The Sizewell C Project

SZC Co.'s Response to the Secretary of State's Request for Further Information dated 18 March 2022: Appendix 3 - The Drainage Strategy Part 12 of 12

Revision: 2.0

April 2022

APPENDIX B: POLLUTION ASSESMENT REPORT

TECHNICAL NOTE 16

DATE:	13 August 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Sizewell C - Associated Development Major Highway Schemes – AD6 Adoptable Highways		
PROJECT:	70073948	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

AD6 ADOPTABLE HIGHWAYS – POLLUTION ASSESSMENT REPORT

1 INTRODUCTION

1.1. WSP has been commissioned by Sizewell Co. (SZC) to validate and develop the design of the AD6 Adoptable Highways (AD6) that was submitted to the Planning Inspectorate as part of a Development Consent Order (DCO) application to build and operate a new nuclear power station to the north of Sizewell B. The AD6 will be designed to Suffolk County Council's (SCC) adoptable standards.

1.2. The AD6 forms one of the Associated Developments (AD) which are required to mitigate traffic impacts arising from the Main Development Site (MDS) construction activities. The AD6 scope includes for the provision of a roundabout located on the B1122 between Leiston and Theberton which will provide access to the MDS. The MDS roundabout and its required B1122 highway modifications are the subject of the Highways England Water Risk Assessment Tool (HEWRAT) assessment, results of which are provided in Appendix A.

1.3. The other elements of AD6 are located closer to Leiston and include changes to B1122 Abbey Road and Lovers Lane in order to accommodate the new railway which serves the MDS and a new Bridleway which is required to replace one which is removed from within the MDS. Since there is no effective change in traffic volumes due to SZC construction at these locations they have not been subject to HEWRAT assessment.

1.4. AD6 roads and the bridleway will require provision of drainage infrastructure to effectively remove highway/bridleway runoff for disposal. Highway runoff will collect contaminants from the road surface which can cause pollution to the receiving water body whether it be watercourse or aquafer. The extent of pollution and whether it is low so as to be acceptable depends on the discharge rate and volume. It also depends on the drainage infrastructure (treatment train) provided which can remove some contaminants, the receiving water body and discharge dilution rate.

1.5. In addition to general lower level pollution in the highway runoff produced by rainfall, there is a risk that pollution may occur as a result of road traffic accident or other incident resulting in spillage onto the highway.

1.6. Prior to the DCO submission, pollution risk was discussed in workshops attended by SCC and the Environment Agency (EA). They both confirmed that an assessment of pollution risk is required. Since the AD6MDS roundabout is a highway and is designed in accordance with the requirements of Design Manual for Roads and Bridges (DMRB), it was agreed that the HEWRAT would be used as a basis for assessment. The HEWRAT assessment methodology is set out in DMRB LA113.

TECHNICAL NOTE 16

DATE:	13 August 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Sizewell C - Associated Development Major Highway Schemes – AD6 Adoptable Highways		
PROJECT:	70073948	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

1.7. This Technical Note (TN) 16 Pollution Assessment Report sets outs the results of the HEWRAT assessment. The calculations and results are contained in Appendix A. The extent of infrastructure assessed is shown in Appendix B.

2 PURPOSE

2.1 This TN provides details of an assessment of pollution risk to water bodies as a result of construction and use of the SLR and its associated side roads due to:

- Contaminates which are contained in highway runoff generated by rainfall; and
- Accidental spillage of contaminates on the highway

2.2 The assessment methodology is described in the results report shown in Appendix A. The methodology includes for an assessment of the effectiveness of the treatment train infrastructure provided which has the effect of reducing the pollution load on the receiving water body. In this case the treatment infrastructure consists of the shallow vegetated channels or swales, filter drains and attenuation basins.

3 SCOPE OF WORK

3.1 The assessment includes only the MDS roundabout and its associated arms. The assessment was undertaken during the Preliminary Design stage but before its completion and results became available in June 2021. As such the results are based on the preliminary drainage design strategy being developed in Spring 2021 which followed confirmation that infiltration is not viable at the MDS roundabout.

3.2 No assessment was made for the Bridleway since there is no potentially polluting highway runoff.

3.3 No assessment was made for the other AD6 road modifications since there is no expected increase in traffic due to SZC since all construction traffic will enter the site via the MDS roundabout.

3.5 The assessment assumed discharge from the highway into an attenuation basin with outfall flow rate controlled and limited to 5 l/s. The outfall arrangements assessed were for the flow from the attenuation basin discharging to the Leiston Drain via filter drains and with flow from the B1122 discharging to a vegetated swale located above the filter drain. HEWRAT has separate assessment methodologies for discharge to watercourse and infiltration to ground. In cases where the natural flow in receiving watercourse is determined to approach zero, being less than 1 l/s, the infiltration to ground methodology is used. This was found to be the case for the upper reach of the Leiston Drain which is in practice an ephemeral watercourse being frequently dry.

TECHNICAL NOTE 16

DATE:	13 August 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Sizewell C - Associated Development Major Highway Schemes – AD6 Adoptable Highways		
PROJECT:	70073948	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

4 CONCLUSIONS

4.1 Following completion of the HEWRAT assessment using the preliminary design drainage layout and treatment train infrastructure provided it can be confirmed that the arrangements result in a pass for the pollutants. This would indicate that applying DMRB standards, the polluting impact of highway runoff is sufficiently low such that no additional treatment measures are required. However as discussed with SCC, further treatment trains such as attenuation basin sediment forebays and defined vegetation such as reed beds will be incorporated at detailed design stage to optimise maintenance requirements and further enhance runoff treatment and biodiversity.

4.3 It is noted that the AD6 MDS roundabout has a predicted Annual Average Daily Traffic (AADT) number less than 10,000. Since HEWRAT does not have an option for AADT values of this scale, the 10,000 – 50,000 category was selected as a suitable alternative. This makes the assessment more conservative.

4.4 The HEWRAT assessment results confirming a pass with no additional treatment required have been reported to SCC through the Design Review meetings and the report will be shared for formal comment. SCC have indicated that irrespective, they may wish to see additional treatment trains added for additional mitigation of pollution risk. If such additional treatment is required, this will be included as part of Detailed Design.

5 NEXT STEPS

5.1 Following SCC consideration of the HEWRAT assessment and the proposed design at preliminary design stage, it is hoped that SCC will accept the conclusions that adequate treatment has been incorporated in design.

5.2 Irrespective of the report, SCC have indicated that they would wish to see additional treatment provided and suitable development of design for additional treatment and biodiversity.

5.3 It is expected that SCC will provide comments on the preliminary drainage design, informed by this report. Such comments will be considered as input data requirements for development of detailed drainage design.

TECHNICAL NOTE 16

DATE:	13 August 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Sizewell C - Associated Development Major Highway Schemes – AD6 Adoptable Highways		
PROJECT:	70073948	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

APPENDIX A

DRAINAGE NETWORK WATER QUALITY ASSESSMENT

TECHNICAL NOTE 16 APPENDIX A

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

INTRODUCTION

WSP have been commissioned to complete the detailed drainage design for Sizewell Adoptable Highways in the Leiston area. A water quality assessment has been carried out to confirm that the proposed drainage design provides suitable treatment of highway runoff before it is discharged to a nearby watercourse. This Technical Note follows on from the previous Drainage Network Quality Assessments undertaken on 1st December 2020 which assessed and advised on the treatment measures required for the Sizewell Link Road, Two Village Bypass and Yoxford scheme drainage networks. This report is required to assess the impact of discharge from the B1122 Abbey Road Main Site Access roundabout catchment into the upstream end of the Leiston Drain watercourse. (See Appendix B for drawing). This technical note summarises the results of this assessment.

Although highway improvements are to be made at Abbey Road and Lovers Lane, these have not been assessed because most increased traffic will enter the Sizewell C construction site via the roundabout from the north. Increase in traffic to the south of the Main Site Access roundabout will be limited.

DATA SOURCES

The following data was used for the assessments:

- Impermeable and permeable highway catchment areas draining to the outfall
- Annual Average Traffic Flow (AADT) and Percentage HGVs for Sizewell Link Road and associated roads. Provided from the most recent traffic model for the scheme for the design year of 2032.
- Catchment boundary of the receiving watercourse informed by a hydrological assessment carried out previously by the WSP water team
- Q95 flow and Base Flow Index generated using LowFlows software
- Ground investigation data for the site
- Defra's magic mapping
- Historic borehole records (Geology of Great Britain Viewer)
- Assumed percentage removal of copper and zinc for treatment solutions informed by Table 8.6.4N3 of CG501 (DMRB)
- Default values for water hardness and copper concentration informed by the HEWRAT Help Guide

ASSESSMENT METHODOLOGY

The simple assessment methodology set out in DMRB LA113 was used to assess impact of the proposed drainage design on water quality of receiving watercourses and the underlying groundwater body.

A HEWRAT assessment was completed to assess the impact of routine runoff proposed to discharge into the upstream end of the Leiston Drain .

An assessment of impacts from routine runoff to groundwater quality (Appendix C of LA113) was competed for the unlined vegetated ditches, attenuation basin and the perforated pipe which carries highway runoff to

TECHNICAL NOTE 16 APPENDIX A

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

the Leiston Drain. A similar methodology was implemented for the Leiston Drain as the Q95 of this watercourse was less than 0.001m^3/s.

An assessment of spillage risk at the outfall was also completed (Appendix D of LA113).

ASSESSMENT RESULTS

Routine Runoff to Watercourses (HEWRAT)

The full assessment results are presented in Table 3 below. In summary, with vegetated ditches and an attenuation basin embedded in the drainage design, sufficient treatment is provided for all aspects the HEWRAT to be passed.

Most of the roads which discharge to the proposed outfalls have an AADT less than 10,000. As the HEWRAT does not have an option for AADT values of this scale, the 10,000 – 50,000 category was selected as a suitable alternative.The percentage removal of copper and zinc has been calculated using the guidance values provided in Table 8.6.4N3 of CG501. The proposed drainage strategy provides treatment for copper, zinc and sediments through vegetated ditches and the attenuation basin. When in combination, the efficiency of pollution removal for measures downstream of other measures is taken at 50%. Only some of the highway runoff will flow along the vegetated ditches (approximately 11%), therefore the treatment efficiencies used in this calculation have been derived by weighting against the highway area. Similarly, the southern arm of the roundabout (approximately 8% of the highway impermeable area) does not drain via the attenuation basin and therefore the efficiencies have been weighted to accommodate this. The final mitigation values used in the HEWRAT assessment are presented in Table 1 and the calculation of these values is presented in Table 2.

Table 1 - Percentage removal of pollutants used in the drainage strategy and assessed in the HEWRAT.

Percentage removal of copper (%)	Percentage removal of zinc (%)	Percentage settlement of sediments (%)
1.58	1.58	46.23

Routine Runoff to Groundwater (Method C)

The assessment results are presented in Table 4 below. In conclusion, the impact to the underlying groundwater via the vegetated ditches and perforated pipe, is determined to be low risk. The assessment determines that the impact to the underlying groundwater via the attenuation basin and the Leiston Drain is medium risk. However, the final assessment score for these two elements is 155 and 150, respectively, which is very close to the threshold for low risk (150).

A more detailed review of the sources, pathways, and receptors has indicated that the medium risk presented in the above evaluation is overly conservative. Considering the following lines of evidence, it is

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

unlikely that potential exceedances of contaminants within the routine runoff would represent a significant risk to the identified groundwater receptor:

- The average traffic density assumed during the Method C assessment is higher than the actual predicted traffic density, indicating that the pollutant load will likely be considerably less than the Method C assessment assumes. A reduction of traffic density reduces the degree of exposure to potential contaminants present in the routine runoff.
- The attenuation basin is designed to temporarily hold runoff whilst discharging at a restricted rate. The basin is not designed to be permanently wet and therefore there is a limited amount of infiltration expected at this feature. It is designed that the highway runoff will mostly discharge to surface water. Furthermore, the proposed basin is located within the clay-rich superficial deposits and therefore likely to have limited capacity for infiltration. An attempt to obtain an infiltration rate by testing in accordance with BRE365 was unsuccessful.
- Prior to discharge to the Leiston Drain, the highway runoff passes through the attenuation basin and the filter drain / perforated pipe and therefore it is considered that sufficient treatment is provided prior to discharge to the Leiston Drain.

Therefore, no further treatment is required prior to highway runoff discharging to groundwater.

Spillage Risk (Method D)

The spillage risk is less than 0.001% which is acceptable and satisfies the standards set out in LA113. The assessment results are presented in

	Parameter	Perforated Pipe			Leiston Drain		
		Value	Risk Score	Score	Value	Risk Score	Score
Source	Traffic flow	<50,000	1	10	<50,000	1	10
	Rainfall depth	550mm	1	10	550mm	1	10
	Drainage area ratio	32	1	10	56	2	20
Pathway	Infiltration method	Continuous	1	15	Continuous	1	15
	Unsaturated zone	5-15mbgl	2	40	5-15mbgl	2	40
	Flow type	Intergranular	1	20	Intergranular	1	20
	Unsaturated zone clay content	9.5%	2	10	9.5%	2	10
	Organic carbon	0.3%	3	15	0.3%	3	15

TECHNICAL NOTE 16 APPENDIX A

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

	Parameter	Perforated Pipe			Leiston Drain		
		Value	Risk Score	Score	Value	Risk Score	Score
	Unsaturated zone soil pH	7.3-8.3	2	10	7.3-8.3	2	10
	TOTAL			**140 Low risk**			**150 Medium risk**

Table 5 below.

TECHNICAL NOTE 1

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

Table 2 – Calculation of weighted treatment efficiencies

Catchment	Area (ha)	Weighting	Treatment measures	Catchment treatment efficiencies			Weighted treatment efficiencies		
				Percentage removal of copper (%)	Percentage removal of zinc (%)	Percentage settlement of sediments (%)	Percentage removal of copper (%)	Percentage removal of zinc (%)	Percentage settlement of sediments (%)
NW1	0.030	0.06	Attenuation basin	0	0	50	0.00	0.00	2.88
NW2	0.026	0.05		0	0	50	0.00	0.00	2.53
NW3	0.074	0.14		0	0	50	0.00	0.00	7.06
NE2	0.025	0.05	Vegetated ditch and attenuation basin	15	15	50	0.73	0.73	2.43
NE3	0.030	0.06		15	15	50	0.85	0.85	2.84
NE4	0.019	0.04	Attenuation basin	0	0	50	0.00	0.00	1.78
NE5	0.040	0.08		0	0	50	0.00	0.00	3.85

TECHNICAL NOTE 1

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

Catchment	Area (ha)	Weighting	Treatment measures	Catchment treatment efficiencies			Weighted treatment efficiencies		
				Percentage removal of copper (%)	Percentage removal of zinc (%)	Percentage settlement of sediments (%)	Percentage removal of copper (%)	Percentage removal of zinc (%)	Percentage settlement of sediments (%)
E1	0.062	0.12		0	0	50	0.00	0.00	5.93
R1	0.102	0.19		0	0	50	0.00	0.00	9.75
S1	0.039	0.08	None				0.00	0.00	0.00
S2	0.027	0.05	Attenuation basin	0	0	50	0.00	0.00	2.58
S3	0.048	0.09		0	0	50	0.00	0.00	4.59
Total	**0.52**	**1**					**1.58**	**1.58**	**46.23**

TECHNICAL NOTE 1

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

Table 3 - Input parameters and results of the HEWRAT assessment for the proposed drainage outfalls for Sizewell Link Road Main Access Roundabout Outfall

HEWRAT Input	Main Access Roundabout Outfall	HEWRAT Output	Main Access Roundabout Outfall
Easting	644528	***Copper – acute***	**Pass**
Northing	263869	**Zinc – acute**	**Pass**
Receiving watercourse	Leiston Drain	***Sediment Settlement***	**Pass**
AADT	10,000-50,000	***Copper (EQS) (µg/l)***	**0.24**
Climatic region	Warm/dry	***Zinc (EQS) (µg/l)***	**0.55**
Rainfall Site	Ipswich (550mm)		
Annual Q95 (m^3/s)	0.001		
Impermeable Area (ha)	0.523		
Permeable Area (ha)	0.513		
BFI	0.57		
Water hardness	Low		
Ambient background copper concentration (µg/l)	0		

TECHNICAL NOTE 1

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

HEWRAT Input	Main Access Roundabout Outfall	HEWRAT Output	Main Access Roundabout Outfall
Protected Site Downstream?	No		
Estimated River Width (m)	1.6		
% Removal of Copper	1.58		
% Removal of Zinc	1.58		
Restricted Discharge Rate (l/s)	5		
% Settlement of Sediments	46.23		

TECHNICAL NOTE 1

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

Table 4 - Groundwater quality assessment results for Sizewell Link Road Main Access Roundabout.

	Parameter	Unlined vegetated ditches			Unlined attenuation basin		
		Value	Risk Score	Score	Value	Risk Score	Score
Source	Traffic flow	<50,000	1	10	<50,000	1	10
	Rainfall depth	550mm	1	10	550mm	1	10
	Drainage area ratio	14	1	10	14	1	10
Pathway	Infiltration method	Continuous	1	15	Region	2	30
	Unsaturated zone	5-15mbgl	2	40	5-15mbgl	2	40
	Flow type	Intergranular	1	20	Intergranular	1	20
	Unsaturated zone clay content	9.5%	2	10	9.5%	2	10
	Organic carbon	0.3%	3	15	0.3%	3	15
	Unsaturated zone soil pH	7.3-8.3	2	10	7.3-8.3	2	10
	TOTAL			**140 Low risk**			**155 Medium risk**

TECHNICAL NOTE 1

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

	Parameter	Perforated Pipe			Leiston Drain		
		Value	Risk Score	Score	Value	Risk Score	Score
Source	Traffic flow	<50,000	1	10	<50,000	1	10
	Rainfall depth	550mm	1	10	550mm	1	10
	Drainage area ratio	32	1	10	56	2	20
Pathway	Infiltration method	Continuous	1	15	Continuous	1	15
	Unsaturated zone	5-15mbgl	2	40	5-15mbgl	2	40
	Flow type	Intergranular	1	20	Intergranular	1	20
	Unsaturated zone clay content	9.5%	2	10	9.5%	2	10
	Organic carbon	0.3%	3	15	0.3%	3	15
	Unsaturated zone soil pH	7.3-8.3	2	10	7.3-8.3	2	10
	TOTAL			**140 Low risk**			**150 Medium risk**

TECHNICAL NOTE 1

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

Table 5 – Spillage risk assessment results for Sizewell Link Road Main Access Roundabout.

Road label	Length (km)	Road type	Junction type	AADT	%HGV	PSPL[1]	PPOL[2]	PINC[3]	RRF[4]	Mitigated PINC
AD6_1.01	0.195	Rural trunk road	Roundabout	7153	3	0.00005	0.75	0.00004	0.24	0.00001
AD6_1.02	0.081	Rural trunk road	Roundabout	1203	1	0.00000	0.75	0.00000	0.24	0.00000
AD6_1.03	0.021	Rural trunk road	Roundabout	1203	1	0.00000	0.75	0.00000	0.224	0.00000
AD6_1.04	0.07	Rural trunk road	No Junction	1203	1	0.00000	0.75	0.00000	0.224	0.00000
AD6_1.05	0.042	Rural trunk road	Roundabout	6552	4	0.00001	0.75	0.00001	0.24	0.00000
AD6_1.06	0.059	Rural trunk road	Roundabout	6552	4	0.00002	0.75	0.00001	0.24	0.00000
AD6_1.07	0.028	Rural trunk road	No Junction	6552	4	0.00000	0.75	0.00000	0.24	0.00000
AD6_1.08	0.089	Rural trunk road	Roundabout	7153	3	0.00002	0.75	0.00002	0.24	0.00000

[1] PSPL = annual probability of a spillage with the potential to cause a serious pollution incident
[2] PPOL = the probability, given a spillage, that a serious pollution incident will result. The location was considered to be rural with a response time to site of <1 hour.
[3] PINC = the probability of a spillage with an associated risk of a serious pollution incident occurring
[4] RRF = risk reduction factor. Implementation of vegetated ditch and an attenuation basin provide a RRF of 0.224 according to the values provided in Table 8.6.4N3 of CG501. The attenuation basin has half the efficiency stated in CG501 as it is part of a linear treatment train. Penstocks provide additional 0.4 RRF and are implemented across the whole design. They would provide full efficiency despite being downstream of other mitigation.

TECHNICAL NOTE 1

DATE:	28 May 2021	**CONFIDENTIALITY:**	Internal
SUBJECT:	Drainage Network Water Quality Assessment		
PROJECT:	Sizewell Adoptable Highways - Main Access Roundabout	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

Road label	Length (km)	Road type	Junction type	AADT	%HGV	PSPL[1]	PPOL[2]	PINC[3]	RRF[4]	Mitigated PINC
AD6_1.09	0.012	Rural trunk road	Roundabout	7153	3	0.00000	0.75	0.00000	0.4	0.00000
AD6_1.10	0.048	Rural trunk road	No Junction	7153	3	0.00000	0.75	0.00000	0.4	0.00000
TOTAL										**0.00002**

TECHNICAL NOTE 16

DATE:	13 August 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Sizewell C - Associated Development Major Highway Schemes – AD6 Adoptable Highways		
PROJECT:	70073948	**AUTHOR:**	[redacted]
CHECKED:	[redacted]	**APPROVED:**	[redacted]

APPENDIX B

MDS DRAINAGE NETWORK AND OUTFALL LAYOUT

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown copyright (2019). All Rights reserved. NNB GenCo Licence: 0100060408

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner NNBGEN	2nd partner EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-LLAHDG-ZZ0000-DRW-HCD-305001

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING: 000

SYSTEM: N/A

SCALE: 1:500

SIZE: A1

PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 1

TEAMCENTER DOCUMENT REFERENCE No.

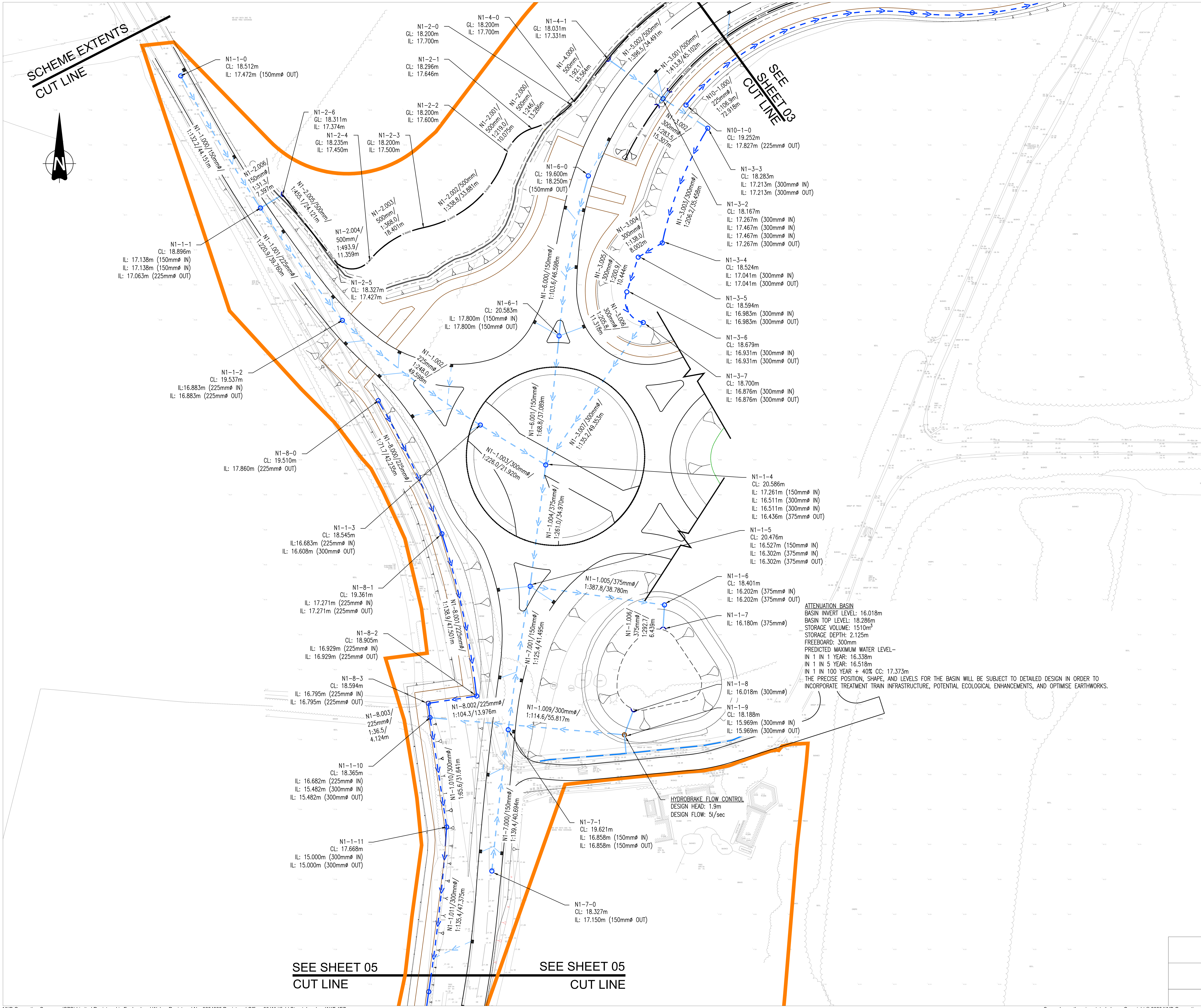
TBC — P01

DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOOCGQUVWMNSZXKY
zsaeocmuvnwxirfklhbdpqgyjlt 71423655690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.

1st partner	2nd partner
NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-MSEHDG-ZZ0000-DRW-HCD-305004

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX
SZC (doc: SZ)

0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 4

TEAMCENTER DOCUMENT REFERENCE No.
TBC — P01

DOCUMENT SUB -TYPE: TEMPLATE
EDF CLASSIFICATION CODE: N/A
SUBCONTRACTOR COMPANY TRADE NAME: N/A
SUBCONTRACTOR DOCUMENT REF. No: N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLUOOCGQUVWMNSZXKY
zsaeocnuvmwxirfkhbdpqgyjtl 71423655690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP: NNB: OWNERSHIP — EDF: N/A — CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID ☐	NATIONAL GRID OSGB36 X
OTHER GRID ☐	(To be defined in the contract project plan)

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

PROPOSED CARRIER DRAIN
PROPOSED FILTER DRAIN
PROPOSED EARTHWORKS DITCH
EXISTING UNCHANGED WATERCOURSE
EXISTING DIVERTED WATERCOURSE
PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
EXISTING CULVERT
EXISTING SW NETWORK
PROPOSED CATCHPIT/MANHOLES
PROPOSED TYPE 10 GRATING CHAMBERS
PROPOSED HYDROBRAKE
PROPOSED SOAKAWAY MANHOLE
PROPOSED COMBINED KERB DRAINAGE
PROPOSED MAMMAL CHANNELS
PROPOSED GULLY
PROPOSED HEADWALL
PROPOSED CELLULAR STORAGE
PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner	2nd partner
	NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-MSEHDG-ZZ0000-DRW-HCD-305005

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A

QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING 000

SYSTEM N/A

SCALE 1:500

SIZE A1

PAGE

DESCRIPTION

PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 5

TEAMCENTER DOCUMENT REFERENCE No.

TBC P01

DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHIJUOGCGQUVWMNSZXKY
zsaeocmuvwxirfkhbdpqgyjlt 714238556690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

APPENDIX C: HYDRAULIC MODELLING RESULTS

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 1-Main Site Access Roundabout

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 1-Main Site Access Roundabout

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.053	8-12	0.443	12-16	0.312	16-20	0.104	20-24	0.062	24-28	0.041	28-32	0.016

Total Area Contributing (ha) = 1.031

Total Pipe Volume (m³) = 526.433

Network Design Table for Network 1-Main Site Access Roundabout

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N1-1.000	44.151	0.334	132.2	0.036	15.00	0.0	0.600		o	150	Pipe/Conduit	
N1-2.000	13.286	0.054	246.0	0.006	15.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-2.001	10.075	0.046	219.0	0.006	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-2.002	33.881	0.100	338.8	0.043	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-2.003	18.401	0.050	368.0	0.023	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-2.004	11.359	0.023	493.9	0.010	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-2.005	24.121	0.053	455.1	0.010	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-2.006	7.397	0.236	31.3	0.000	0.00	0.0	0.600		o	150	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)
N1-1.000	33.15	15.84	17.472	0.036	0.0	0.0	0.0	0.87	15.4	3.2
N1-2.000	33.75	15.37	17.700	0.006	0.0	0.0	0.0	0.60	596.3	0.5
N1-2.001	33.41	15.64	17.646	0.012	0.0	0.0	0.0	0.63	632.0	1.1
N1-2.002	32.05	16.75	17.600	0.055	0.0	0.0	0.0	0.51	508.1	4.8
N1-2.003	31.33	17.38	17.500	0.078	0.0	0.0	0.0	0.49	487.5	6.6
N1-2.004	30.83	17.83	17.450	0.088	0.0	0.0	0.0	0.42	420.9	7.3
N1-2.005	29.87	18.74	17.427	0.098	0.0	0.0	0.0	0.44	438.4	7.9
N1-2.006	29.80	18.81	17.374	0.098	0.0	0.0	0.0	1.80	31.9	7.9

Network Design Table for Network 1-Main Site Access Roundabout

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N1-1.001	39.760	0.180	220.9	0.029	0.00	0.0	0.600		o	225	Pipe/Conduit	
N1-1.002	49.598	0.200	248.0	0.079	0.00	0.0	0.600		o	225	Pipe/Conduit	
N1-1.003	21.920	0.097	226.0	0.155	0.00	0.0	0.600		o	225	Pipe/Conduit	
N1-3.000	38.947	0.224	173.9	0.040	15.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-3.001	45.102	0.109	413.8	0.048	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-4.000	15.564	0.169	92.1	0.008	15.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-5.000	68.659	0.238	288.5	0.066	15.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-5.001	58.923	0.157	375.3	0.023	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-5.002	34.491	0.087	396.5	0.014	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N1-4.001	19.405	0.064	303.2	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
N1-3.002	15.307	0.054	283.5	0.040	0.00	0.0	0.600		o	300	Pipe/Conduit	
N1-3.003	35.458	0.172	206.2	0.003	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-3.004	8.002	0.058	138.0	0.004	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-3.005	10.444	0.052	200.9	0.007	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-3.006	11.318	0.055	205.8	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-3.007	49.353	0.365	135.2	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
N1-6.000	46.598	0.450	103.6	0.040	15.00	0.0	0.600		o	150	Pipe/Conduit	
N1-6.001	37.089	0.539	68.8	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
N1-1.004	34.970	0.134	261.0	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)
N1-1.001	29.06	19.57	17.063	0.163	0.0	0.0	0.0	0.88	34.8	12.8
N1-1.002	28.14	20.57	16.883	0.242	0.0	0.0	0.0	0.83	32.8	18.4
N1-1.003	27.77	20.99	16.683	0.397	0.0	0.0	0.0	0.87	34.4	29.9
N1-3.000	33.06	15.92	17.800	0.040	0.0	0.0	0.0	0.71	709.3	3.6
N1-3.001	31.14	17.55	17.576	0.088	0.0	0.0	0.0	0.46	459.8	7.4
N1-4.000	33.88	15.27	17.700	0.008	0.0	0.0	0.0	0.97	974.6	0.7
N1-5.000	31.50	17.22	17.813	0.066	0.0	0.0	0.0	0.51	422.1	5.6
N1-5.001	29.36	19.26	17.575	0.089	0.0	0.0	0.0	0.48	482.8	7.1
N1-5.002	28.22	20.48	17.418	0.103	0.0	0.0	0.0	0.47	469.7	7.9
N1-4.001	27.90	20.84	17.331	0.111	0.0	0.0	0.0	0.90	63.5	8.4
N1-3.002	27.67	21.12	17.267	0.239	0.0	0.0	0.0	0.93	65.7	17.9
N1-3.003	27.16	21.73	17.213	0.242	0.0	0.0	0.0	0.96	68.2	17.9
N1-3.004	27.06	21.84	17.041	0.246	0.0	0.0	0.0	1.18	83.4	18.0
N1-3.005	26.92	22.02	16.983	0.253	0.0	0.0	0.0	0.98	69.1	18.4
N1-3.006	26.76	22.21	16.931	0.253	0.0	0.0	0.0	0.97	68.2	18.4
N1-3.007	26.29	22.82	16.876	0.253	0.0	0.0	0.0	1.35	95.5	18.4
N1-6.000	33.22	15.79	18.250	0.040	0.0	0.0	0.0	0.99	17.4	3.6
N1-6.001	32.59	16.30	17.800	0.040	0.0	0.0	0.0	1.21	21.5	3.6
N1-1.004	25.84	23.43	16.511	0.690	0.0	0.0	0.0	0.97	68.5	48.3

Network Design Table for Network 1-Main Site Access Roundabout

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N1-7.000	40.694	0.292	139.4	0.038	15.00	0.0	0.600		o	150	Pipe/Conduit	
N1-7.001	41.495	0.331	125.4	0.055	0.00	0.0	0.600		o	150	Pipe/Conduit	
N1-1.005	38.780	0.100	387.8	0.069	0.00	0.0	0.600		o	375	Pipe/Conduit	
N1-1.006	6.439	0.022	292.7	0.127	0.00	0.0	0.600		o	375	Pipe/Conduit	
N1-1.007	25.535	0.162	157.6	0.000	0.00	0.0	0.600		o	375	Pipe/Conduit	
N1-1.008	7.114	0.049	145.2	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
N1-1.009	55.817	0.487	114.6	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
N1-8.000	42.232	0.589	71.7	0.000	15.00	0.0	1.500		o	225	Pipe/Conduit	
N1-8.001	47.502	0.342	138.9	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N1-8.002	13.976	0.134	104.3	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N1-8.003	4.124	0.113	36.5	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N1-1.010	31.641	0.482	65.6	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.011	47.375	0.350	135.4	0.052	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.012	36.585	0.350	104.5	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.013	51.681	0.274	188.6	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.014	57.717	0.274	210.6	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.015	41.389	0.254	162.9	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.016	26.615	0.134	198.6	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.017	44.838	0.250	179.4	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.018	48.141	1.033	46.6	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.019	51.934	2.010	25.8	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.020	34.156	1.351	25.3	0.000	0.00	0.0	1.500		o	300	Pipe/Conduit	
N1-1.021	19.942	0.675	29.5	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)
N1-7.000	33.21	15.80	17.150	0.038	0.0	0.0	0.0	0.85	15.0	3.4
N1-7.001	32.26	16.57	16.858	0.093	0.0	0.0	0.0	0.90	15.8	8.1
N1-1.005	25.34	24.13	16.302	0.852	0.0	0.0	0.0	0.91	100.9	58.5
N1-1.006	25.27	24.23	16.202	0.979	0.0	0.0	0.0	1.05	116.4	67.0
N1-1.007	25.06	24.53	16.180	0.979	0.0	0.0	0.0	1.44	159.1	67.0
N1-1.008	25.00	24.62	16.018	0.979	0.0	0.0	0.0	1.30	92.1	67.0
N1-1.009	24.58	25.25	15.969	0.979	0.0	0.0	0.0	1.47	103.8	67.0
N1-8.000	33.56	15.52	17.860	0.000	0.0	0.0	0.0	1.36	53.9	0.0
N1-8.001	32.55	16.33	17.271	0.000	0.0	0.0	0.0	0.97	38.7	0.0
N1-8.002	32.30	16.54	16.929	0.000	0.0	0.0	0.0	1.12	44.7	0.0
N1-8.003	32.25	16.58	16.795	0.000	0.0	0.0	0.0	1.90	75.7	0.0
N1-1.010	24.38	25.56	15.482	0.979	0.0	0.0	0.0	1.71	121.1	67.0
N1-1.011	23.96	26.23	15.000	1.031	0.0	0.0	0.0	1.19	84.2	67.0
N1-1.012	23.69	26.68	14.650	1.031	0.0	0.0	0.0	1.36	95.9	67.0
N1-1.013	23.19	27.53	14.300	1.031	0.0	0.0	0.0	1.01	71.3	67.0
N1-1.014	22.63	28.54	14.026	1.031	0.0	0.0	0.0	0.95	67.4	67.0
N1-1.015	22.30	29.17	13.752	1.031	0.0	0.0	0.0	1.09	76.7	67.0
N1-1.016	22.06	29.62	13.498	1.031	0.0	0.0	0.0	0.98	69.5	67.0
N1-1.017	21.87	30.00	13.364	1.031	0.0	0.0	0.0	1.03	73.1	67.0
N1-1.018	21.87	30.00	13.114	1.031	0.0	0.0	0.0	2.03	143.8	67.0
N1-1.019	21.87	30.00	12.081	1.031	0.0	0.0	0.0	2.73	193.2	67.0
N1-1.020	21.87	30.00	10.071	1.031	0.0	0.0	0.0	2.76	195.3	67.0
N1-1.021	21.87	30.00	8.720	1.031	0.0	0.0	0.0	2.90	205.2	67.0

Manhole Schedules for Network 1-Main Site Access Roundabout

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)
N1-1-0	18.512	1.040	Open Manhole	1050	N1-1.000	17.472	150				
N1-2-0	18.200	0.500	Junction		N1-2.000	17.700	500				
N1-2-1	18.296	0.650	Junction		N1-2.001	17.646	500	N1-2.000	17.646	500	
N1-2-2	18.200	0.600	Junction		N1-2.002	17.600	500	N1-2.001	17.600	500	
N1-2-3	18.200	0.700	Junction		N1-2.003	17.500	500	N1-2.002	17.500	500	
N1-2-4	18.235	0.785	Junction		N1-2.004	17.450	500	N1-2.003	17.450	500	
N1-2-5	18.327	0.900	Junction		N1-2.005	17.427	500	N1-2.004	17.427	500	
N1-2-6	18.311	0.937	Junction		N1-2.006	17.374	150	N1-2.005	17.374	500	
N1-1-1	18.896	1.833	Open Manhole	1050	N1-1.001	17.063	225	N1-1.000	17.138	150	
								N1-2.006	17.138	150	
N1-1-2	19.537	2.654	Open Manhole	1050	N1-1.002	16.883	225	N1-1.001	16.883	225	
N1-1-3	18.545	1.862	Open Manhole	1500	N1-1.003	16.683	225	N1-1.002	16.683	225	
N1-3-0	18.300	0.500	Junction		N1-3.000	17.800	500				
N1-3-1	18.076	0.500	Junction		N1-3.001	17.576	500	N1-3.000	17.576	500	
N1-4-0	18.200	0.500	Junction		N1-4.000	17.700	500				
N1-5-0	18.259	0.446	Junction		N1-5.000	17.813	500				
N1-5-1	18.075	0.500	Junction		N1-5.001	17.575	500	N1-5.000	17.575	500	
N1-5-2	17.918	0.500	Junction		N1-5.002	17.418	500	N1-5.001	17.418	500	
N1-4-1	18.031	0.700	Junction		N1-4.001	17.331	300	N1-4.000	17.531	500	400
								N1-5.002	17.331	500	
N1-3-2	18.167	0.900	Junction		N1-3.002	17.267	300	N1-3.001	17.467	500	400
								N1-4.001	17.267	300	
N1-3-3	18.283	1.070	Open Manhole	1050	N1-3.003	17.213	300	N1-3.002	17.213	300	
N1-3-4	18.524	1.483	Open Manhole	1050	N1-3.004	17.041	300	N1-3.003	17.041	300	
N1-3-5	18.594	1.611	Open Manhole	1050	N1-3.005	16.983	300	N1-3.004	16.983	300	
N1-3-6	18.647	1.716	Open Manhole	1050	N1-3.006	16.931	300	N1-3.005	16.931	300	
N1-3-7	18.700	1.824	Open Manhole	1050	N1-3.007	16.876	300	N1-3.006	16.876	300	
N1-6-0	19.600	1.350	Open Manhole	1050	N1-6.000	18.250	150				
N1-6-1	20.583	2.783	Open Manhole	1200	N1-6.001	17.800	150	N1-6.000	17.800	150	
N1-1-4	18.580	2.069	Open Manhole	1500	N1-1.004	16.511	300	N1-1.003	16.586	225	
								N1-3.007	16.511	300	
								N1-6.001	17.261	150	600
N1-7-0	18.327	1.177	Open Manhole	1050	N1-7.000	17.150	150				
N1-7-1	19.621	2.763	Open Manhole	1050	N1-7.001	16.858	150	N1-7.000	16.858	150	
N1-1-5	20.476	4.174	Open Manhole	1500	N1-1.005	16.302	375	N1-1.004	16.377	300	
								N1-7.001	16.527	150	
N1-1-6	18.401	2.199	Open Manhole	1500	N1-1.006	16.202	375	N1-1.005	16.202	375	
N1-1-7	18.312	2.132	Open Manhole	1050	N1-1.007	16.180	375	N1-1.006	16.180	375	
N1-1-8	18.118	2.100	Open Manhole	1050	N1-1.008	16.018	300	N1-1.007	16.018	375	
N1-1-9	17.950	1.981	Open Manhole	1200	N1-1.009	15.969	300	N1-1.008	15.969	300	
N1-8-0	19.510	1.650	Open Manhole	1200	N1-8.000	17.860	225				
N1-8-1	19.361	2.090	Open Manhole	1200	N1-8.001	17.271	225	N1-8.000	17.271	225	
N1-8-2	18.905	1.976	Open Manhole	1200	N1-8.002	16.929	225	N1-8.001	16.929	225	
N1-8-3	18.594	1.799	Open Manhole	1200	N1-8.003	16.795	225	N1-8.002	16.795	225	
N1-1-10	18.365	2.883	Open Manhole	1500	N1-1.010	15.482	300	N1-1.009	15.482	300	
								N1-8.003	16.682	225	1125
N1-1-11	17.668	2.668	Open Manhole	1200	N1-1.011	15.000	300	N1-1.010	15.000	300	

Manhole Schedules for Network 1-Main Site Access Roundabout

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)
N1-1-12	16.952	2.302	Open Manhole	1200	N1-1.012	14.650	300	N1-1.011	14.650	300	
N1-1-13	16.333	2.033	Open Manhole	1200	N1-1.013	14.300	300	N1-1.012	14.300	300	
N1-1-14	15.732	1.706	Open Manhole	1050	N1-1.014	14.026	300	N1-1.013	14.026	300	
N1-1-15	15.300	1.548	Open Manhole	1050	N1-1.015	13.752	300	N1-1.014	13.752	300	
N1-1-16	15.027	1.529	Open Manhole	1200	N1-1.016	13.498	300	N1-1.015	13.498	300	
N1-1-17	14.918	1.554	Open Manhole	1050	N1-1.017	13.364	300	N1-1.016	13.364	300	
N1-1-18	14.740	1.626	Open Manhole	1050	N1-1.018	13.114	300	N1-1.017	13.114	300	
N1-1-19	13.561	1.480	Open Manhole	1050	N1-1.019	12.081	300	N1-1.018	12.081	300	
N1-1-20	11.560	1.489	Open Manhole	1050	N1-1.020	10.071	300	N1-1.019	10.071	300	
N1-1-21	10.247	1.527	Open Manhole	1050	N1-1.021	8.720	300	N1-1.020	8.720	300	
N1-	8.802	0.757	Open Manhole	0		OUTFALL		N1-1.021	8.045	300	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N1-1-0	644736.392	264625.401	644736.392	264625.401	Required	
N1-2-0	644848.105	264617.133			No Entry	
N1-2-1	644836.850	264610.357			No Entry	
N1-2-2	644829.778	264603.667			No Entry	
N1-2-3	644805.800	264582.000			No Entry	
N1-2-4	644790.392	264572.614			No Entry	
N1-2-5	644780.466	264572.503			No Entry	
N1-2-6	644765.514	264591.430			No Entry	
N1-1-1	644759.184	264587.602	644759.184	264587.602	Required	
N1-1-2	644782.610	264555.487	644782.610	264555.487	Required	
N1-1-3	644822.052	264525.560	644822.052	264525.560	Required	
N1-3-0	644948.107	264649.893			No Entry	
N1-3-1	644909.683	264645.877			No Entry	

Manhole Schedules for Network 1-Main Site Access Roundabout

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N1-4-0	644848.889	264618.028			No Entry	
N1-5-0	645005.823	264683.908			No Entry	
N1-5-1	644941.388	264665.870			No Entry	
N1-5-2	644884.900	264652.133			No Entry	
N1-4-1	644858.580	264630.207			No Entry	
N1-3-2	644874.326	264618.867			No Entry	
N1-3-3	644887.103	264610.436	644887.103	264610.436	Required	
N1-3-4	644874.096	264577.631	644874.096	264577.631	Required	
N1-3-5	644867.211	264573.553	644867.211	264573.553	Required	
N1-3-6	644863.956	264563.629	644863.956	264563.629	Required	
N1-3-7	644868.637	264554.866	644868.637	264554.866	Required	
N1-6-0	644852.947	264596.800	644852.947	264596.800	Required	
N1-6-1	644844.591	264551.030	644844.591	264551.030	Required	
N1-1-4	644840.762	264514.139	644840.762	264514.139	Required	
N1-7-0	644825.358	264398.016	644825.358	264398.016	Required	
N1-7-1	644830.039	264438.438	644830.039	264438.438	Required	
N1-1-5	644836.322	264479.452	644836.322	264479.452	Required	
N1-1-6	644874.732	264474.107	644874.732	264474.107	Required	
N1-1-7	644874.383	264467.677	644874.383	264467.677	Required	
N1-1-8	644865.708	264443.662	644865.708	264443.662	Required	

Manhole Schedules for Network 1-Main Site Access Roundabout

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N1-1-9	644863.274	264436.977	644863.274	264436.977	Required	
N1-8-0	644792.872	264532.507	644792.872	264532.507	Required	
N1-8-1	644811.070	264494.456	644811.070	264494.456	Required	
N1-8-2	644821.009	264448.083	644821.009	264448.083	Required	
N1-8-3	644807.191	264445.987	644807.191	264445.987	Required	
N1-1-10	644807.674	264441.891	644807.674	264441.891	Required	
N1-1-11	644812.428	264410.609	644812.428	264410.609	Required	
N1-1-12	644807.300	264363.528	644807.300	264363.528	Required	
N1-1-13	644802.316	264327.285	644802.316	264327.285	Required	
N1-1-14	644782.793	264279.474	644782.793	264279.474	Required	
N1-1-15	644755.076	264228.884	644755.076	264228.884	Required	
N1-1-16	644731.819	264194.659	644731.819	264194.659	Required	
N1-1-17	644718.461	264171.639	644718.461	264171.639	Required	
N1-1-18	644695.238	264133.291	644695.238	264133.291	Required	
N1-1-19	644670.711	264091.869	644670.711	264091.869	Required	
N1-1-20	644644.184	264047.223	644644.184	264047.223	Required	
N1-1-21	644625.543	264018.603	644625.543	264018.603	Required	
N1-	644616.400	264000.881			No Entry	

PIPELINE SCHEDULES for Network 1-Main Site Access Roundabout

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)
N1-1.000	o	150	N1-1-0	18.512	17.472	0.890	Open Manhole	1050
N1-2.000	3 \=/	500	N1-2-0	18.200	17.700	0.000	Junction	
N1-2.001	3 \=/	500	N1-2-1	18.296	17.646	0.150	Junction	
N1-2.002	3 \=/	500	N1-2-2	18.200	17.600	0.100	Junction	
N1-2.003	3 \=/	500	N1-2-3	18.200	17.500	0.200	Junction	
N1-2.004	3 \=/	500	N1-2-4	18.235	17.450	0.285	Junction	
N1-2.005	3 \=/	500	N1-2-5	18.327	17.427	0.400	Junction	
N1-2.006	o	150	N1-2-6	18.311	17.374	0.787	Junction	
N1-1.001	o	225	N1-1-1	18.896	17.063	1.608	Open Manhole	1050
N1-1.002	o	225	N1-1-2	19.537	16.883	2.429	Open Manhole	1050
N1-1.003	o	225	N1-1-3	18.545	16.683	1.637	Open Manhole	1500
N1-3.000	3 \=/	500	N1-3-0	18.300	17.800	0.000	Junction	
N1-3.001	3 \=/	500	N1-3-1	18.076	17.576	0.000	Junction	
N1-4.000	3 \=/	500	N1-4-0	18.200	17.700	0.000	Junction	
N1-5.000	3 \=/	500	N1-5-0	18.259	17.813	-0.054	Junction	
N1-5.001	3 \=/	500	N1-5-1	18.075	17.575	0.000	Junction	
N1-5.002	3 \=/	500	N1-5-2	17.918	17.418	0.000	Junction	
N1-4.001	o	300	N1-4-1	18.031	17.331	0.400	Junction	
N1-3.002	o	300	N1-3-2	18.167	17.267	0.600	Junction	
N1-3.003	o	300	N1-3-3	18.283	17.213	0.770	Open Manhole	1050

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)
N1-1.000	44.151	132.2	N1-1-1	18.896	17.138	1.608	Open Manhole	1050
N1-2.000	13.286	246.0	N1-2-1	18.296	17.646	0.150	Junction	
N1-2.001	10.075	219.0	N1-2-2	18.200	17.600	0.100	Junction	
N1-2.002	33.881	338.8	N1-2-3	18.200	17.500	0.200	Junction	
N1-2.003	18.401	368.0	N1-2-4	18.235	17.450	0.285	Junction	
N1-2.004	11.359	493.9	N1-2-5	18.327	17.427	0.400	Junction	
N1-2.005	24.121	455.1	N1-2-6	18.311	17.374	0.437	Junction	
N1-2.006	7.397	31.3	N1-1-1	18.896	17.138	1.608	Open Manhole	1050
N1-1.001	39.760	220.9	N1-1-2	19.537	16.883	2.429	Open Manhole	1050
N1-1.002	49.598	248.0	N1-1-3	18.545	16.683	1.637	Open Manhole	1500
N1-1.003	21.920	226.0	N1-1-4	18.580	16.586	1.769	Open Manhole	1500
N1-3.000	38.947	173.9	N1-3-1	18.076	17.576	0.000	Junction	
N1-3.001	45.102	413.8	N1-3-2	18.167	17.467	0.200	Junction	
N1-4.000	15.564	92.1	N1-4-1	18.031	17.531	0.000	Junction	
N1-5.000	68.659	288.5	N1-5-1	18.075	17.575	0.000	Junction	
N1-5.001	58.923	375.3	N1-5-2	17.918	17.418	0.000	Junction	
N1-5.002	34.491	396.5	N1-4-1	18.031	17.331	0.200	Junction	
N1-4.001	19.405	303.2	N1-3-2	18.167	17.267	0.600	Junction	
N1-3.002	15.307	283.5	N1-3-3	18.283	17.213	0.770	Open Manhole	1050
N1-3.003	35.458	206.2	N1-3-4	18.524	17.041	1.183	Open Manhole	1050

PIPELINE SCHEDULES for Network 1-Main Site Access Roundabout

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)
N1-3.004	o	300	N1-3-4	18.524	17.041	1.183	Open Manhole	1050
N1-3.005	o	300	N1-3-5	18.594	16.983	1.311	Open Manhole	1050
N1-3.006	o	300	N1-3-6	18.647	16.931	1.416	Open Manhole	1050
N1-3.007	o	300	N1-3-7	18.700	16.876	1.524	Open Manhole	1050
N1-6.000	o	150	N1-6-0	19.600	18.250	1.200	Open Manhole	1050
N1-6.001	o	150	N1-6-1	20.583	17.800	2.633	Open Manhole	1200
N1-1.004	o	300	N1-1-4	18.580	16.511	1.769	Open Manhole	1500
N1-7.000	o	150	N1-7-0	18.327	17.150	1.027	Open Manhole	1050
N1-7.001	o	150	N1-7-1	19.621	16.858	2.613	Open Manhole	1050
N1-1.005	o	375	N1-1-5	20.476	16.302	3.799	Open Manhole	1500
N1-1.006	o	375	N1-1-6	18.401	16.202	1.824	Open Manhole	1500
N1-1.007	o	375	N1-1-7	18.312	16.180	1.757	Open Manhole	1050
N1-1.008	o	300	N1-1-8	18.118	16.018	1.800	Open Manhole	1050
N1-1.009	o	300	N1-1-9	17.950	15.969	1.681	Open Manhole	1200
N1-8.000	o	225	N1-8-0	19.510	17.860	1.425	Open Manhole	1200
N1-8.001	o	225	N1-8-1	19.361	17.271	1.865	Open Manhole	1200
N1-8.002	o	225	N1-8-2	18.905	16.929	1.751	Open Manhole	1200
N1-8.003	o	225	N1-8-3	18.594	16.795	1.574	Open Manhole	1200
N1-1.010	o	300	N1-1-10	18.365	15.482	2.583	Open Manhole	1500
N1-1.011	o	300	N1-1-11	17.668	15.000	2.368	Open Manhole	1200
N1-1.012	o	300	N1-1-12	16.952	14.650	2.002	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
N1-3.004	8.002	138.0	N1-3-5	18.594	16.983	1.311	Open Manhole	1050
N1-3.005	10.444	200.9	N1-3-6	18.647	16.931	1.416	Open Manhole	1050
N1-3.006	11.318	205.8	N1-3-7	18.700	16.876	1.524	Open Manhole	1050
N1-3.007	49.353	135.2	N1-1-4	18.580	16.511	1.769	Open Manhole	1500
N1-6.000	46.598	103.6	N1-6-1	20.583	17.800	2.633	Open Manhole	1200
N1-6.001	37.089	68.8	N1-1-4	18.580	17.261	1.169	Open Manhole	1500
N1-1.004	34.970	261.0	N1-1-5	20.476	16.377	3.799	Open Manhole	1500
N1-7.000	40.694	139.4	N1-7-1	19.621	16.858	2.613	Open Manhole	1050
N1-7.001	41.495	125.4	N1-1-5	20.476	16.527	3.799	Open Manhole	1500
N1-1.005	38.780	387.8	N1-1-6	18.401	16.202	1.824	Open Manhole	1500
N1-1.006	6.439	292.7	N1-1-7	18.312	16.180	1.757	Open Manhole	1050
N1-1.007	25.535	157.6	N1-1-8	18.118	16.018	1.725	Open Manhole	1050
N1-1.008	7.114	145.2	N1-1-9	17.950	15.969	1.681	Open Manhole	1200
N1-1.009	55.817	114.6	N1-1-10	18.365	15.482	2.583	Open Manhole	1500
N1-8.000	42.232	71.7	N1-8-1	19.361	17.271	1.865	Open Manhole	1200
N1-8.001	47.502	138.9	N1-8-2	18.905	16.929	1.751	Open Manhole	1200
N1-8.002	13.976	104.3	N1-8-3	18.594	16.795	1.574	Open Manhole	1200
N1-8.003	4.124	36.5	N1-1-10	18.365	16.682	1.458	Open Manhole	1500
N1-1.010	31.641	65.6	N1-1-11	17.668	15.000	2.368	Open Manhole	1200
N1-1.011	47.375	135.4	N1-1-12	16.952	14.650	2.002	Open Manhole	1200
N1-1.012	36.585	104.5	N1-1-13	16.333	14.300	1.733	Open Manhole	1200

PIPELINE SCHEDULES for Network 1-Main Site Access Roundabout

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)
N1-1.013	o	300	N1-1-13	16.333	14.300	1.733	Open Manhole	1200
N1-1.014	o	300	N1-1-14	15.732	14.026	1.406	Open Manhole	1050
N1-1.015	o	300	N1-1-15	15.300	13.752	1.248	Open Manhole	1050
N1-1.016	o	300	N1-1-16	15.027	13.498	1.229	Open Manhole	1200
N1-1.017	o	300	N1-1-17	14.918	13.364	1.254	Open Manhole	1050
N1-1.018	o	300	N1-1-18	14.740	13.114	1.326	Open Manhole	1050
N1-1.019	o	300	N1-1-19	13.561	12.081	1.180	Open Manhole	1050
N1-1.020	o	300	N1-1-20	11.560	10.071	1.189	Open Manhole	1050
N1-1.021	o	300	N1-1-21	10.247	8.720	1.227	Open Manhole	1050

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)
N1-1.013	51.681	188.6	N1-1-14	15.732	14.026	1.406	Open Manhole	1050
N1-1.014	57.717	210.6	N1-1-15	15.300	13.752	1.248	Open Manhole	1050
N1-1.015	41.389	162.9	N1-1-16	15.027	13.498	1.229	Open Manhole	1200
N1-1.016	26.615	198.6	N1-1-17	14.918	13.364	1.254	Open Manhole	1050
N1-1.017	44.838	179.4	N1-1-18	14.740	13.114	1.326	Open Manhole	1050
N1-1.018	48.141	46.6	N1-1-19	13.561	12.081	1.180	Open Manhole	1050
N1-1.019	51.934	25.8	N1-1-20	11.560	10.071	1.189	Open Manhole	1050
N1-1.020	34.156	25.3	N1-1-21	10.247	8.720	1.227	Open Manhole	1050
N1-1.021	19.942	29.5	N1-	8.802	8.045	0.457	Open Manhole	0

Area Summary for Network 1-Main Site Access Roundabout

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.036	0.036	0.036
2.000	-	-	100	0.006	0.006	0.006
2.001	-	-	100	0.006	0.006	0.006
2.002	-	-	100	0.043	0.043	0.043
2.003	-	-	100	0.023	0.023	0.023
2.004	-	-	100	0.010	0.010	0.010
2.005	-	-	100	0.010	0.010	0.010
2.006	-	-	100	0.000	0.000	0.000
1.001	-	-	100	0.029	0.029	0.029
1.002	-	-	100	0.079	0.079	0.079
1.003	-	-	100	0.155	0.155	0.155
3.000	-	-	100	0.040	0.040	0.040
3.001	-	-	100	0.048	0.048	0.048
4.000	-	-	100	0.008	0.008	0.008
5.000	-	-	100	0.066	0.066	0.066
5.001	-	-	100	0.023	0.023	0.023
5.002	-	-	100	0.014	0.014	0.014
4.001	-	-	100	0.000	0.000	0.000
3.002	-	-	100	0.040	0.040	0.040
3.003	-	-	100	0.003	0.003	0.003
3.004	-	-	100	0.004	0.004	0.004
3.005	-	-	100	0.007	0.007	0.007
3.006	-	-	100	0.000	0.000	0.000
3.007	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.040	0.040	0.040
6.001	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.038	0.038	0.038
7.001	-	-	100	0.055	0.055	0.055
1.005	-	-	100	0.069	0.069	0.069
1.006	-	-	100	0.127	0.127	0.127
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.000	0.000	0.000
8.001	-	-	100	0.000	0.000	0.000
8.002	-	-	100	0.000	0.000	0.000
8.003	-	-	100	0.000	0.000	0.000
1.010	-	-	100	0.000	0.000	0.000
1.011	-	-	100	0.052	0.052	0.052
1.012	-	-	100	0.000	0.000	0.000
1.013	-	-	100	0.000	0.000	0.000
1.014	-	-	100	0.000	0.000	0.000
1.015	-	-	100	0.000	0.000	0.000
1.016	-	-	100	0.000	0.000	0.000
1.017	-	-	100	0.000	0.000	0.000
1.018	-	-	100	0.000	0.000	0.000
1.019	-	-	100	0.000	0.000	0.000
1.020	-	-	100	0.000	0.000	0.000
1.021	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.031	1.031	1.031

Network Classifications for Network 1-Main Site Access Roundabout

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
N1-1.000	N1-1-0	150	0.890	1.608	Unclassified	1050	0	0.890	Unclassified
N1-2.000	N1-2-0	500	0.000	0.150	Unclassified				Junction
N1-2.001	N1-2-1	500	0.100	0.150	Unclassified				Junction
N1-2.002	N1-2-2	500	0.100	1.006	Unclassified				Junction
N1-2.003	N1-2-3	500	0.200	0.285	Unclassified				Junction
N1-2.004	N1-2-4	500	0.285	0.400	Unclassified				Junction
N1-2.005	N1-2-5	500	0.400	0.437	Unclassified				Junction
N1-2.006	N1-2-6	150	0.787	1.608	Unclassified				Junction
N1-1.001	N1-1-1	225	1.608	2.429	Unclassified	1050	0	1.608	Unclassified
N1-1.002	N1-1-2	225	1.637	3.219	Unclassified	1050	0	2.429	Unclassified
N1-1.003	N1-1-3	225	1.637	3.643	Unclassified	1500	0	1.637	Unclassified
N1-3.000	N1-3-0	500	0.000	0.052	Unclassified				Junction
N1-3.001	N1-3-1	500	0.000	0.547	Unclassified				Junction
N1-4.000	N1-4-0	500	0.000	0.000	Unclassified				Junction
N1-5.000	N1-5-0	500	-0.054	0.362	Unclassified				Junction
N1-5.001	N1-5-1	500	0.000	0.345	Unclassified				Junction
N1-5.002	N1-5-2	500	0.000	0.200	Unclassified				Junction
N1-4.001	N1-4-1	300	0.400	1.499	Unclassified				Junction
N1-3.002	N1-3-2	300	0.600	1.757	Unclassified				Junction
N1-3.003	N1-3-3	300	0.770	1.183	Unclassified	1050	0	0.770	Unclassified
N1-3.004	N1-3-4	300	1.183	1.311	Unclassified	1050	0	1.183	Unclassified
N1-3.005	N1-3-5	300	1.311	1.416	Unclassified	1050	0	1.311	Unclassified
N1-3.006	N1-3-6	300	1.416	1.524	Unclassified	1050	0	1.416	Unclassified
N1-3.007	N1-3-7	300	1.524	3.725	Unclassified	1050	0	1.524	Unclassified
N1-6.000	N1-6-0	150	1.200	2.633	Unclassified	1050	0	1.200	Unclassified
N1-6.001	N1-6-1	150	1.169	2.976	Unclassified	1200	0	2.633	Unclassified
N1-1.004	N1-1-4	300	1.769	3.799	Unclassified	1500	0	1.769	Unclassified
N1-7.000	N1-7-0	150	1.027	2.613	Unclassified	1050	0	1.027	Unclassified
N1-7.001	N1-7-1	150	2.613	3.799	Unclassified	1050	0	2.613	Unclassified
N1-1.005	N1-1-5	375	1.803	3.862	Unclassified	1500	0	3.799	Unclassified
N1-1.006	N1-1-6	375	1.757	1.824	Unclassified	1500	0	1.824	Unclassified
N1-1.007	N1-1-7	375	1.725	1.757	Unclassified	1050	0	1.757	Unclassified
N1-1.008	N1-1-8	300	1.681	1.800	Unclassified	1050	0	1.800	Unclassified
N1-1.009	N1-1-9	300	1.681	3.669	Unclassified	1200	0	1.681	Unclassified
N1-8.000	N1-8-0	225	1.286	1.865	Unclassified	1200	0	1.425	Unclassified
N1-8.001	N1-8-1	225	1.665	1.865	Unclassified	1200	0	1.865	Unclassified
N1-8.002	N1-8-2	225	1.574	1.801	Unclassified	1200	0	1.751	Unclassified
N1-8.003	N1-8-3	225	1.458	1.574	Unclassified	1200	0	1.574	Unclassified
N1-1.010	N1-1-10	300	2.360	2.583	Unclassified	1500	0	2.583	Unclassified
N1-1.011	N1-1-11	300	2.002	2.368	Unclassified	1200	0	2.368	Unclassified
N1-1.012	N1-1-12	300	1.733	2.002	Unclassified	1200	0	2.002	Unclassified
N1-1.013	N1-1-13	300	1.406	1.733	Unclassified	1200	0	1.733	Unclassified
N1-1.014	N1-1-14	300	1.248	1.406	Unclassified	1050	0	1.406	Unclassified
N1-1.015	N1-1-15	300	1.229	1.248	Unclassified	1050	0	1.248	Unclassified
N1-1.016	N1-1-16	300	1.216	1.254	Unclassified	1200	0	1.229	Unclassified
N1-1.017	N1-1-17	300	1.254	1.326	Unclassified	1050	0	1.254	Unclassified
N1-1.018	N1-1-18	300	1.180	1.490	Unclassified	1050	0	1.326	Unclassified
N1-1.019	N1-1-19	300	1.180	1.189	Unclassified	1050	0	1.180	Unclassified
N1-1.020	N1-1-20	300	1.189	1.227	Unclassified	1050	0	1.189	Unclassified
N1-1.021	N1-1-21	300	0.457	1.227	Unclassified	1050	0	1.227	Unclassified

Free Flowing Outfall Details for Network 1-Main Site Access Roundabout

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N1-1.021	N1-	8.802	8.045	0.000	0	0

Simulation Criteria for Network 1-Main Site Access Roundabout

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Online Controls for Network 1-Main Site Access Roundabout

Hydro-Brake® Optimum Manhole: N1-1-8, DS/PN: N1-1.008, Volume (m³): 4.5

Unit Reference	MD-SHE-0093-5000-1900-5000
Design Head (m)	1.900
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	93
Invert Level (m)	16.018
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	**Head (m)**	**Flow (l/s)**	**Control Points**	**Head (m)**	**Flow (l/s)**
Design Point (Calculated)	1.900	5.0	Kick-Flo®	0.830	3.4
Flush-Flo™	0.406	4.3	Mean Flow over Head Range	-	4.0

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	2.9	0.800	3.6	2.000	5.1	4.000	7.1	7.000	9.2
0.200	3.9	1.000	3.7	2.200	5.4	4.500	7.5	7.500	9.5
0.300	4.2	1.200	4.0	2.400	5.6	5.000	7.9	8.000	9.8
0.400	4.3	1.400	4.3	2.600	5.8	5.500	8.2	8.500	10.1
0.500	4.2	1.600	4.6	3.000	6.2	6.000	8.6	9.000	10.4
0.600	4.1	1.800	4.9	3.500	6.7	6.500	8.9	9.500	10.7

Hydro-Brake® Optimum Manhole: N1-1-16, DS/PN: N1-1.016, Volume (m³): 4.6

Unit Reference	MD-SHE-0097-5000-1600-5000
Design Head (m)	1.600
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	97
Invert Level (m)	13.498
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	**Head (m)**	**Flow (l/s)**	**Control Points**	**Head (m)**	**Flow (l/s)**
Design Point (Calculated)	1.600	5.0	Kick-Flo®	0.865	3.8
Flush-Flo™	0.425	4.7	Mean Flow over Head Range	-	4.2

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	3.1	0.800	4.1	2.000	5.5	4.000	7.7	7.000	10.0
0.200	4.3	1.000	4.0	2.200	5.8	4.500	8.1	7.500	10.3
0.300	4.6	1.200	4.4	2.400	6.0	5.000	8.5	8.000	10.7
0.400	4.7	1.400	4.7	2.600	6.3	5.500	8.9	8.500	11.0
0.500	4.7	1.600	5.0	3.000	6.7	6.000	9.3	9.000	11.3
0.600	4.6	1.800	5.3	3.500	7.2	6.500	9.7	9.500	11.6

Storage Structures for Network 1-Main Site Access Roundabout

Tank or Pond Manhole: N1-1-8, DS/PN: N1-1.008

Invert Level (m) 16.018

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	400.0	2.100	971.3

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N1-1.000	N1-1-0	30 Winter	2	+0%	30/15 Winter				17.517	-0.105	0.000
N1-2.000	N1-2-0	30 Winter	2	+0%					17.713	-0.487	0.000
N1-2.001	N1-2-1	15 Winter	2	+0%					17.673	-0.623	0.000
N1-2.002	N1-2-2	15 Winter	2	+0%					17.664	-0.536	0.000
N1-2.003	N1-2-3	15 Winter	2	+0%					17.579	-0.621	0.000
N1-2.004	N1-2-4	15 Winter	2	+0%					17.539	-0.696	0.000
N1-2.005	N1-2-5	15 Winter	2	+0%					17.512	-0.815	0.000
N1-2.006	N1-2-6	15 Winter	2	+0%	30/15 Summer				17.434	-0.090	0.000
N1-1.001	N1-1-1	15 Winter	2	+0%	30/15 Summer				17.172	-0.116	0.000
N1-1.002	N1-1-2	15 Winter	2	+0%	5/15 Winter				17.023	-0.085	0.000
N1-1.003	N1-1-3	15 Winter	2	+0%	2/15 Winter				16.918	0.010	0.000
N1-3.000	N1-3-0	30 Winter	2	+0%					17.834	-0.466	0.000
N1-3.001	N1-3-1	15 Winter	2	+0%					17.647	-0.429	0.000
N1-4.000	N1-4-0	30 Winter	2	+0%					17.710	-0.490	0.000
N1-5.000	N1-5-0	30 Winter	2	+0%					17.864	-0.395	0.000
N1-5.001	N1-5-1	30 Winter	2	+0%					17.637	-0.438	0.000
N1-5.002	N1-5-2	30 Winter	2	+0%					17.490	-0.428	0.000
N1-4.001	N1-4-1	30 Winter	2	+0%	100/15 Summer				17.411	-0.220	0.000
N1-3.002	N1-3-2	30 Winter	2	+0%	100/15 Summer				17.376	-0.191	0.000
N1-3.003	N1-3-3	30 Winter	2	+0%	100/15 Summer				17.320	-0.193	0.000
N1-3.004	N1-3-4	30 Winter	2	+0%	30/15 Winter				17.150	-0.191	0.000
N1-3.005	N1-3-5	30 Winter	2	+0%	30/15 Winter				17.099	-0.184	0.000
N1-3.006	N1-3-6	30 Winter	2	+0%	30/30 Winter				17.047	-0.184	0.000
N1-3.007	N1-3-7	30 Winter	2	+0%	100/15 Summer				16.967	-0.209	0.000
N1-6.000	N1-6-0	30 Winter	2	+0%					18.294	-0.106	0.000
N1-6.001	N1-6-1	30 Winter	2	+0%					17.839	-0.111	0.000
N1-1.004	N1-1-4	30 Winter	2	+0%	5/15 Winter				16.721	-0.090	0.000
N1-7.000	N1-7-0	30 Winter	2	+0%	30/15 Winter	100/30 Winter			17.197	-0.103	0.000
N1-7.001	N1-7-1	15 Winter	2	+0%	30/15 Summer				16.943	-0.065	0.000
N1-1.005	N1-1-5	30 Winter	2	+0%	30/15 Summer				16.549	-0.128	0.000
N1-1.006	N1-1-6	30 Winter	2	+0%	5/15 Winter				16.483	-0.094	0.000
N1-1.007	N1-1-7	480 Winter	2	+0%	30/60 Winter				16.392	-0.163	0.000
N1-1.008	N1-1-8	480 Winter	2	+0%	2/120 Winter				16.389	0.071	0.000

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N1-1.000	N1-1-0	0.19		2.9	OK	
N1-2.000	N1-2-0	0.00		0.5	OK	
N1-2.001	N1-2-1	0.00		1.1	OK	
N1-2.002	N1-2-2	0.01		6.2	OK	
N1-2.003	N1-2-3	0.01		8.5	OK	
N1-2.004	N1-2-4	0.01		9.4	OK	
N1-2.005	N1-2-5	0.01		10.4	OK	
N1-2.006	N1-2-6	0.34		10.4	OK*	
N1-1.001	N1-1-1	0.47		15.4	OK	
N1-1.002	N1-1-2	0.69		21.7	OK	
N1-1.003	N1-1-3	1.09		34.4	SURCHARGED	
N1-3.000	N1-3-0	0.00		3.2	OK	
N1-3.001	N1-3-1	0.02		8.2	OK	
N1-4.000	N1-4-0	0.00		0.6	OK	
N1-5.000	N1-5-0	0.01		5.3	OK	
N1-5.001	N1-5-1	0.01		6.7	OK	
N1-5.002	N1-5-2	0.02		7.4	OK	
N1-4.001	N1-4-1	0.13		8.1	OK*	
N1-3.002	N1-3-2	0.28		17.3	OK*	
N1-3.003	N1-3-3	0.27		17.5	OK	
N1-3.004	N1-3-4	0.29		17.6	OK	
N1-3.005	N1-3-5	0.32		18.0	OK	
N1-3.006	N1-3-6	0.32		18.0	OK	
N1-3.007	N1-3-7	0.20		18.0	OK	
N1-6.000	N1-6-0	0.19		3.2	OK	
N1-6.001	N1-6-1	0.16		3.2	OK	
N1-1.004	N1-1-4	0.83		52.4	OK	
N1-7.000	N1-7-0	0.21		3.1	OK	1
N1-7.001	N1-7-1	0.61		9.4	OK	
N1-1.005	N1-1-5	0.68		62.5	OK	
N1-1.006	N1-1-6	0.91		69.8	OK	
N1-1.007	N1-1-7	0.15		21.4	OK	
N1-1.008	N1-1-8	0.07		4.2	SURCHARGED	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N1-1.009	N1-1-9	480 Winter	2	+0%					16.009	-0.260	0.000
N1-8.000	N1-8-0	240 Winter	2	+0%					17.860	-0.225	0.000
N1-8.001	N1-8-1	240 Winter	2	+0%					17.271	-0.225	0.000
N1-8.002	N1-8-2	240 Winter	2	+0%					16.929	-0.225	0.000
N1-8.003	N1-8-3	240 Winter	2	+0%					16.795	-0.225	0.000
N1-1.010	N1-1-10	480 Winter	2	+0%					15.519	-0.263	0.000
N1-1.011	N1-1-11	15 Winter	2	+0%					15.059	-0.241	0.000
N1-1.012	N1-1-12	15 Winter	2	+0%	100/60 Winter				14.704	-0.246	0.000
N1-1.013	N1-1-13	15 Winter	2	+0%	30/120 Winter				14.362	-0.238	0.000
N1-1.014	N1-1-14	15 Winter	2	+0%	5/360 Winter				14.089	-0.237	0.000
N1-1.015	N1-1-15	360 Winter	2	+0%	5/180 Winter				13.920	-0.132	0.000
N1-1.016	N1-1-16	360 Winter	2	+0%	2/120 Summer	30/360 Winter			13.913	0.115	0.000
N1-1.017	N1-1-17	360 Winter	2	+0%					13.415	-0.249	0.000
N1-1.018	N1-1-18	360 Winter	2	+0%					13.150	-0.264	0.000
N1-1.019	N1-1-19	360 Winter	2	+0%					12.113	-0.268	0.000
N1-1.020	N1-1-20	360 Winter	2	+0%					10.103	-0.268	0.000
N1-1.021	N1-1-21	360 Winter	2	+0%					8.752	-0.268	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N1-1.009	N1-1-9	0.04		4.2	OK	
N1-8.000	N1-8-0	0.00		0.0	OK	
N1-8.001	N1-8-1	0.00		0.0	OK	
N1-8.002	N1-8-2	0.00		0.0	OK	
N1-8.003	N1-8-3	0.00		0.0	OK	
N1-1.010	N1-1-10	0.04		4.2	OK	
N1-1.011	N1-1-11	0.08		6.7	OK	
N1-1.012	N1-1-12	0.07		6.6	OK	
N1-1.013	N1-1-13	0.09		6.5	OK	
N1-1.014	N1-1-14	0.10		6.2	OK	
N1-1.015	N1-1-15	0.07		5.3	OK	
N1-1.016	N1-1-16	0.07		4.7	SURCHARGED	24
N1-1.017	N1-1-17	0.07		4.7	OK	
N1-1.018	N1-1-18	0.03		4.7	OK	
N1-1.019	N1-1-19	0.03		4.7	OK	
N1-1.020	N1-1-20	0.03		4.7	OK	
N1-1.021	N1-1-21	0.03		4.7	OK	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N1-1.000	N1-1-0	30 Winter	5	+0%	30/15 Winter				17.524	-0.098	0.000
N1-2.000	N1-2-0	30 Winter	5	+0%					17.715	-0.485	0.000
N1-2.001	N1-2-1	15 Winter	5	+0%					17.682	-0.614	0.000
N1-2.002	N1-2-2	15 Winter	5	+0%					17.675	-0.525	0.000
N1-2.003	N1-2-3	15 Winter	5	+0%					17.592	-0.608	0.000
N1-2.004	N1-2-4	15 Winter	5	+0%					17.552	-0.683	0.000
N1-2.005	N1-2-5	15 Winter	5	+0%					17.526	-0.801	0.000
N1-2.006	N1-2-6	15 Winter	5	+0%	30/15 Summer				17.446	-0.078	0.000
N1-1.001	N1-1-1	15 Winter	5	+0%	30/15 Summer				17.231	-0.057	0.000
N1-1.002	N1-1-2	15 Winter	5	+0%	5/15 Winter				17.159	0.051	0.000
N1-1.003	N1-1-3	15 Winter	5	+0%	2/15 Winter				16.996	0.088	0.000
N1-3.000	N1-3-0	30 Winter	5	+0%					17.840	-0.460	0.000
N1-3.001	N1-3-1	15 Winter	5	+0%					17.660	-0.416	0.000
N1-4.000	N1-4-0	30 Winter	5	+0%					17.713	-0.487	0.000
N1-5.000	N1-5-0	30 Winter	5	+0%					17.873	-0.386	0.000
N1-5.001	N1-5-1	30 Winter	5	+0%					17.649	-0.426	0.000
N1-5.002	N1-5-2	30 Winter	5	+0%					17.505	-0.413	0.000
N1-4.001	N1-4-1	30 Winter	5	+0%	100/15 Summer				17.429	-0.202	0.000
N1-3.002	N1-3-2	30 Winter	5	+0%	100/15 Summer				17.398	-0.169	0.000
N1-3.003	N1-3-3	30 Winter	5	+0%	100/15 Summer				17.341	-0.172	0.000
N1-3.004	N1-3-4	30 Winter	5	+0%	30/15 Winter				17.172	-0.169	0.000
N1-3.005	N1-3-5	30 Winter	5	+0%	30/15 Winter				17.122	-0.161	0.000
N1-3.006	N1-3-6	30 Winter	5	+0%	30/30 Winter				17.070	-0.161	0.000
N1-3.007	N1-3-7	30 Winter	5	+0%	100/15 Summer				16.983	-0.193	0.000
N1-6.000	N1-6-0	30 Winter	5	+0%					18.302	-0.098	0.000
N1-6.001	N1-6-1	30 Winter	5	+0%					17.847	-0.103	0.000
N1-1.004	N1-1-4	30 Winter	5	+0%	5/15 Winter				16.827	0.016	0.000
N1-7.000	N1-7-0	30 Winter	5	+0%	30/15 Winter	100/30 Winter			17.205	-0.095	0.000
N1-7.001	N1-7-1	15 Winter	5	+0%	30/15 Summer				16.963	-0.045	0.000
N1-1.005	N1-1-5	30 Winter	5	+0%	30/15 Summer				16.656	-0.021	0.000
N1-1.006	N1-1-6	15 Winter	5	+0%	5/15 Winter				16.581	0.004	0.000
N1-1.007	N1-1-7	480 Winter	5	+0%	30/60 Winter				16.489	-0.066	0.000
N1-1.008	N1-1-8	480 Winter	5	+0%	2/120 Winter				16.486	0.168	0.000

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N1-1.000	N1-1-0	0.26		3.9	OK	
N1-2.000	N1-2-0	0.00		0.7	OK	
N1-2.001	N1-2-1	0.00		1.6	OK	
N1-2.002	N1-2-2	0.01		8.4	OK	
N1-2.003	N1-2-3	0.01		11.7	OK	
N1-2.004	N1-2-4	0.01		13.0	OK	
N1-2.005	N1-2-5	0.01		14.3	OK	
N1-2.006	N1-2-6	0.47		14.4	OK*	
N1-1.001	N1-1-1	0.63		20.7	OK	
N1-1.002	N1-1-2	0.90		28.4	SURCHARGED	
N1-1.003	N1-1-3	1.41		44.4	SURCHARGED	
N1-3.000	N1-3-0	0.01		4.4	OK	
N1-3.001	N1-3-1	0.02		11.2	OK	
N1-4.000	N1-4-0	0.00		0.9	OK	
N1-5.000	N1-5-0	0.02		7.1	OK	
N1-5.001	N1-5-1	0.02		9.1	OK	
N1-5.002	N1-5-2	0.02		10.2	OK	
N1-4.001	N1-4-1	0.18		11.2	OK*	
N1-3.002	N1-3-2	0.39		24.1	OK*	
N1-3.003	N1-3-3	0.38		24.3	OK	
N1-3.004	N1-3-4	0.40		24.6	OK	
N1-3.005	N1-3-5	0.44		25.1	OK	
N1-3.006	N1-3-6	0.44		25.1	OK	
N1-3.007	N1-3-7	0.28		24.9	OK	
N1-6.000	N1-6-0	0.26		4.4	OK	
N1-6.001	N1-6-1	0.21		4.4	OK	
N1-1.004	N1-1-4	1.09		68.7	SURCHARGED	
N1-7.000	N1-7-0	0.29		4.2	OK	1
N1-7.001	N1-7-1	0.82		12.6	OK	
N1-1.005	N1-1-5	0.88		80.9	OK	
N1-1.006	N1-1-6	1.13		86.6	SURCHARGED	
N1-1.007	N1-1-7	0.19		26.3	OK	
N1-1.008	N1-1-8	0.07		4.3	SURCHARGED	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N1-1.009	N1-1-9	720 Winter	5	+0%					16.009	-0.260	0.000
N1-8.000	N1-8-0	240 Winter	5	+0%					17.860	-0.225	0.000
N1-8.001	N1-8-1	240 Winter	5	+0%					17.271	-0.225	0.000
N1-8.002	N1-8-2	240 Winter	5	+0%					16.929	-0.225	0.000
N1-8.003	N1-8-3	240 Winter	5	+0%					16.795	-0.225	0.000
N1-1.010	N1-1-10	720 Winter	5	+0%					15.519	-0.263	0.000
N1-1.011	N1-1-11	15 Winter	5	+0%					15.068	-0.232	0.000
N1-1.012	N1-1-12	15 Winter	5	+0%	100/60 Winter				14.713	-0.237	0.000
N1-1.013	N1-1-13	360 Winter	5	+0%	30/120 Winter				14.597	-0.003	0.000
N1-1.014	N1-1-14	360 Winter	5	+0%	5/360 Winter				14.707	0.381	0.000
N1-1.015	N1-1-15	360 Winter	5	+0%	5/180 Winter				14.708	0.656	0.000
N1-1.016	N1-1-16	360 Winter	5	+0%	2/120 Summer	30/360 Winter			14.746	0.948	0.000
N1-1.017	N1-1-17	360 Winter	5	+0%					13.415	-0.249	0.000
N1-1.018	N1-1-18	960 Winter	5	+0%					13.150	-0.264	0.000
N1-1.019	N1-1-19	960 Winter	5	+0%					12.113	-0.268	0.000
N1-1.020	N1-1-20	720 Summer	5	+0%					10.103	-0.268	0.000
N1-1.021	N1-1-21	720 Summer	5	+0%					8.752	-0.268	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N1-1.009	N1-1-9	0.04		4.3	OK	
N1-8.000	N1-8-0	0.00		0.0	OK	
N1-8.001	N1-8-1	0.00		0.0	OK	
N1-8.002	N1-8-2	0.00		0.0	OK	
N1-8.003	N1-8-3	0.00		0.0	OK	
N1-1.010	N1-1-10	0.04		4.3	OK	
N1-1.011	N1-1-11	0.11		9.1	OK	
N1-1.012	N1-1-12	0.10		8.9	OK	
N1-1.013	N1-1-13	0.10		6.8	OK	
N1-1.014	N1-1-14	0.10		6.5	SURCHARGED	
N1-1.015	N1-1-15	0.10		7.4	SURCHARGED	
N1-1.016	N1-1-16	0.07		4.7	FLOOD RISK	24
N1-1.017	N1-1-17	0.07		4.7	OK	
N1-1.018	N1-1-18	0.03		4.7	OK	
N1-1.019	N1-1-19	0.03		4.7	OK	
N1-1.020	N1-1-20	0.03		4.7	OK	
N1-1.021	N1-1-21	0.03		4.7	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N1-1.000	N1-1-0	15 Winter	30	+0%	30/15 Winter				17.664	0.042	0.000
N1-2.000	N1-2-0	15 Winter	30	+0%					17.725	-0.475	0.000
N1-2.001	N1-2-1	15 Winter	30	+0%					17.712	-0.584	0.000
N1-2.002	N1-2-2	15 Winter	30	+0%					17.709	-0.491	0.000
N1-2.003	N1-2-3	15 Winter	30	+0%					17.643	-0.557	0.000
N1-2.004	N1-2-4	15 Winter	30	+0%					17.634	-0.601	0.000
N1-2.005	N1-2-5	15 Winter	30	+0%					17.631	-0.696	0.000
N1-2.006	N1-2-6	15 Winter	30	+0%	30/15 Summer				17.626	0.102	0.000
N1-1.001	N1-1-1	15 Winter	30	+0%	30/15 Summer				17.626	0.338	0.000
N1-1.002	N1-1-2	15 Winter	30	+0%	5/15 Winter				17.614	0.506	0.000
N1-1.003	N1-1-3	15 Winter	30	+0%	2/15 Winter				17.470	0.562	0.000
N1-3.000	N1-3-0	30 Winter	30	+0%					17.853	-0.447	0.000
N1-3.001	N1-3-1	15 Winter	30	+0%					17.693	-0.383	0.000
N1-4.000	N1-4-0	30 Winter	30	+0%					17.718	-0.482	0.000
N1-5.000	N1-5-0	30 Winter	30	+0%					17.893	-0.366	0.000
N1-5.001	N1-5-1	30 Winter	30	+0%					17.672	-0.403	0.000
N1-5.002	N1-5-2	30 Winter	30	+0%					17.540	-0.378	0.000
N1-4.001	N1-4-1	30 Winter	30	+0%	100/15 Summer				17.501	-0.130	0.000
N1-3.002	N1-3-2	30 Winter	30	+0%	100/15 Summer				17.487	-0.080	0.000
N1-3.003	N1-3-3	30 Winter	30	+0%	100/15 Summer				17.454	-0.059	0.000
N1-3.004	N1-3-4	30 Winter	30	+0%	30/15 Winter				17.406	0.065	0.000
N1-3.005	N1-3-5	30 Winter	30	+0%	30/15 Winter				17.330	0.047	0.000
N1-3.006	N1-3-6	30 Winter	30	+0%	30/30 Winter				17.247	0.016	0.000
N1-3.007	N1-3-7	30 Winter	30	+0%	100/15 Summer				17.171	-0.005	0.000
N1-6.000	N1-6-0	30 Winter	30	+0%					18.319	-0.081	0.000
N1-6.001	N1-6-1	30 Winter	30	+0%					17.861	-0.089	0.000
N1-1.004	N1-1-4	30 Winter	30	+0%	5/15 Winter				17.104	0.293	0.000
N1-7.000	N1-7-0	15 Winter	30	+0%	30/15 Winter	100/30 Winter			17.312	0.012	0.000
N1-7.001	N1-7-1	15 Winter	30	+0%	30/15 Summer				17.275	0.267	0.000
N1-1.005	N1-1-5	30 Winter	30	+0%	30/15 Summer				16.831	0.154	0.000
N1-1.006	N1-1-6	720 Winter	30	+0%	5/15 Winter				16.789	0.212	0.000
N1-1.007	N1-1-7	720 Winter	30	+0%	30/60 Winter				16.788	0.233	0.000
N1-1.008	N1-1-8	720 Winter	30	+0%	2/120 Winter				16.785	0.467	0.000

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N1-1.000	N1-1-0	0.49		7.3	SURCHARGED	
N1-2.000	N1-2-0	0.00		1.1	OK	
N1-2.001	N1-2-1	0.00		2.9	OK	
N1-2.002	N1-2-2	0.02		16.9	OK	
N1-2.003	N1-2-3	0.02		19.6	OK	
N1-2.004	N1-2-4	0.02		18.2	OK	
N1-2.005	N1-2-5	0.01		18.1	OK	
N1-2.006	N1-2-6	0.80		24.3	SURCHARGED*	
N1-1.001	N1-1-1	0.96		31.7	SURCHARGED	
N1-1.002	N1-1-2	1.06		33.4	SURCHARGED	
N1-1.003	N1-1-3	2.16		68.0	SURCHARGED	
N1-3.000	N1-3-0	0.01		7.3	OK	
N1-3.001	N1-3-1	0.04		20.6	OK	
N1-4.000	N1-4-0	0.00		1.5	OK	
N1-5.000	N1-5-0	0.03		11.9	OK	
N1-5.001	N1-5-1	0.03		14.7	OK	
N1-5.002	N1-5-2	0.03		15.4	OK	
N1-4.001	N1-4-1	0.32		20.6	OK*	
N1-3.002	N1-3-2	0.63		38.4	OK*	
N1-3.003	N1-3-3	0.60		38.3	OK	
N1-3.004	N1-3-4	0.62		37.8	SURCHARGED	
N1-3.005	N1-3-5	0.68		38.5	SURCHARGED	
N1-3.006	N1-3-6	0.66		37.8	SURCHARGED	
N1-3.007	N1-3-7	0.41		36.9	OK	
N1-6.000	N1-6-0	0.43		7.3	OK	
N1-6.001	N1-6-1	0.35		7.3	OK	
N1-1.004	N1-1-4	1.42		89.8	SURCHARGED	
N1-7.000	N1-7-0	0.56		8.2	SURCHARGED	1
N1-7.001	N1-7-1	1.19		18.3	SURCHARGED	
N1-1.005	N1-1-5	1.28		117.3	SURCHARGED	
N1-1.006	N1-1-6	0.38		28.9	SURCHARGED	
N1-1.007	N1-1-7	0.21		28.9	SURCHARGED	
N1-1.008	N1-1-8	0.07		4.3	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N1-1.009	N1-1-9	960 Winter	30	+0%					16.009	-0.260	0.000
N1-8.000	N1-8-0	240 Winter	30	+0%					17.860	-0.225	0.000
N1-8.001	N1-8-1	240 Winter	30	+0%					17.271	-0.225	0.000
N1-8.002	N1-8-2	240 Winter	30	+0%					16.929	-0.225	0.000
N1-8.003	N1-8-3	240 Winter	30	+0%					16.795	-0.225	0.000
N1-1.010	N1-1-10	960 Winter	30	+0%					15.519	-0.263	0.000
N1-1.011	N1-1-11	15 Winter	30	+0%					15.099	-0.201	0.000
N1-1.012	N1-1-12	480 Winter	30	+0%	100/60 Winter				14.925	-0.025	0.000
N1-1.013	N1-1-13	480 Winter	30	+0%	30/120 Winter				14.927	0.327	0.000
N1-1.014	N1-1-14	480 Winter	30	+0%	5/360 Winter				14.958	0.632	0.000
N1-1.015	N1-1-15	480 Winter	30	+0%	5/180 Winter				15.034	0.982	0.000
N1-1.016	N1-1-16	480 Winter	30	+0%	2/120 Summer	30/360 Winter			15.027	1.229	0.416
N1-1.017	N1-1-17	480 Winter	30	+0%					13.416	-0.248	0.000
N1-1.018	N1-1-18	480 Winter	30	+0%					13.151	-0.263	0.000
N1-1.019	N1-1-19	480 Winter	30	+0%					12.113	-0.268	0.000
N1-1.020	N1-1-20	480 Winter	30	+0%					10.104	-0.267	0.000
N1-1.021	N1-1-21	480 Winter	30	+0%					8.753	-0.267	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N1-1.009	N1-1-9	0.04		4.3	OK	
N1-8.000	N1-8-0	0.00		0.0	OK	
N1-8.001	N1-8-1	0.00		0.0	OK	
N1-8.002	N1-8-2	0.00		0.0	OK	
N1-8.003	N1-8-3	0.00		0.0	OK	
N1-1.010	N1-1-10	0.04		4.3	OK	
N1-1.011	N1-1-11	0.23		18.6	OK	
N1-1.012	N1-1-12	0.07		6.7	OK	
N1-1.013	N1-1-13	0.13		8.7	SURCHARGED	
N1-1.014	N1-1-14	0.11		7.3	SURCHARGED	
N1-1.015	N1-1-15	0.09		6.3	FLOOD RISK	
N1-1.016	N1-1-16	0.07		4.7	FLOOD	24
N1-1.017	N1-1-17	0.07		4.7	OK	
N1-1.018	N1-1-18	0.03		4.7	OK	
N1-1.019	N1-1-19	0.03		4.7	OK	
N1-1.020	N1-1-20	0.03		4.7	OK	
N1-1.021	N1-1-21	0.03		4.7	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N1-1.000	N1-1-0	15 Winter	100	+40%	30/15 Winter				18.427	0.805	0.000
N1-2.000	N1-2-0	30 Winter	100	+40%					17.833	-0.367	0.000
N1-2.001	N1-2-1	30 Winter	100	+40%					17.833	-0.463	0.000
N1-2.002	N1-2-2	30 Winter	100	+40%					17.833	-0.367	0.000
N1-2.003	N1-2-3	30 Winter	100	+40%					17.832	-0.368	0.000
N1-2.004	N1-2-4	30 Winter	100	+40%					17.830	-0.405	0.000
N1-2.005	N1-2-5	30 Winter	100	+40%					17.829	-0.498	0.000
N1-2.006	N1-2-6	30 Winter	100	+40%	30/15 Summer				17.828	0.304	0.000
N1-1.001	N1-1-1	15 Winter	100	+40%	30/15 Summer				18.334	1.046	0.000
N1-1.002	N1-1-2	15 Winter	100	+40%	5/15 Winter				18.517	1.409	0.000
N1-1.003	N1-1-3	15 Winter	100	+40%	2/15 Winter				18.490	1.582	0.000
N1-3.000	N1-3-0	30 Winter	100	+40%					17.873	-0.427	0.000
N1-3.001	N1-3-1	15 Winter	100	+40%					17.737	-0.339	0.000
N1-4.000	N1-4-0	30 Winter	100	+40%					17.727	-0.473	0.000
N1-5.000	N1-5-0	30 Winter	100	+40%					17.923	-0.336	0.000
N1-5.001	N1-5-1	30 Winter	100	+40%					17.737	-0.338	0.000
N1-5.002	N1-5-2	30 Winter	100	+40%					17.713	-0.205	0.000
N1-4.001	N1-4-1	30 Winter	100	+40%	100/15 Summer				17.700	0.069	0.000
N1-3.002	N1-3-2	30 Winter	100	+40%	100/15 Summer				17.684	0.117	0.000
N1-3.003	N1-3-3	15 Winter	100	+40%	100/15 Summer				17.669	0.156	0.000
N1-3.004	N1-3-4	15 Winter	100	+40%	30/15 Winter				17.665	0.324	0.000
N1-3.005	N1-3-5	15 Winter	100	+40%	30/15 Winter				17.672	0.389	0.000
N1-3.006	N1-3-6	15 Winter	100	+40%	30/30 Winter				17.677	0.446	0.000
N1-3.007	N1-3-7	15 Winter	100	+40%	100/15 Summer				17.678	0.502	0.000
N1-6.000	N1-6-0	30 Winter	100	+40%					18.351	-0.049	0.000
N1-6.001	N1-6-1	30 Winter	100	+40%					17.888	-0.062	0.000
N1-1.004	N1-1-4	15 Winter	100	+40%	5/15 Winter				17.673	0.862	0.000
N1-7.000	N1-7-0	30 Winter	100	+40%	30/15 Winter	100/30 Winter			18.327	1.027	0.107
N1-7.001	N1-7-1	15 Winter	100	+40%	30/15 Summer				18.203	1.195	0.000
N1-1.005	N1-1-5	960 Winter	100	+40%	30/15 Summer				17.508	0.831	0.000
N1-1.006	N1-1-6	960 Winter	100	+40%	5/15 Winter				17.504	0.927	0.000
N1-1.007	N1-1-7	960 Winter	100	+40%	30/60 Winter				17.503	0.948	0.000
N1-1.008	N1-1-8	960 Winter	100	+40%	2/120 Winter				17.499	1.181	0.000

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N1-1.000	N1-1-0	1.07		16.0	FLOOD RISK	
N1-2.000	N1-2-0	0.00		1.9	OK	
N1-2.001	N1-2-1	0.00		3.4	OK	
N1-2.002	N1-2-2	0.03		21.3	OK	
N1-2.003	N1-2-3	0.02		18.8	OK	
N1-2.004	N1-2-4	0.02		19.8	OK	
N1-2.005	N1-2-5	0.01		23.2	OK	
N1-2.006	N1-2-6	1.04		31.6	SURCHARGED*	
N1-1.001	N1-1-1	1.09		35.9	SURCHARGED	
N1-1.002	N1-1-2	1.15		36.0	SURCHARGED	
N1-1.003	N1-1-3	2.95		92.6	FLOOD RISK	
N1-3.000	N1-3-0	0.02		13.3	OK	
N1-3.001	N1-3-1	0.08		35.6	OK	
N1-4.000	N1-4-0	0.00		2.7	OK	
N1-5.000	N1-5-0	0.05		21.7	OK	
N1-5.001	N1-5-1	0.05		23.7	OK	
N1-5.002	N1-5-2	0.04		18.3	FLOOD RISK*	
N1-4.001	N1-4-1	0.57		35.9	SURCHARGED*	
N1-3.002	N1-3-2	0.72		44.1	SURCHARGED*	
N1-3.003	N1-3-3	0.67		42.7	SURCHARGED	
N1-3.004	N1-3-4	0.72		43.9	SURCHARGED	
N1-3.005	N1-3-5	0.77		44.1	SURCHARGED	
N1-3.006	N1-3-6	0.78		44.3	SURCHARGED	
N1-3.007	N1-3-7	0.49		43.9	SURCHARGED	
N1-6.000	N1-6-0	0.78		13.3	OK	
N1-6.001	N1-6-1	0.64		13.3	OK	
N1-1.004	N1-1-4	1.67		105.1	SURCHARGED	
N1-7.000	N1-7-0	1.09		15.9	FLOOD	1
N1-7.001	N1-7-1	1.66		25.6	SURCHARGED	
N1-1.005	N1-1-5	0.44		40.1	SURCHARGED	
N1-1.006	N1-1-6	0.60		46.1	SURCHARGED	
N1-1.007	N1-1-7	0.33		46.1	SURCHARGED	
N1-1.008	N1-1-8	0.07		4.5	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 1-Main Site Access Roundabout

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N1-1.009	N1-1-9	960 Winter	100	+40%					16.010	-0.259	0.000
N1-8.000	N1-8-0	240 Winter	100	+40%					17.860	-0.225	0.000
N1-8.001	N1-8-1	240 Winter	100	+40%					17.271	-0.225	0.000
N1-8.002	N1-8-2	240 Winter	100	+40%					16.929	-0.225	0.000
N1-8.003	N1-8-3	240 Winter	100	+40%					16.795	-0.225	0.000
N1-1.010	N1-1-10	960 Winter	100	+40%					15.520	-0.262	0.000
N1-1.011	N1-1-11	15 Winter	100	+40%					15.138	-0.162	0.000
N1-1.012	N1-1-12	240 Winter	100	+40%	100/60 Winter				15.085	0.135	0.000
N1-1.013	N1-1-13	240 Winter	100	+40%	30/120 Winter				15.073	0.473	0.000
N1-1.014	N1-1-14	120 Winter	100	+40%	5/360 Winter				15.060	0.734	0.000
N1-1.015	N1-1-15	720 Winter	100	+40%	5/180 Winter				15.048	0.996	0.000
N1-1.016	N1-1-16	600 Winter	100	+40%	2/120 Summer	30/360 Winter			15.038	1.240	11.259
N1-1.017	N1-1-17	1440 Summer	100	+40%					13.416	-0.248	0.000
N1-1.018	N1-1-18	1440 Winter	100	+40%					13.151	-0.263	0.000
N1-1.019	N1-1-19	480 Winter	100	+40%					12.113	-0.268	0.000
N1-1.020	N1-1-20	2880 Winter	100	+40%					10.104	-0.267	0.000
N1-1.021	N1-1-21	480 Winter	100	+40%					8.753	-0.267	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N1-1.009	N1-1-9	0.05		4.5	OK	
N1-8.000	N1-8-0	0.00		0.0	OK	
N1-8.001	N1-8-1	0.00		0.0	OK	
N1-8.002	N1-8-2	0.00		0.0	OK	
N1-8.003	N1-8-3	0.00		0.0	OK	
N1-1.010	N1-1-10	0.04		4.5	OK	
N1-1.011	N1-1-11	0.42		33.4	OK	
N1-1.012	N1-1-12	0.12		10.9	SURCHARGED	
N1-1.013	N1-1-13	0.15		10.3	SURCHARGED	
N1-1.014	N1-1-14	0.19		12.6	SURCHARGED	
N1-1.015	N1-1-15	0.09		6.7	FLOOD RISK	
N1-1.016	N1-1-16	0.08		4.9	FLOOD	24
N1-1.017	N1-1-17	0.07		4.9	OK	
N1-1.018	N1-1-18	0.04		4.9	OK	
N1-1.019	N1-1-19	0.03		4.9	OK	
N1-1.020	N1-1-20	0.03		4.7	OK	
N1-1.021	N1-1-21	0.03		4.9	OK	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 2-Abbey Road

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 2-Abbey Road

Time (mins)	**Area (ha)**
0-4	0.000

Total Area Contributing (ha) = 0.000

Total Pipe Volume (m³) = 1019.838

Network Design Table for Network 2-Abbey Road

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N2-1.000	64.992	0.511	127.2	0.000	15.00	0.0		0.045	3 \=/	500	1:3 Swale	
N2-1.001	49.994	1.445	34.6	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N2-1.002	101.168	1.071	94.5	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N2-1.003	6.186	0.300	20.6	0.000	0.00	0.0		0.045	o	750	Pipe/Conduit	
N2-2.000	40.226	0.472	85.2	0.000	15.00	0.0		0.045	3 \=/	500	1:3 Swale	
N2-2.001	43.694	0.332	131.6	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N2-2.002	53.867	0.356	151.3	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N2-2.003	10.796	0.300	36.0	0.000	0.00	0.0	0.600		o	900	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
N2-1.000	32.58	16.31	9.587	0.000	0.0	0.0	0.0	0.83	829.3	0.0
N2-1.001	31.96	16.83	9.076	0.000	0.0	0.0	0.0	1.59	1590.1	0.0
N2-1.002	30.04	18.58	7.631	0.000	0.0	0.0	0.0	0.96	962.3	0.0
N2-1.003	29.97	18.65	6.560	0.000	0.0	0.0	0.0	1.60	708.3	0.0
N2-2.000	33.38	15.66	8.660	0.000	0.0	0.0	0.0	1.01	1013.1	0.0
N2-2.001	32.28	16.55	8.188	0.000	0.0	0.0	0.0	0.82	815.3	0.0
N2-2.002	30.93	17.74	7.856	0.000	0.0	0.0	0.0	0.76	760.4	0.0
N2-2.003	30.90	17.77	7.500	0.000	0.0	0.0	0.0	5.23	3328.6	0.0

Network Design Table for Network 2-Abbey Road

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N2-2.004	10.362	0.160	64.8	0.000	0.00	0.0	0.600		o	900	Pipe/Conduit	
N2-2.005	17.974	0.060	299.6	0.000	0.00	0.0	0.600		o	900	Pipe/Conduit	
N2-2.006	17.938	0.105	170.8	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N2-2.007	51.374	0.095	540.8	0.000	0.00	0.0	0.600		o	900	Pipe/Conduit	
N2-2.008	54.120	0.210	257.7	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N2-3.000	9.583	0.070	136.9	0.000	15.00	0.0		0.045	o	900	Pipe/Conduit	
N2-2.009	32.024	0.210	152.5	0.000	0.00	0.0		0.045	3 \=/	500	1:3 Swale	
N2-2.010	23.648	0.100	236.5	0.000	0.00	0.0	0.600		o	750	Pipe/Conduit	
N2-1.004	3.360	0.040	84.0	0.000	0.00	0.0	0.600		o	750	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)
N2-2.004	30.85	17.81	7.200	0.000	0.0	0.0	0.0	3.90	2479.2	0.0
N2-2.005	30.67	17.98	7.040	0.000	0.0	0.0	0.0	1.81	1148.3	0.0
N2-2.006	30.23	18.40	6.980	0.000	0.0	0.0	0.0	0.72	715.6	0.0
N2-2.007	29.58	19.04	6.875	0.000	0.0	0.0	0.0	1.34	852.7	0.0
N2-2.008	28.13	20.59	6.780	0.000	0.0	0.0	0.0	0.58	582.6	0.0
N2-3.000	33.93	15.23	6.100	0.000	0.0	0.0	0.0	0.70	447.0	0.0
N2-2.009	27.52	21.29	6.570	0.000	0.0	0.0	0.0	0.76	757.4	0.0
N2-2.010	27.34	21.51	6.360	0.000	0.0	0.0	0.0	1.82	802.1	0.0
N2-1.004	27.32	21.53	6.260	0.000	0.0	0.0	0.0	3.05	1349.6	0.0

Manhole Schedules for Network 2-Abbey Road

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)
N2-3-0	10.087	0.500	Junction		N2-1.000	9.587	500				
N2-3-1	9.576	0.500	Junction		N2-1.001	9.076	500	N2-1.000	9.076	500	
N2-3-2	8.131	0.500	Junction		N2-1.002	7.631	500	N2-1.001	7.631	500	
N2-3-3	7.350	0.790	Junction		N2-1.003	6.560	750	N2-1.002	6.560	500	
N2-1-0	9.160	0.500	Junction		N2-2.000	8.660	500				
N2-1-1	9.047	0.859	Junction		N2-2.001	8.188	500	N2-2.000	8.188	500	
N2-1-2	8.706	0.850	Junction		N2-2.002	7.856	500	N2-2.001	7.856	500	
N2-1-3	8.640	1.140	Junction		N2-2.003	7.500	900	N2-2.002	7.500	500	
N2-1-4	8.600	1.400	Open Manhole	1800	N2-2.004	7.200	900	N2-2.003	7.200	900	
N2-1-5	8.817	1.777	Open Manhole	1800	N2-2.005	7.040	900	N2-2.004	7.040	900	
N2-1-6	8.120	1.140	Junction		N2-2.006	6.980	500	N2-2.005	6.980	900	
N2-1-7	8.475	1.600	Junction		N2-2.007	6.875	900	N2-2.006	6.875	500	
N2-1-8	8.000	1.220	Junction		N2-2.008	6.780	500	N2-2.007	6.780	900	
N2-2-0	7.600	1.500	Open Manhole	1800	N2-3.000	6.100	900				
N2-1-9	7.375	1.345	Open Manhole	1500	N2-2.009	6.570	500	N2-2.008	6.570	500	
								N2-3.000	6.030	900	
N2-1-10	7.340	0.980	Junction		N2-2.010	6.360	750	N2-2.009	6.360	500	
N2-1-11	7.961	1.701	Open Manhole	1800	N2-1.004	6.260	750	N2-1.003	6.260	750	
								N2-2.010	6.260	750	
N2-	7.610	1.390	Open Manhole	1800		OUTFALL		N2-1.004	6.220	750	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N2-3-0	644263.176	263764.659			No Entry	
N2-3-1	644326.774	263751.269			No Entry	
N2-3-2	644374.973	263738.350			No Entry	
N2-3-3	644468.713	263700.764			No Entry	
N2-1-0	644616.090	264000.298			No Entry	
N2-1-1	644593.708	263966.876			No Entry	
N2-1-2	644569.289	263930.643			No Entry	
N2-1-3	644540.793	263884.930			No Entry	
N2-1-4	644535.177	263875.710	644535.177	263875.710	Required	

Manhole Schedules for Network 2-Abbey Road

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N2-1-5	644530.404	263866.512	644530.404	263866.512	Required	
N2-1-6	644512.439	263867.094			No Entry	
N2-1-7	644502.566	263852.118			No Entry	
N2-1-8	644480.887	263805.542			No Entry	
N2-2-0	644458.161	263756.351	644458.161	263756.351	Required	
N2-1-9	644467.237	263753.274	644467.237	263753.274	Required	
N2-1-10	644464.783	263721.344			No Entry	
N2-1-11	644474.844	263699.943	644474.844	263699.943	Required	
N2-	644474.418	263696.611			No Entry	

PIPELINE SCHEDULES for Network 2-Abbey Road

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)
N2-1.000	3 \=/	500	N2-3-0	10.087	9.587	0.000	Junction	
N2-1.001	3 \=/	500	N2-3-1	9.576	9.076	0.000	Junction	
N2-1.002	3 \=/	500	N2-3-2	8.131	7.631	0.000	Junction	
N2-1.003	o	750	N2-3-3	7.350	6.560	0.290	Junction	
N2-2.000	3 \=/	500	N2-1-0	9.160	8.660	0.000	Junction	
N2-2.001	3 \=/	500	N2-1-1	9.047	8.188	0.359	Junction	
N2-2.002	3 \=/	500	N2-1-2	8.706	7.856	0.350	Junction	
N2-2.003	o	900	N2-1-3	8.640	7.500	0.240	Junction	
N2-2.004	o	900	N2-1-4	8.600	7.200	0.500	Open Manhole	1800
N2-2.005	o	900	N2-1-5	8.817	7.040	0.877	Open Manhole	1800
N2-2.006	3 \=/	500	N2-1-6	8.120	6.980	0.640	Junction	
N2-2.007	o	900	N2-1-7	8.475	6.875	0.700	Junction	
N2-2.008	3 \=/	500	N2-1-8	8.000	6.780	0.720	Junction	
N2-3.000	o	900	N2-2-0	7.600	6.100	0.600	Open Manhole	1800
N2-2.009	3 \=/	500	N2-1-9	7.375	6.570	0.305	Open Manhole	1500
N2-2.010	o	750	N2-1-10	7.340	6.360	0.230	Junction	
N2-1.004	o	750	N2-1-11	7.961	6.260	0.951	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)
N2-1.000	64.992	127.2	N2-3-1	9.576	9.076	0.000	Junction	
N2-1.001	49.994	34.6	N2-3-2	8.131	7.631	0.000	Junction	
N2-1.002	101.168	94.5	N2-3-3	7.350	6.560	0.290	Junction	
N2-1.003	6.186	20.6	N2-1-11	7.961	6.260	1.201	Open Manhole	1800
N2-2.000	40.226	85.2	N2-1-1	9.047	8.188	0.359	Junction	
N2-2.001	43.694	131.6	N2-1-2	8.706	7.856	0.350	Junction	
N2-2.002	53.867	151.3	N2-1-3	8.640	7.500	0.640	Junction	
N2-2.003	10.796	36.0	N2-1-4	8.600	7.200	0.500	Open Manhole	1800
N2-2.004	10.362	64.8	N2-1-5	8.817	7.040	0.877	Open Manhole	1800
N2-2.005	17.974	299.6	N2-1-6	8.120	6.980	0.240	Junction	
N2-2.006	17.938	170.8	N2-1-7	8.475	6.875	1.100	Junction	
N2-2.007	51.374	540.8	N2-1-8	8.000	6.780	0.320	Junction	
N2-2.008	54.120	257.7	N2-1-9	7.375	6.570	0.305	Open Manhole	1500
N2-3.000	9.583	136.9	N2-1-9	7.375	6.030	0.445	Open Manhole	1500
N2-2.009	32.024	152.5	N2-1-10	7.340	6.360	0.480	Junction	
N2-2.010	23.648	236.5	N2-1-11	7.961	6.260	0.951	Open Manhole	1800
N2-1.004	3.360	84.0	N2-	7.610	6.220	0.640	Open Manhole	1800

Area Summary for Network 2-Abbey Road

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.000	0.000	0.000
2.001	-	-	100	0.000	0.000	0.000
2.002	-	-	100	0.000	0.000	0.000
2.003	-	-	100	0.000	0.000	0.000
2.004	-	-	100	0.000	0.000	0.000
2.005	-	-	100	0.000	0.000	0.000
2.006	-	-	100	0.000	0.000	0.000
2.007	-	-	100	0.000	0.000	0.000
2.008	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.000	0.000	0.000
2.009	-	-	100	0.000	0.000	0.000
2.010	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.000	0.000	0.000

Free Flowing Outfall Details for Network 2-Abbey Road

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N2-1.004	N2-	7.610	6.220	6.220	1800	0

Simulation Criteria for Network 2-Abbey Road

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

Number of Input Hydrographs	2	Number of Offline Controls	1	Number of Time/Area Diagrams	0
Number of Online Controls	0	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Offline Controls for Network 2-Abbey Road

Weir Manhole: N2-1-9, DS/PN: N2-2.009, Loop to PN: N2-2.003

Discharge Coef 0.544 Width (m) 9.999 Invert Level (m) 6.930

Storage Structures for Network 2-Abbey Road

Infiltration Basin Manhole: N2-2-0, DS/PN: N2-3.000

Invert Level (m) 6.100 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.38160 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.38160

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	6300.0	1.500	7629.8

Summary of Results for 720 minute 100 year Summer (Network 2-Abbey Road)

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

WARNING: The analysis maybe unstable. Please see the method of analysis help for more details.

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
N2-1.000	N2-3-0	9.984	-0.103	0.000	0.59		485.6	FLOOD RISK*
N2-1.001	N2-3-1	9.373	-0.203	0.000	0.31		485.4	FLOOD RISK*
N2-1.002	N2-3-2	8.002	-0.129	0.000	0.50		484.9	FLOOD RISK*
N2-1.003	N2-3-3	7.468	0.158	121.179	0.66		469.4	FLOOD
N2-2.000	N2-1-0	9.323	0.163	163.439	1.10		1110.1	FLOOD
N2-2.001	N2-1-1	8.756	-0.291	0.000	0.37		1110.1	FLOOD RISK*
N2-2.002	N2-1-2	8.562	-0.144	0.000	0.41		1109.1	FLOOD RISK*
N2-2.003	N2-1-3	8.489	0.089	0.000	0.83		1026.1	FLOOD RISK*
N2-2.004	N2-1-4	8.282	0.182	0.000	1.07		1026.1	SURCHARGED
N2-2.005	N2-1-5	8.075	0.135	0.000	1.38		1026.1	SURCHARGED
N2-2.006	N2-1-6	7.856	-0.264	0.000	0.19		1026.1	FLOOD RISK*
N2-2.007	N2-1-7	7.842	0.067	0.000	1.20		1026.1	SURCHARGED*
N2-2.008	N2-1-8	7.419	-0.581	0.000	0.20		1025.8	OK
N2-3.000	N2-2-0	7.127	0.127	0.000	-0.04		-15.2	SURCHARGED
N2-2.009	N2-1-9	7.282	-0.093	0.000	0.15	-11.1	345.8	FLOOD RISK
N2-2.010	N2-1-10	7.239	0.129	1.472	0.58		349.2	FLOOD
N2-1.004	N2-1-11	7.327	0.317	0.491	1.43		728.2	FLOOD

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 3-Lover's Lane Junction

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 3-Lover's Lane Junction

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.055	4-8	0.127	8-12	0.129	12-16	0.128	16-20	0.046

Total Area Contributing (ha) = 0.485

Total Pipe Volume (m^3) = 110.182

Network Design Table for Network 3-Lover's Lane Junction

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N3-1.000	94.978	0.976	97.3	0.000	15.00	0.0	1.500		o	225	Pipe/Conduit	
N3-2.000	93.727	1.132	82.8	0.063	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-2.001	1.102	0.200	5.5	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-1.001	96.619	3.772	25.6	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N3-3.000	95.808	3.795	25.2	0.076	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-3.001	1.227	0.150	8.2	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	

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)
N3-1.000	32.51	16.36	13.673	0.000	0.0	0.0	0.0	1.16	46.3	0.0
N3-2.000	30.84	17.82	15.154	0.063	0.0	0.0	0.0	0.55	110.9	5.2
N3-2.001	30.83	17.83	14.022	0.063	0.0	0.0	0.0	2.15	429.7	5.2
N3-1.001	30.09	18.53	12.697	0.063	0.0	0.0	0.0	2.27	90.4	5.2
N3-3.000	32.24	16.59	14.022	0.076	0.0	0.0	0.0	1.00	200.8	6.7
N3-3.001	32.22	16.60	10.227	0.076	0.0	0.0	0.0	1.76	352.8	6.7

Network Design Table for Network 3-Lover's Lane Junction

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N3-1.002	33.175	1.322	25.1	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N3-4.000	95.145	1.095	86.9	0.000	15.00	0.0	1.500		o	225	Pipe/Conduit	
N3-5.000	94.173	1.010	93.2	0.092	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-5.001	1.548	0.200	7.7	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-4.001	96.127	3.595	26.7	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N3-6.000	95.020	3.667	25.9	0.105	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-6.001	1.576	0.200	7.9	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-4.002	36.386	1.282	28.4	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N3-7.000	34.923	1.254	27.8	0.084	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-7.001	1.757	0.200	8.8	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-4.003	17.151	0.160	107.2	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
N3-8.000	32.015	1.189	26.9	0.065	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-8.001	1.433	0.200	7.2	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N3-1.003	14.818	0.778	19.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
N3-1.004	1.521	0.100	15.2	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)
N3-1.002	29.84	18.78	8.925	0.139	0.0	0.0	0.0	2.30	91.3	11.2
N3-4.000	32.60	16.29	13.735	0.000	0.0	0.0	0.0	1.23	49.0	0.0
N3-5.000	30.64	18.00	14.975	0.092	0.0	0.0	0.0	0.52	104.5	7.6
N3-5.001	30.63	18.02	13.965	0.092	0.0	0.0	0.0	1.81	362.6	7.6
N3-4.001	29.88	18.74	12.640	0.092	0.0	0.0	0.0	2.22	88.5	7.6
N3-6.000	32.23	16.60	13.965	0.105	0.0	0.0	0.0	0.99	198.2	9.2
N3-6.001	32.21	16.61	10.298	0.105	0.0	0.0	0.0	1.80	359.4	9.2
N3-4.002	29.60	19.02	9.045	0.197	0.0	0.0	0.0	2.16	85.9	15.8
N3-7.000	33.44	15.61	10.298	0.084	0.0	0.0	0.0	0.96	191.2	7.6
N3-7.001	33.42	15.63	9.044	0.084	0.0	0.0	0.0	1.70	340.4	7.6
N3-4.003	29.37	19.25	7.763	0.281	0.0	0.0	0.0	1.26	50.2	22.4
N3-8.000	33.52	15.55	10.227	0.065	0.0	0.0	0.0	0.97	194.4	5.9
N3-8.001	33.50	15.56	9.038	0.065	0.0	0.0	0.0	1.88	376.9	5.9
N3-1.003	29.29	19.33	7.603	0.485	0.0	0.0	0.0	3.01	119.8	38.5
N3-1.004	29.29	19.34	6.825	0.485	0.0	0.0	0.0	3.37	134.1	38.5

Manhole Schedules for Network 3-Lover's Lane Junction

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)
N3-1-0	15.154	1.481	Open Manhole	1200	N3-1.000	13.673	225				
N3-2-0	15.354	0.200	Junction		N3-2.000	15.154	200				
N3-2-1	14.222	0.200	Junction		N3-2.001	14.022	200	N3-2.000	14.022	200	
N3-1-1	14.022	1.325	Open Manhole	1050	N3-1.001	12.697	225	N3-1.000	12.697	225	
								N3-2.001	13.822	200	1100
N3-3-0	14.222	0.200	Junction		N3-3.000	14.022	200				
N3-3-1	10.427	0.200	Junction		N3-3.001	10.227	200	N3-3.000	10.227	200	
N3-1-2	10.277	1.352	Open Manhole	1050	N3-1.002	8.925	225	N3-1.001	8.925	225	
								N3-3.001	10.077	200	1127
N3-4-0	14.975	1.240	Open Manhole	1050	N3-4.000	13.735	225				
N3-5-0	15.175	0.200	Junction		N3-5.000	14.975	200				
N3-5-1	14.165	0.200	Junction		N3-5.001	13.965	200	N3-5.000	13.965	200	
N3-4-1	13.965	1.325	Open Manhole	1050	N3-4.001	12.640	225	N3-4.000	12.640	225	
								N3-5.001	13.765	200	1100
N3-6-0	14.165	0.200	Junction		N3-6.000	13.965	200				
N3-6-1	10.498	0.200	Junction		N3-6.001	10.298	200	N3-6.000	10.298	200	
N3-4-2	10.298	1.253	Open Manhole	1050	N3-4.002	9.045	225	N3-4.001	9.045	225	
								N3-6.001	10.098	200	1028
N3-7-0	10.498	0.200	Junction		N3-7.000	10.298	200				
N3-7-1	9.244	0.200	Junction		N3-7.001	9.044	200	N3-7.000	9.044	200	
N3-4-3	9.044	1.281	Open Manhole	1050	N3-4.003	7.763	225	N3-4.002	7.763	225	
								N3-7.001	8.844	200	1056
N3-8-0	10.427	0.200	Junction		N3-8.000	10.227	200				
N3-8-1	9.238	0.200	Junction		N3-8.001	9.038	200	N3-8.000	9.038	200	
N3-1-3	9.038	1.435	Open Manhole	1050	N3-1.003	7.603	225	N3-1.002	7.603	225	
								N3-4.003	7.603	225	
								N3-8.001	8.838	200	1210
N3-1-4	8.550	1.725	Open Manhole	1050	N3-1.004	6.825	225	N3-1.003	6.825	225	
N3-1-5	8.550	1.825	Open Manhole	1200		OUTFALL		N3-1.004	6.725	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N3-1-0	644732.441	263744.234	644732.441	263744.234	Required	
N3-2-0	644731.767	263743.241			No Entry	
N3-2-1	644638.155	263738.641			No Entry	
N3-1-1	644637.577	263739.580	644637.577	263739.580	Required	
N3-3-0	644637.293	263738.550			No Entry	

Manhole Schedules for Network 3-Lover's Lane Junction

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N3-3-1	644541.539	263735.546			No Entry	
N3-1-2	644541.023	263736.659	644541.023	263736.659	Required	
N3-4-0	644733.119	263734.107	644733.119	263734.107	Required	
N3-5-0	644732.455	263735.057			No Entry	
N3-5-1	644638.381	263730.747			No Entry	
N3-4-1	644638.099	263729.224	644638.099	263729.224	Required	
N3-6-0	644637.709	263730.603			No Entry	
N3-6-1	644542.764	263727.454			No Entry	
N3-4-2	644542.047	263726.050	644542.047	263726.050	Required	
N3-7-0	644541.594	263727.488			No Entry	
N3-7-1	644506.689	263726.773			No Entry	
N3-4-3	644505.678	263725.337	644505.678	263725.337	Required	
N3-8-0	644540.698	263735.523			No Entry	
N3-8-1	644509.200	263741.105			No Entry	
N3-1-3	644508.373	263742.275	644508.373	263742.275	Required	
N3-1-4	644516.016	263754.969	644516.016	263754.969	Required	
N3-1-5	644516.982	263756.144			No Entry	

PIPELINE SCHEDULES for Network 3-Lover's Lane Junction

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)
N3-1.000	o	225	N3-1-0	15.154	13.673	1.256	Open Manhole	1200
N3-2.000	4 \=/	200	N3-2-0	15.354	15.154	0.000	Junction	
N3-2.001	4 \=/	200	N3-2-1	14.222	14.022	0.000	Junction	
N3-1.001	o	225	N3-1-1	14.022	12.697	1.100	Open Manhole	1050
N3-3.000	4 \=/	200	N3-3-0	14.222	14.022	0.000	Junction	
N3-3.001	4 \=/	200	N3-3-1	10.427	10.227	0.000	Junction	
N3-1.002	o	225	N3-1-2	10.277	8.925	1.127	Open Manhole	1050
N3-4.000	o	225	N3-4-0	14.975	13.735	1.015	Open Manhole	1050
N3-5.000	4 \=/	200	N3-5-0	15.175	14.975	0.000	Junction	
N3-5.001	4 \=/	200	N3-5-1	14.165	13.965	0.000	Junction	
N3-4.001	o	225	N3-4-1	13.965	12.640	1.100	Open Manhole	1050
N3-6.000	4 \=/	200	N3-6-0	14.165	13.965	0.000	Junction	
N3-6.001	4 \=/	200	N3-6-1	10.498	10.298	0.000	Junction	
N3-4.002	o	225	N3-4-2	10.298	9.045	1.028	Open Manhole	1050
N3-7.000	4 \=/	200	N3-7-0	10.498	10.298	0.000	Junction	
N3-7.001	4 \=/	200	N3-7-1	9.244	9.044	0.000	Junction	

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)
N3-1.000	94.978	97.3	N3-1-1	14.022	12.697	1.100	Open Manhole	1050
N3-2.000	93.727	82.8	N3-2-1	14.222	14.022	0.000	Junction	
N3-2.001	1.102	5.5	N3-1-1	14.022	13.822	0.000	Open Manhole	1050
N3-1.001	96.619	25.6	N3-1-2	10.277	8.925	1.127	Open Manhole	1050
N3-3.000	95.808	25.2	N3-3-1	10.427	10.227	0.000	Junction	
N3-3.001	1.227	8.2	N3-1-2	10.277	10.077	0.000	Open Manhole	1050
N3-1.002	33.175	25.1	N3-1-3	9.038	7.603	1.210	Open Manhole	1050
N3-4.000	95.145	86.9	N3-4-1	13.965	12.640	1.100	Open Manhole	1050
N3-5.000	94.173	93.2	N3-5-1	14.165	13.965	0.000	Junction	
N3-5.001	1.548	7.7	N3-4-1	13.965	13.765	0.000	Open Manhole	1050
N3-4.001	96.127	26.7	N3-4-2	10.298	9.045	1.028	Open Manhole	1050
N3-6.000	95.020	25.9	N3-6-1	10.498	10.298	0.000	Junction	
N3-6.001	1.576	7.9	N3-4-2	10.298	10.098	0.000	Open Manhole	1050
N3-4.002	36.386	28.4	N3-4-3	9.044	7.763	1.056	Open Manhole	1050
N3-7.000	34.923	27.8	N3-7-1	9.244	9.044	0.000	Junction	
N3-7.001	1.757	8.8	N3-4-3	9.044	8.844	0.000	Open Manhole	1050

PIPELINE SCHEDULES for Network 3-Lover's Lane Junction

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)
N3-4.003	o	225	N3-4-3	9.044	7.763	1.056	Open Manhole	1050
N3-8.000	4 \=/	200	N3-8-0	10.427	10.227	0.000	Junction	
N3-8.001	4 \=/	200	N3-8-1	9.238	9.038	0.000	Junction	
N3-1.003	o	225	N3-1-3	9.038	7.603	1.210	Open Manhole	1050
N3-1.004	o	225	N3-1-4	8.550	6.825	1.500	Open Manhole	1050

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)
N3-4.003	17.151	107.2	N3-1-3	9.038	7.603	1.210	Open Manhole	1050
N3-8.000	32.015	26.9	N3-8-1	9.238	9.038	0.000	Junction	
N3-8.001	1.433	7.2	N3-1-3	9.038	8.838	0.000	Open Manhole	1050
N3-1.003	14.818	19.0	N3-1-4	8.550	6.825	1.500	Open Manhole	1050
N3-1.004	1.521	15.2	N3-1-5	8.550	6.725	1.600	Open Manhole	1200

Area Summary for Network 3-Lover's Lane Junction

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
2.000	Classification	Carriageway	100	0.031	0.031	0.031
	Classification	Swales	100	0.029	0.029	0.060
	Classification	Earthworks	25	0.011	0.003	0.063
2.001	-	-	100	0.000	0.000	0.000
1.001	-	-	100	0.000	0.000	0.000
3.000	Classification	Carriageway	100	0.033	0.033	0.033
	Classification	Swales	100	0.029	0.029	0.062
	Classification	Earthworks	25	0.056	0.014	0.076
3.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.000	0.000	0.000
5.000	Classification	Carriageway	100	0.030	0.030	0.030
	Classification	Swales	100	0.029	0.029	0.059
	Classification	Earthworks	25	0.049	0.012	0.071
	Classification	Verge	25	0.045	0.011	0.082
	Classification	Bridleway	25	0.027	0.007	0.089
	Classification	Earthworks	25	0.011	0.003	0.092
5.001	-	-	100	0.000	0.000	0.000
4.001	-	-	100	0.000	0.000	0.000
6.000	Classification	Swales	100	0.029	0.029	0.029
	Classification	Carriageway	100	0.032	0.032	0.062
	Classification	Earthworks	25	0.052	0.013	0.075
	Classification	Verge	25	0.049	0.012	0.087
	Classification	Bridleway	25	0.029	0.007	0.094
	Classification	Earthworks	25	0.045	0.011	0.105
6.001	-	-	100	0.000	0.000	0.000
4.002	-	-	100	0.000	0.000	0.000
7.000	Classification	Carriageway	100	0.033	0.033	0.033
	Classification	Swales	100	0.017	0.017	0.050
	Classification	Earthworks	25	0.032	0.008	0.058
	Classification	Verge	25	0.063	0.016	0.074
	Classification	Bridleway	25	0.025	0.006	0.080
	Classification	Earthworks	25	0.017	0.004	0.084
7.001	-	-	100	0.000	0.000	0.000
4.003	-	-	100	0.000	0.000	0.000
8.000	Classification	Carriageway	100	0.029	0.029	0.029
	Classification	Swales	100	0.023	0.023	0.052
	Classification	Earthworks	25	0.050	0.013	0.065
8.001	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.907	0.485	0.485

Network Classifications for Network 3-Lover's Lane Junction

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
N3-1.000	N3-1-0	225	1.100	1.466	Unclassified	1200	0	1.256	Unclassified
N3-2.000	N3-2-0	200	0.000	0.235	Unclassified				Junction
N3-2.001	N3-2-1	200	0.000	0.025	Unclassified				Junction
N3-1.001	N3-1-1	225	1.100	1.443	Unclassified	1050	0	1.100	Unclassified
N3-3.000	N3-3-0	200	0.000	0.250	Unclassified				Junction
N3-3.001	N3-3-1	200	0.000	0.052	Unclassified				Junction
N3-1.002	N3-1-2	225	1.043	1.210	Unclassified	1050	0	1.127	Unclassified
N3-4.000	N3-4-0	225	1.015	1.419	Unclassified	1050	0	1.015	Unclassified
N3-5.000	N3-5-0	200	0.000	0.375	Unclassified				Junction
N3-5.001	N3-5-1	200	0.000	0.073	Unclassified				Junction
N3-4.001	N3-4-1	225	1.028	1.396	Unclassified	1050	0	1.100	Unclassified
N3-6.000	N3-6-0	200	0.000	0.271	Unclassified				Junction
N3-6.001	N3-6-1	200	0.000	0.090	Unclassified				Junction
N3-4.002	N3-4-2	225	0.949	1.056	Unclassified	1050	0	1.028	Unclassified
N3-7.000	N3-7-0	200	0.000	0.000	Unclassified				Junction
N3-7.001	N3-7-1	200	0.000	0.071	Unclassified				Junction
N3-4.003	N3-4-3	225	1.056	1.383	Unclassified	1050	0	1.056	Unclassified
N3-8.000	N3-8-0	200	0.000	0.000	Unclassified				Junction
N3-8.001	N3-8-1	200	0.000	0.011	Unclassified				Junction
N3-1.003	N3-1-3	225	1.210	3.354	Unclassified	1050	0	1.210	Unclassified
N3-1.004	N3-1-4	225	1.500	4.461	Unclassified	1050	0	1.500	Unclassified

TAKE OFF DETAILS for Network 3-Lover's Lane Junction

Length Calculations based on 'True Length'

Warning - The following pipes have not been classified:
1.000
2.000
2.001
1.001
3.000
3.001
1.002
4.000
5.000
5.001
4.001
6.000
6.001
4.002
7.000
7.001
4.003
8.000
8.001
1.003
1.004
Warning - The following manholes have not been classified:
1-0
1-1
1-2
4-0
4-1
4-2
4-3
1-3
1-4

Pipes

Number	21
Total Length (m)	927.480
Volume (m^3)	109.1707

Manholes

Number	9
True Depth (m)	12.417
Volume (m^3)	11.1445

Outfalls

Number	1
True Depth (m)	1.825
Volume (m^3)	2.0640

Flow Controls

Number 1

Storage Structures

Number	13
Volume (m^3)	424.9944

TOTALS FOR MANHOLES

Diameter (mm)	Width (mm)	Manhole Class	Number	Ring Depth (m)	Cost (?)	Add Cost (?)	Total Cost (?)
1200		Unclassified	1	1.256	?.??	?.??	?.??
1050		Unclassified	8	9.136	?.??	?.??	?.??
TOTALS			9	10.392	0.00	0.00	0.00

TOTALS FOR PIPES

Diameter (mm)	Pipe Class	Number	Length (m)	Cost (?)
200	Unclassified	12	451.159	?.??
225	Unclassified	9	476.321	?.??
TOTALS		21	927.480	0.00

TOTALS FOR MATERIALS

No materials are used

GROUND WORKS - Pipe Excavation by Depth

Depth <= (m)	Length (m)	Volume (m^3)	Cost (?)
TOTALS	0.000	0.0000	0.00

GROUND WORKS - Totals

Item	Volume / Area (m^3) (m^2)	Cost (?)
MH Excavation	0.0000	0.00
Pipe Excavation	0.0000	0.00
Pipe Replacement	0.0000	0.00
Pipe Reinstatement	0.0000	0.00
Removal	0.0000	0.00
TOTALS		0.00

TOTALS FOR FLOW CONTROLS

Name	Number	Cost (?)
Weir	1	0.00
TOTALS	1	0.00

TOTALS FOR STORAGE STRUCTURES

Name	Number	Volume (m³)	Cost (?)
Filter Drain	6	45.8927	0.00
Infiltration Basin	1	379.1017	0.00
Swale	6	0.0000	0.00
TOTALS	13	424.9944	0.00

TOTAL COSTS

Item	Cost (?)
Manholes	0.00
Pipes	0.00
Materials	0.00
Ground Works	0.00
Flow Controls	0.00
Storage Structures	0.00
TOTAL	0.00

BREAKDOWN FOR MANHOLES

USMH Name	PN	MH Class	Diameter (mm)	Width (mm)	Ring Depth (m)	Cost (?)	Add Cost (?)	Total (?)
N3-1-0	N3-1.000	Unclassified	1200		1.256	?.??	?.??	?.??
N3-1-1	N3-1.001	Unclassified	1050		1.100	?.??	?.??	?.??
N3-1-2	N3-1.002	Unclassified	1050		1.127	?.??	?.??	?.??
N3-4-0	N3-4.000	Unclassified	1050		1.015	?.??	?.??	?.??
N3-4-1	N3-4.001	Unclassified	1050		1.100	?.??	?.??	?.??
N3-4-2	N3-4.002	Unclassified	1050		1.028	?.??	?.??	?.??
N3-4-3	N3-4.003	Unclassified	1050		1.056	?.??	?.??	?.??
N3-1-3	N3-1.003	Unclassified	1050		1.210	?.??	?.??	?.??
N3-1-4	N3-1.004	Unclassified	1050		1.500	?.??	?.??	?.??
TOTALS					10.392	0.00	0.00	0.00

BREAKDOWN FOR PIPES

PN	Pipe Class	Diameter (mm)	Min Cover D (m)	Max Cover D (m)	Length (m)	Cost / m (?)	Total Cost (?)
N3-1.000	Unclassified	225	1.100	1.466	93.853	?.??	?.??
N3-2.000	Unclassified	200	0.000	0.235	93.727	?.??	?.??
N3-2.001	Unclassified	200	0.000	0.025	0.577	?.??	?.??
N3-1.001	Unclassified	225	1.100	1.443	95.569	?.??	?.??
N3-3.000	Unclassified	200	0.000	0.250	95.808	?.??	?.??
N3-3.001	Unclassified	200	0.000	0.052	0.702	?.??	?.??
N3-1.002	Unclassified	225	1.043	1.210	32.125	?.??	?.??
N3-4.000	Unclassified	225	1.015	1.419	94.095	?.??	?.??
N3-5.000	Unclassified	200	0.000	0.375	94.173	?.??	?.??
N3-5.001	Unclassified	200	0.000	0.073	1.023	?.??	?.??
N3-4.001	Unclassified	225	1.028	1.396	95.077	?.??	?.??
N3-6.000	Unclassified	200	0.000	0.271	95.020	?.??	?.??
N3-6.001	Unclassified	200	0.000	0.090	1.051	?.??	?.??
N3-4.002	Unclassified	225	0.949	1.056	35.336	?.??	?.??
N3-7.000	Unclassified	200	0.000	0.000	34.923	?.??	?.??
N3-7.001	Unclassified	200	0.000	0.071	1.232	?.??	?.??
N3-4.003	Unclassified	225	1.056	1.383	16.101	?.??	?.??
N3-8.000	Unclassified	200	0.000	0.000	32.015	?.??	?.??
N3-8.001	Unclassified	200	0.000	0.011	0.908	?.??	?.??
N3-1.003	Unclassified	225	1.210	3.354	13.768	?.??	?.??
N3-1.004	Unclassified	225	1.500	4.461	0.396	?.??	?.??
TOTALS					927.480		0.00

BREAKDOWN FOR MANHOLE BLINDING (?0.00/m³)

USMH Name	PN	Diameter (mm)	Width (mm)	Height (m)	Volume (m³)	Cost (?)
N3-1-0	N3-1.000	1200		?.???	?.????	?.??
N3-1-1	N3-1.001	1050		?.???	?.????	?.??
N3-1-2	N3-1.002	1050		?.???	?.????	?.??
N3-4-0	N3-4.000	1050		?.???	?.????	?.??
N3-4-1	N3-4.001	1050		?.???	?.????	?.??
N3-4-2	N3-4.002	1050		?.???	?.????	?.??
N3-4-3	N3-4.003	1050		?.???	?.????	?.??
N3-1-3	N3-1.003	1050		?.???	?.????	?.??
N3-1-4	N3-1.004	1050		?.???	?.????	?.??
TOTALS				0.000	0.0000	0.00

BREAKDOWN FOR PIPE SURROUND

PN	Length (m)	Diameter (mm)	Surround	Volume (m³)	Cost / m³ (?)	Cost (?)
N3-1.000	93.853	225	Unclassified	?.????	?.??	?.??
N3-2.000	93.727	200	Unclassified	?.????	?.??	?.??
N3-2.001	0.577	200	Unclassified	?.????	?.??	?.??
N3-1.001	95.569	225	Unclassified	?.????	?.??	?.??
N3-3.000	95.808	200	Unclassified	?.????	?.??	?.??
N3-3.001	0.702	200	Unclassified	?.????	?.??	?.??
N3-1.002	32.125	225	Unclassified	?.????	?.??	?.??
N3-4.000	94.095	225	Unclassified	?.????	?.??	?.??
N3-5.000	94.173	200	Unclassified	?.????	?.??	?.??
N3-5.001	1.023	200	Unclassified	?.????	?.??	?.??
N3-4.001	95.077	225	Unclassified	?.????	?.??	?.??
N3-6.000	95.020	200	Unclassified	?.????	?.??	?.??
N3-6.001	1.051	200	Unclassified	?.????	?.??	?.??
N3-4.002	35.336	225	Unclassified	?.????	?.??	?.??
N3-7.000	34.923	200	Unclassified	?.????	?.??	?.??
N3-7.001	1.232	200	Unclassified	?.????	?.??	?.??
N3-4.003	16.101	225	Unclassified	?.????	?.??	?.??
N3-8.000	32.015	200	Unclassified	?.????	?.??	?.??
N3-8.001	0.908	200	Unclassified	?.????	?.??	?.??
N3-1.003	13.768	225	Unclassified	?.????	?.??	?.??
N3-1.004	0.396	225	Unclassified	?.????	?.??	?.??
TOTALS	927.480			0.0000		0.00

BREAKDOWN FOR MANHOLE SURROUND

USMH Name	PN	Diameter (mm)	Width (mm)	Depth (m)	Surround	Volume (m^3)	Cost / m^3 (?)	Cost (?)
N3-1-0	N3-1.000	1200		1.481	Unclassified	?.????	?.??	?.??
N3-1-1	N3-1.001	1050		1.325	Unclassified	?.????	?.??	?.??
N3-1-2	N3-1.002	1050		1.352	Unclassified	?.????	?.??	?.??
N3-4-0	N3-4.000	1050		1.240	Unclassified	?.????	?.??	?.??
N3-4-1	N3-4.001	1050		1.325	Unclassified	?.????	?.??	?.??
N3-4-2	N3-4.002	1050		1.253	Unclassified	?.????	?.??	?.??
N3-4-3	N3-4.003	1050		1.281	Unclassified	?.????	?.??	?.??
N3-1-3	N3-1.003	1050		1.435	Unclassified	?.????	?.??	?.??
N3-1-4	N3-1.004	1050		1.725	Unclassified	?.????	?.??	?.??
TOTALS				12.417		0.0000		0.00

BREAKDOWN FOR MANHOLE BASE

USMH Name	PN	Diameter (mm)	Width (mm)	Height (m)	Base	Volume (m³)	Cost / m³ (?)	Cost (?)
N3-1-0	N3-1.000	1200		?.???	Unclassified	?.????	?.??	?.??
N3-1-1	N3-1.001	1050		?.???	Unclassified	?.????	?.??	?.??
N3-1-2	N3-1.002	1050		?.???	Unclassified	?.????	?.??	?.??
N3-4-0	N3-4.000	1050		?.???	Unclassified	?.????	?.??	?.??
N3-4-1	N3-4.001	1050		?.???	Unclassified	?.????	?.??	?.??
N3-4-2	N3-4.002	1050		?.???	Unclassified	?.????	?.??	?.??
N3-4-3	N3-4.003	1050		?.???	Unclassified	?.????	?.??	?.??
N3-1-3	N3-1.003	1050		?.???	Unclassified	?.????	?.??	?.??
N3-1-4	N3-1.004	1050		?.???	Unclassified	?.????	?.??	?.??
TOTALS				0.000		0.0000		0.00

BREAKDOWN FOR DEPTH BANDS

PN	Dia (mm)	Length (m)	> 0.000
N3-1.000	225	93.853	93.853
N3-2.000	200	93.727	93.727
N3-2.001	200	0.577	0.577
N3-1.001	225	95.569	95.569
N3-3.000	200	95.808	95.808
N3-3.001	200	0.702	0.702
N3-1.002	225	32.125	32.125
N3-4.000	225	94.095	94.095
N3-5.000	200	94.173	94.173
N3-5.001	200	1.023	1.023
N3-4.001	225	95.077	95.077
N3-6.000	200	95.020	95.020
N3-6.001	200	1.051	1.051
N3-4.002	225	35.336	35.336
N3-7.000	200	34.923	34.923
N3-7.001	200	1.232	1.232
N3-4.003	225	16.101	16.101
N3-8.000	200	32.015	32.015
N3-8.001	200	0.908	0.908
N3-1.003	225	13.768	13.768
N3-1.004	225	0.396	0.396
TOTALS		927.480	927.480

BREAKDOWN FOR PIPE EXCAVATION / REINSTATEMENT

PN	Dia (mm)	Length (m)	Ex. Volume (m³)	Ex. Cost (?)	Rep. Volume (m³)	Rep. Cost (?)	Rem. Volume (m³)	Rem. Cost (?)	Rein. Area (m²)	Rein. Cost (?)	Total Cost (?)
N3-1.000	225	93.853	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-2.000	200	93.727	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-2.001	200	0.577	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-1.001	225	95.569	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-3.000	200	95.808	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-3.001	200	0.702	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-1.002	225	32.125	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-4.000	225	94.095	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-5.000	200	94.173	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-5.001	200	1.023	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-4.001	225	95.077	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-6.000	200	95.020	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-6.001	200	1.051	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-4.002	225	35.336	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-7.000	200	34.923	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-7.001	200	1.232	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-4.003	225	16.101	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-8.000	200	32.015	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-8.001	200	0.908	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-1.003	225	13.768	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
N3-1.004	225	0.396	?.????	?.??	?.????	?.??	?.????	?.??	?.????	?.??	?.??
TOTALS		927.480	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.00

BREAKDOWN FOR MANHOLE EXCAVATION

USMH Name	PN	Dia (mm)	Width (mm)	Depth (m)	Total Dia (m)	Total Width (m)	Total Depth (m)	Ex. Volume (m³)	Ex. Cost (?)	Rem. Volume (m³)	Rem. Cost (?)	Total C (?)
N3-1-0	N3-1.000	1200		1.256	?.???		?.???	?.????	?.??	?.????	?.??	?
N3-1-1	N3-1.001	1050		1.100	?.???		?.???	?.????	?.??	?.????	?.??	?
N3-1-2	N3-1.002	1050		1.127	?.???		?.???	?.????	?.??	?.????	?.??	?
N3-4-0	N3-4.000	1050		1.015	?.???		?.???	?.????	?.??	?.????	?.??	?
N3-4-1	N3-4.001	1050		1.100	?.???		?.???	?.????	?.??	?.????	?.??	?
N3-4-2	N3-4.002	1050		1.028	?.???		?.???	?.????	?.??	?.????	?.??	?
N3-4-3	N3-4.003	1050		1.056	?.???		?.???	?.????	?.??	?.????	?.??	?
N3-1-3	N3-1.003	1050		1.210	?.???		?.???	?.????	?.??	?.????	?.??	?
N3-1-4	N3-1.004	1050		1.500	?.???		?.???	?.????	?.??	?.????	?.??	?
TOTALS				10.392			0.000	0.0000	0.00	0.0000	0.00	0

BREAKDOWN FOR FLOW CONTROLS

USMH Name	PN	Flow Control	Online/Offline	Cost (?)
N3-1-4	N3-1.004	Weir	Online	0.00
TOTALS				0.000

BREAKDOWN FOR STORAGE STRUCTURES

USMH Name	PN	Storage Structure	Volume (m³)	Cost (?)
N3-2-1	N3-2.001	Swale	0.0000	0.00
N3-1-1	N3-1.001	Filter Drain	14.5688	0.00
N3-3-1	N3-3.001	Swale	0.0000	0.00
N3-1-2	N3-1.002	Filter Drain	4.3929	0.00
N3-5-1	N3-5.001	Swale	0.0000	0.00
N3-4-1	N3-4.001	Filter Drain	13.7425	0.00
N3-6-1	N3-6.001	Swale	0.0000	0.00
N3-4-2	N3-4.002	Filter Drain	3.9909	0.00
N3-7-1	N3-7.001	Swale	0.0000	0.00
N3-4-3	N3-4.003	Filter Drain	4.4184	0.00
N3-8-1	N3-8.001	Swale	0.0000	0.00
N3-1-3	N3-1.003	Filter Drain	4.7791	0.00
N3-1-4	N3-1.004	Infiltration Basin	379.1017	0.00
TOTALS			424.994	0.00

Free Flowing Outfall Details for Network 3-Lover's Lane Junction

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N3-1.004	N3-1-5	8.550	6.725	0.000	1200	0

Simulation Criteria for Network 3-Lover's Lane Junction

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	13	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Online Controls for Network 3-Lover's Lane Junction

Weir Manhole: N3-1-4, DS/PN: N3-1.004, Volume (m³): 2.0

Discharge Coef 0.544 Width (m) 0.300 Invert Level (m) 8.550

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 3-Lover's Lane Junction

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 13 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N3-1.000	N3-1-0	240 Winter	2	+0%					13.673	-0.225	0.000
N3-2.000	N3-2-0	30 Winter	2	+0%					15.203	-0.151	0.000
N3-2.001	N3-2-1	30 Winter	2	+0%					14.046	-0.176	0.000
N3-1.001	N3-1-1	30 Winter	2	+0%					12.731	-0.191	0.000
N3-3.000	N3-3-0	30 Winter	2	+0%					14.063	-0.159	0.000
N3-3.001	N3-3-1	30 Winter	2	+0%					10.257	-0.170	0.000
N3-1.002	N3-1-2	30 Winter	2	+0%					8.977	-0.173	0.000
N3-4.000	N3-4-0	240 Winter	2	+0%					13.735	-0.225	0.000
N3-5.000	N3-5-0	30 Winter	2	+0%					15.036	-0.139	0.000
N3-5.001	N3-5-1	30 Winter	2	+0%					13.997	-0.168	0.000
N3-4.001	N3-4-1	30 Winter	2	+0%					12.682	-0.183	0.000
N3-6.000	N3-6-0	30 Winter	2	+0%					14.013	-0.152	0.000
N3-6.001	N3-6-1	30 Winter	2	+0%					10.333	-0.165	0.000
N3-4.002	N3-4-2	30 Winter	2	+0%	100/15 Winter				9.110	-0.160	0.000
N3-7.000	N3-7-0	30 Winter	2	+0%					10.342	-0.156	0.000
N3-7.001	N3-7-1	30 Winter	2	+0%					9.076	-0.168	0.000
N3-4.003	N3-4-3	30 Winter	2	+0%	30/15 Winter	100/30 Winter			7.873	-0.115	0.000
N3-8.000	N3-8-0	30 Winter	2	+0%					10.265	-0.162	0.000
N3-8.001	N3-8-1	30 Winter	2	+0%					9.064	-0.174	0.000
N3-1.003	N3-1-3	30 Winter	2	+0%	100/15 Summer				7.695	-0.133	0.000
N3-1.004	N3-1-4	120 Winter	2	+0%	2/30 Summer				7.121	0.071	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N3-1.000	N3-1-0	0.00		0.0	OK	
N3-2.000	N3-2-0	0.04		4.9	FLOOD RISK*	
N3-2.001	N3-2-1	0.02		4.9	FLOOD RISK*	
N3-1.001	N3-1-1	0.05		4.8	OK	
N3-3.000	N3-3-0	0.03		6.0	FLOOD RISK*	
N3-3.001	N3-3-1	0.02		6.0	FLOOD RISK*	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 3-Lover's Lane Junction

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N3-1.002	N3-1-2	0.12		10.7	OK	
N3-4.000	N3-4-0	0.00		0.0	OK	
N3-5.000	N3-5-0	0.07		7.0	FLOOD RISK*	
N3-5.001	N3-5-1	0.02		7.0	FLOOD RISK*	
N3-4.001	N3-4-1	0.08		6.9	OK	
N3-6.000	N3-6-0	0.04		8.3	FLOOD RISK*	
N3-6.001	N3-6-1	0.03		8.3	FLOOD RISK*	
N3-4.002	N3-4-2	0.18		15.0	OK	
N3-7.000	N3-7-0	0.04		6.7	FLOOD RISK*	
N3-7.001	N3-7-1	0.02		6.7	FLOOD RISK*	
N3-4.003	N3-4-3	0.48		21.5	OK	1
N3-8.000	N3-8-0	0.03		5.2	FLOOD RISK*	
N3-8.001	N3-8-1	0.02		5.2	FLOOD RISK*	
N3-1.003	N3-1-3	0.35		37.2	OK	
N3-1.004	N3-1-4	0.00		0.0	SURCHARGED	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 3-Lover's Lane Junction

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 13 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N3-1.000	N3-1-0	240 Winter	5	+0%					13.673	-0.225	0.000
N3-2.000	N3-2-0	30 Winter	5	+0%					15.212	-0.142	0.000
N3-2.001	N3-2-1	30 Winter	5	+0%					14.050	-0.172	0.000
N3-1.001	N3-1-1	30 Winter	5	+0%					12.737	-0.185	0.000
N3-3.000	N3-3-0	30 Winter	5	+0%					14.069	-0.153	0.000
N3-3.001	N3-3-1	30 Winter	5	+0%					10.262	-0.165	0.000
N3-1.002	N3-1-2	30 Winter	5	+0%					8.986	-0.164	0.000
N3-4.000	N3-4-0	240 Winter	5	+0%					13.735	-0.225	0.000
N3-5.000	N3-5-0	30 Winter	5	+0%					15.046	-0.129	0.000
N3-5.001	N3-5-1	30 Winter	5	+0%					14.003	-0.162	0.000
N3-4.001	N3-4-1	30 Winter	5	+0%					12.689	-0.176	0.000
N3-6.000	N3-6-0	30 Winter	5	+0%					14.021	-0.144	0.000
N3-6.001	N3-6-1	30 Winter	5	+0%					10.340	-0.158	0.000
N3-4.002	N3-4-2	30 Winter	5	+0%	100/15 Winter				9.121	-0.149	0.000
N3-7.000	N3-7-0	30 Winter	5	+0%					10.349	-0.149	0.000
N3-7.001	N3-7-1	30 Winter	5	+0%					9.082	-0.162	0.000
N3-4.003	N3-4-3	30 Winter	5	+0%	30/15 Winter	100/30 Winter			7.896	-0.092	0.000
N3-8.000	N3-8-0	30 Winter	5	+0%					10.272	-0.155	0.000
N3-8.001	N3-8-1	30 Winter	5	+0%					9.069	-0.169	0.000
N3-1.003	N3-1-3	30 Winter	5	+0%	100/15 Summer				7.713	-0.115	0.000
N3-1.004	N3-1-4	120 Winter	5	+0%	2/30 Summer				7.223	0.173	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N3-1.000	N3-1-0	0.00		0.0	OK	
N3-2.000	N3-2-0	0.06		6.6	FLOOD RISK*	
N3-2.001	N3-2-1	0.02		6.6	FLOOD RISK*	
N3-1.001	N3-1-1	0.07		6.5	OK	
N3-3.000	N3-3-0	0.04		8.2	FLOOD RISK*	
N3-3.001	N3-3-1	0.03		8.2	FLOOD RISK*	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 3-Lover's Lane Junction

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N3-1.002	N3-1-2	0.17		14.5	OK	
N3-4.000	N3-4-0	0.00		0.0	OK	
N3-5.000	N3-5-0	0.09		9.6	FLOOD RISK*	
N3-5.001	N3-5-1	0.03		9.6	FLOOD RISK*	
N3-4.001	N3-4-1	0.11		9.4	OK	
N3-6.000	N3-6-0	0.06		11.3	FLOOD RISK*	
N3-6.001	N3-6-1	0.04		11.3	FLOOD RISK*	
N3-4.002	N3-4-2	0.25		20.5	OK	
N3-7.000	N3-7-0	0.05		9.1	FLOOD RISK*	
N3-7.001	N3-7-1	0.03		9.1	FLOOD RISK*	
N3-4.003	N3-4-3	0.65		29.3	OK	1
N3-8.000	N3-8-0	0.04		7.1	FLOOD RISK*	
N3-8.001	N3-8-1	0.02		7.1	FLOOD RISK*	
N3-1.003	N3-1-3	0.48		50.6	OK	
N3-1.004	N3-1-4	0.00		0.0	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 3- Lover's Lane Junction

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 13 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N3-1.000	N3-1-0	240 Winter	30	+0%					13.673	-0.225	0.000
N3-2.000	N3-2-0	30 Winter	30	+0%					15.228	-0.126	0.000
N3-2.001	N3-2-1	30 Winter	30	+0%					14.060	-0.162	0.000
N3-1.001	N3-1-1	30 Winter	30	+0%					12.749	-0.173	0.000
N3-3.000	N3-3-0	30 Winter	30	+0%					14.083	-0.139	0.000
N3-3.001	N3-3-1	30 Winter	30	+0%					10.273	-0.154	0.000
N3-1.002	N3-1-2	30 Winter	30	+0%					9.006	-0.144	0.000
N3-4.000	N3-4-0	240 Winter	30	+0%					13.735	-0.225	0.000
N3-5.000	N3-5-0	30 Winter	30	+0%					15.065	-0.110	0.000
N3-5.001	N3-5-1	30 Winter	30	+0%					14.014	-0.151	0.000
N3-4.001	N3-4-1	30 Winter	30	+0%					12.705	-0.160	0.000
N3-6.000	N3-6-0	30 Winter	30	+0%					14.037	-0.128	0.000
N3-6.001	N3-6-1	30 Winter	30	+0%					10.351	-0.147	0.000
N3-4.002	N3-4-2	30 Winter	30	+0%	100/15 Winter				9.147	-0.123	0.000
N3-7.000	N3-7-0	30 Winter	30	+0%					10.364	-0.134	0.000
N3-7.001	N3-7-1	30 Winter	30	+0%					9.093	-0.151	0.000
N3-4.003	N3-4-3	30 Winter	30	+0%	30/15 Winter	100/30 Winter			8.012	0.024	0.000
N3-8.000	N3-8-0	30 Winter	30	+0%					10.285	-0.142	0.000
N3-8.001	N3-8-1	30 Winter	30	+0%					9.080	-0.158	0.000
N3-1.003	N3-1-3	30 Winter	30	+0%	100/15 Summer				7.758	-0.070	0.000
N3-1.004	N3-1-4	120 Winter	30	+0%	2/30 Summer				7.467	0.417	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N3-1.000	N3-1-0	0.00		0.0	OK	
N3-2.000	N3-2-0	0.10		11.1	FLOOD RISK*	
N3-2.001	N3-2-1	0.04		11.1	FLOOD RISK*	
N3-1.001	N3-1-1	0.12		10.9	OK	
N3-3.000	N3-3-0	0.07		13.7	FLOOD RISK*	
N3-3.001	N3-3-1	0.05		13.7	FLOOD RISK*	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 3-Lover's Lane Junction

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N3-1.002	N3-1-2	0.28		24.5	OK	
N3-4.000	N3-4-0	0.00		0.0	OK	
N3-5.000	N3-5-0	0.16		16.3	FLOOD RISK*	
N3-5.001	N3-5-1	0.05		16.2	FLOOD RISK*	
N3-4.001	N3-4-1	0.18		16.0	OK	
N3-6.000	N3-6-0	0.10		19.0	FLOOD RISK*	
N3-6.001	N3-6-1	0.06		19.0	FLOOD RISK*	
N3-4.002	N3-4-2	0.42		34.7	OK	
N3-7.000	N3-7-0	0.08		15.4	FLOOD RISK*	
N3-7.001	N3-7-1	0.05		15.4	FLOOD RISK*	
N3-4.003	N3-4-3	1.10		49.5	SURCHARGED	1
N3-8.000	N3-8-0	0.06		11.9	FLOOD RISK*	
N3-8.001	N3-8-1	0.04		11.9	FLOOD RISK*	
N3-1.003	N3-1-3	0.81		85.4	OK	
N3-1.004	N3-1-4	0.00		0.0	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 3-Lover's Lane Junction

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 13 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N3-1.000	N3-1-0	240 Winter	100	+40%					13.673	-0.225	0.000
N3-2.000	N3-2-0	30 Winter	100	+40%					15.251	-0.103	0.000
N3-2.001	N3-2-1	30 Winter	100	+40%					14.072	-0.150	0.000
N3-1.001	N3-1-1	30 Winter	100	+40%					12.769	-0.153	0.000
N3-3.000	N3-3-0	30 Winter	100	+40%					14.103	-0.119	0.000
N3-3.001	N3-3-1	30 Winter	100	+40%					10.289	-0.138	0.000
N3-1.002	N3-1-2	30 Winter	100	+40%					9.039	-0.111	0.000
N3-4.000	N3-4-0	240 Winter	100	+40%					13.735	-0.225	0.000
N3-5.000	N3-5-0	30 Winter	100	+40%					15.093	-0.082	0.000
N3-5.001	N3-5-1	30 Winter	100	+40%					14.031	-0.134	0.000
N3-4.001	N3-4-1	30 Winter	100	+40%					12.730	-0.135	0.000
N3-6.000	N3-6-0	30 Winter	100	+40%					14.060	-0.105	0.000
N3-6.001	N3-6-1	30 Winter	100	+40%					10.369	-0.129	0.000
N3-4.002	N3-4-2	30 Winter	100	+40%	100/15 Winter				9.674	0.404	0.000
N3-7.000	N3-7-0	30 Winter	100	+40%					10.385	-0.113	0.000
N3-7.001	N3-7-1	30 Winter	100	+40%					9.110	-0.134	0.000
N3-4.003	N3-4-3	30 Winter	100	+40%	30/15 Winter	100/30 Winter			9.045	1.057	0.685
N3-8.000	N3-8-0	30 Winter	100	+40%					10.304	-0.123	0.000
N3-8.001	N3-8-1	30 Winter	100	+40%					9.094	-0.144	0.000
N3-1.003	N3-1-3	30 Winter	100	+40%	100/15 Summer				8.636	0.808	0.000
N3-1.004	N3-1-4	180 Winter	100	+40%	2/30 Summer				7.906	0.856	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N3-1.000	N3-1-0	0.00		0.0	OK	
N3-2.000	N3-2-0	0.18		20.3	FLOOD RISK*	
N3-2.001	N3-2-1	0.06		20.2	FLOOD RISK*	
N3-1.001	N3-1-1	0.22		20.0	OK	
N3-3.000	N3-3-0	0.12		25.0	FLOOD RISK*	
N3-3.001	N3-3-1	0.09		25.0	FLOOD RISK*	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 3-Lover's Lane Junction

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N3-1.002	N3-1-2	0.51		44.7	OK	
N3-4.000	N3-4-0	0.00		0.0	OK	
N3-5.000	N3-5-0	0.28		29.7	FLOOD RISK*	
N3-5.001	N3-5-1	0.09		29.6	FLOOD RISK*	
N3-4.001	N3-4-1	0.34		29.3	OK	
N3-6.000	N3-6-0	0.17		34.6	FLOOD RISK*	
N3-6.001	N3-6-1	0.11		34.6	FLOOD RISK*	
N3-4.002	N3-4-2	0.70		57.4	SURCHARGED	
N3-7.000	N3-7-0	0.15		28.0	FLOOD RISK*	
N3-7.001	N3-7-1	0.09		27.9	FLOOD RISK*	
N3-4.003	N3-4-3	1.67		74.7	FLOOD	1
N3-8.000	N3-8-0	0.11		21.6	FLOOD RISK*	
N3-8.001	N3-8-1	0.07		21.6	FLOOD RISK*	
N3-1.003	N3-1-3	1.23		129.6	SURCHARGED	
N3-1.004	N3-1-4	0.00		0.0	SURCHARGED	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 4-Lover's Lane Diversion

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 4-Lover's Lane Diversion

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.045	4-8	0.151	8-12	0.186	12-16	0.174	16-20	0.133	20-24	0.053	24-28	0.013

Total Area Contributing (ha) = 0.754

Total Pipe Volume (m³) = 170.486

Network Design Table for Network 4-Lover's Lane Diversion

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N4-1.000	67.839	0.771	88.0	0.054	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.001	0.830	0.200	4.2	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.002	69.691	0.423	164.8	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-2.000	68.250	0.948	72.0	0.037	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-2.001	1.353	0.200	6.8	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-2.002	70.504	0.681	103.5	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-2.003	9.322	0.096	97.1	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)
N4-1.000	31.64	17.10	13.696	0.054	0.0	0.0	0.0	0.54	107.6	4.6
N4-1.001	31.63	17.11	12.925	0.054	0.0	0.0	0.0	2.48	495.2	4.6
N4-1.002	30.22	18.41	11.790	0.054	0.0	0.0	0.0	0.89	35.5	4.6
N4-2.000	31.86	16.91	13.852	0.037	0.0	0.0	0.0	0.59	118.9	3.2
N4-2.001	31.84	16.92	12.904	0.037	0.0	0.0	0.0	1.94	387.9	3.2
N4-2.002	30.68	17.97	12.144	0.037	0.0	0.0	0.0	1.13	44.9	3.2
N4-2.003	30.56	18.08	11.463	0.037	0.0	0.0	0.0	1.33	52.8	3.2

Network Design Table for Network 4-Lover's Lane Diversion

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N4-1.003	81.346	0.329	247.3	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-3.000	79.707	0.454	175.6	0.072	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-3.001	0.893	0.200	4.5	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.004	59.534	0.333	178.8	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-4.000	57.652	0.689	83.7	0.075	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-4.001	1.074	0.200	5.4	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.005	60.770	0.341	178.2	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-5.000	59.009	0.674	87.6	0.090	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-5.001	0.976	0.200	4.9	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.006	82.856	0.936	88.5	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-6.000	81.384	1.192	68.3	0.134	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-6.001	0.941	0.200	4.7	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.007	90.852	4.190	21.7	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-7.000	89.520	4.165	21.5	0.117	15.00	0.0		0.045	4 \=/	600	1:4 Swale	
N4-7.001	0.905	0.200	4.5	0.000	0.00	0.0		0.045	4 \=/	600	1:4 Swale	
N4-1.008	38.203	1.423	26.8	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-1.009	39.021	1.423	27.4	0.000	0.00	0.0	1.500		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)
N4-1.003	28.41	20.27	11.367	0.091	0.0	0.0	0.0	0.73	29.0	7.0
N4-3.000	30.13	18.49	13.696	0.072	0.0	0.0	0.0	0.38	76.1	5.9
N4-3.001	30.13	18.50	13.242	0.072	0.0	0.0	0.0	2.39	477.4	5.9
N4-1.004	27.40	21.43	11.038	0.163	0.0	0.0	0.0	0.86	34.1	12.1
N4-4.000	32.06	16.74	13.242	0.075	0.0	0.0	0.0	0.55	110.3	6.5
N4-4.001	32.05	16.75	12.553	0.075	0.0	0.0	0.0	2.18	435.3	6.5
N4-1.005	26.46	22.61	10.705	0.238	0.0	0.0	0.0	0.86	34.1	17.1
N4-5.000	31.96	16.82	12.553	0.090	0.0	0.0	0.0	0.54	107.8	7.8
N4-5.001	31.95	16.83	11.879	0.090	0.0	0.0	0.0	2.28	456.7	7.8
N4-1.006	25.62	23.74	10.364	0.328	0.0	0.0	0.0	1.22	48.5	22.8
N4-6.000	31.50	17.22	11.879	0.134	0.0	0.0	0.0	0.61	122.1	11.4
N4-6.001	31.50	17.23	10.687	0.134	0.0	0.0	0.0	2.32	465.0	11.4
N4-1.007	25.19	24.35	9.428	0.462	0.0	0.0	0.0	2.47	98.3	31.5
N4-7.000	32.65	16.25	10.687	0.117	0.0	0.0	0.0	1.20	334.6	10.3
N4-7.001	32.64	16.25	6.522	0.117	0.0	0.0	0.0	2.61	729.4	10.3
N4-1.008	24.99	24.64	5.238	0.579	0.0	0.0	0.0	2.22	88.3	39.2
N4-1.009	24.79	24.93	3.815	0.579	0.0	0.0	0.0	2.20	87.3	39.2

Network Design Table for Network 4-Lover's Lane Diversion

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N4-8.000	90.001	0.888	101.4	0.019	15.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.001	60.984	0.366	166.6	0.015	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.002	20.119	0.339	59.3	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.003	83.773	0.798	105.0	0.019	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.004	63.493	0.555	114.4	0.013	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.005	25.934	0.180	144.1	0.005	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.006	58.536	0.592	98.9	0.013	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.007	66.365	0.422	157.3	0.014	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.008	79.948	0.555	144.1	0.018	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.009	66.497	0.731	91.0	0.013	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.010	74.795	1.701	44.0	0.018	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.011	50.314	3.109	16.2	0.010	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.012	17.599	0.457	38.5	0.003	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.013	7.469	0.031	240.9	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
N4-1.010	40.020	0.350	114.3	0.009	0.00	47.7	1.500		o	375	Pipe/Conduit	
N4-1.011	21.507	0.114	188.7	0.006	0.00	0.0	1.500		o	375	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)
N4-8.000	32.57	16.32	13.116	0.019	0.0	0.0	0.0	1.14	45.3	1.7
N4-8.001	31.24	17.46	12.228	0.034	0.0	0.0	0.0	0.89	35.3	2.9
N4-8.002	30.99	17.68	11.862	0.034	0.0	0.0	0.0	1.49	59.3	2.9
N4-8.003	29.68	18.93	11.523	0.053	0.0	0.0	0.0	1.12	44.5	4.3
N4-8.004	28.73	19.92	10.725	0.066	0.0	0.0	0.0	1.07	42.7	5.1
N4-8.005	28.32	20.37	10.170	0.071	0.0	0.0	0.0	0.96	38.0	5.4
N4-8.006	27.58	21.22	9.990	0.084	0.0	0.0	0.0	1.15	45.9	6.3
N4-8.007	26.60	22.42	9.398	0.098	0.0	0.0	0.0	0.91	36.4	7.1
N4-8.008	25.56	23.82	8.976	0.116	0.0	0.0	0.0	0.96	38.0	8.0
N4-8.009	24.92	24.74	8.421	0.129	0.0	0.0	0.0	1.20	47.9	8.7
N4-8.010	24.45	25.46	7.690	0.147	0.0	0.0	0.0	1.73	68.9	9.7
N4-8.011	24.26	25.75	5.989	0.157	0.0	0.0	0.0	2.86	113.8	10.3
N4-8.012	24.16	25.91	2.880	0.160	0.0	0.0	0.0	1.85	73.7	10.5
N4-8.013	24.07	26.06	2.423	0.160	0.0	0.0	0.0	0.84	33.3	10.5
N4-1.010	23.80	26.50	2.392	0.748	47.7	0.0	0.0	1.50	165.6	95.9
N4-1.011	23.61	26.81	2.042	0.754	47.7	0.0	0.0	1.17	128.8	95.9

Manhole Schedules for Network 4-Lover's Lane Diversion

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)
N4-1-0	13.896	0.200	Junction		N4-1.000	13.696	200				
N4-1-1	13.125	0.200	Junction		N4-1.001	12.925	200	N4-1.000	12.925	200	
N4-1-2	12.925	1.135	Open Manhole	1050	N4-1.002	11.790	225	N4-1.001	12.725	200	910
N4-2-0	14.052	0.200	Junction		N4-2.000	13.852	200				
N4-2-1	13.104	0.200	Junction		N4-2.001	12.904	200	N4-2.000	12.904	200	
N4-2-2	12.904	0.760	Open Manhole	1050	N4-2.002	12.144	225	N4-2.001	12.704	200	535
N4-2-3	13.852	2.389	Open Manhole	1050	N4-2.003	11.463	225	N4-2.002	11.463	225	
N4-1-3	13.696	2.329	Open Manhole	1050	N4-1.003	11.367	225	N4-1.002	11.367	225	
								N4-2.003	11.367	225	
N4-3-0	13.896	0.200	Junction		N4-3.000	13.696	200				
N4-3-1	13.442	0.200	Junction		N4-3.001	13.242	200	N4-3.000	13.242	200	
N4-1-4	13.242	2.204	Open Manhole	1050	N4-1.004	11.038	225	N4-1.003	11.038	225	
								N4-3.001	13.042	200	1979
N4-4-0	13.442	0.200	Junction		N4-4.000	13.242	200				
N4-4-1	12.753	0.200	Junction		N4-4.001	12.553	200	N4-4.000	12.553	200	
N4-1-5	12.553	1.848	Open Manhole	1050	N4-1.005	10.705	225	N4-1.004	10.705	225	
								N4-4.001	12.353	200	1623
N4-5-0	12.753	0.200	Junction		N4-5.000	12.553	200				
N4-5-1	12.079	0.200	Junction		N4-5.001	11.879	200	N4-5.000	11.879	200	
N4-1-6	11.879	1.515	Open Manhole	1050	N4-1.006	10.364	225	N4-1.005	10.364	225	
								N4-5.001	11.679	200	1290
N4-6-0	12.079	0.200	Junction		N4-6.000	11.879	200				
N4-6-1	10.887	0.200	Junction		N4-6.001	10.687	200	N4-6.000	10.687	200	
N4-1-7	10.687	1.259	Open Manhole	1050	N4-1.007	9.428	225	N4-1.006	9.428	225	
								N4-6.001	10.487	200	1034
N4-7-0	10.887	0.200	Junction		N4-7.000	10.687	600				
N4-7-1	6.722	0.200	Junction		N4-7.001	6.522	600	N4-7.000	6.522	600	
N4-1-8	6.522	1.284	Open Manhole	1050	N4-1.008	5.238	225	N4-1.007	5.238	225	
								N4-7.001	6.322	600	1059
N4-1-9	4.964	1.149	Open Manhole	1050	N4-1.009	3.815	225	N4-1.008	3.815	225	
N4-8-0	14.341	1.225	Open Manhole	1050	N4-8.000	13.116	225				
N4-8-1	14.453	2.225	Open Manhole	1050	N4-8.001	12.228	225	N4-8.000	12.228	225	
N4-8-2	13.284	1.422	Open Manhole	1050	N4-8.002	11.862	225	N4-8.001	11.862	225	
N4-8-3	13.071	1.548	Open Manhole	1050	N4-8.003	11.523	225	N4-8.002	11.523	225	
N4-8-4	12.186	1.461	Open Manhole	1050	N4-8.004	10.725	225	N4-8.003	10.725	225	
N4-8-5	12.233	2.063	Open Manhole	1050	N4-8.005	10.170	225	N4-8.004	10.170	225	
N4-8-6	11.726	1.736	Open Manhole	1050	N4-8.006	9.990	225	N4-8.005	9.990	225	
N4-8-7	10.636	1.238	Open Manhole	1050	N4-8.007	9.398	225	N4-8.006	9.398	225	
N4-8-8	10.587	1.611	Open Manhole	1050	N4-8.008	8.976	225	N4-8.007	8.976	225	
N4-8-9	9.857	1.436	Open Manhole	1050	N4-8.009	8.421	225	N4-8.008	8.421	225	
N4-8-10	9.491	1.801	Open Manhole	1050	N4-8.010	7.690	225	N4-8.009	7.690	225	
N4-8-11	7.152	1.163	Open Manhole	1050	N4-8.011	5.989	225	N4-8.010	5.989	225	
N4-8-12	4.041	1.161	Open Manhole	1050	N4-8.012	2.880	225	N4-8.011	2.880	225	
N4-8-13	3.257	0.834	Open Manhole	1050	N4-8.013	2.423	225	N4-8.012	2.423	225	
N4-1-10	3.108	0.716	Open Manhole	1050	N4-1.010	2.392	375	N4-1.009	2.392	225	
								N4-8.013	2.392	225	
N4-1-11	2.776	0.734	Open Manhole	1050	N4-1.011	2.042	375	N4-1.010	2.042	375	

Manhole Schedules for Network 4-Lover's Lane Diversion

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)
N4-	2.761	0.833	Open Manhole	0		OUTFALL		N4-1.011	1.928	375	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N4-1-0	645068.147	263774.382			No Entry	
N4-1-1	645000.810	263766.282			No Entry	
N4-1-2	645000.116	263765.825	645000.116	263765.825	Required	
N4-2-0	645067.534	263783.029			No Entry	
N4-2-1	644999.827	263774.656			No Entry	
N4-2-2	644998.521	263775.012	644998.521	263775.012	Required	
N4-2-3	645068.463	263783.469	645068.463	263783.469	Required	
N4-1-3	645069.298	263774.184	645069.298	263774.184	Required	
N4-3-0	645070.191	263774.581			No Entry	
N4-3-1	645149.820	263775.622			No Entry	
N4-1-4	645150.602	263775.191	645150.602	263775.191	Required	
N4-4-0	645151.544	263775.636			No Entry	
N4-4-1	645208.838	263769.309			No Entry	
N4-1-5	645209.777	263768.786	645209.777	263768.786	Required	
N4-5-0	645210.775	263769.030			No Entry	
N4-5-1	645268.342	263756.422			No Entry	
N4-1-6	645269.042	263755.742	645269.042	263755.742	Required	

Manhole Schedules for Network 4-Lover's Lane Diversion

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N4-6-0	645269.972	263755.820			No Entry	
N4-6-1	645339.386	263714.498			No Entry	
N4-1-7	645339.675	263713.602	645339.675	263713.602	Required	
N4-7-0	645340.565	263713.396			No Entry	
N4-7-1	645382.824	263635.391			No Entry	
N4-1-8	645382.610	263634.512	645382.610	263634.512	Required	
N4-1-9	645396.670	263598.996	645396.670	263598.996	Required	
N4-8-0	644730.917	263724.564	644730.917	263724.564	Required	
N4-8-1	644820.655	263731.378	644820.655	263731.378	Required	
N4-8-2	644881.405	263736.448	644881.405	263736.448	Required	
N4-8-3	644901.310	263739.376	644901.310	263739.376	Required	
N4-8-4	644984.206	263751.450	644984.206	263751.450	Required	
N4-8-5	645038.630	263726.744	645038.630	263726.744	Required	
N4-8-6	645046.653	263702.361	645046.653	263702.361	Required	
N4-8-7	645075.042	263653.518	645075.042	263653.518	Required	
N4-8-8	645136.362	263628.253	645136.362	263628.253	Required	
N4-8-9	645213.824	263608.762	645213.824	263608.762	Required	
N4-8-10	645279.909	263601.838	645279.909	263601.838	Required	
N4-8-11	645354.669	263599.563	645354.669	263599.563	Required	
N4-8-12	645396.521	263575.069	645396.521	263575.069	Required	

Manhole Schedules for Network 4-Lover's Lane Diversion

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N4-8-13	645405.285	263559.807	645405.285	263559.807	Required	
N4-1-10	645411.985	263563.106	645411.985	263563.106	Required	
N4-1-11	645427.817	263526.351	645427.817	263526.351	Required	
N4-	645436.669	263506.751			No Entry	

PIPELINE SCHEDULES for Network 4-Lover's Lane Diversion

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)
N4-1.000	4 \=/	200	N4-1-0	13.896	13.696	0.000	Junction	
N4-1.001	4 \=/	200	N4-1-1	13.125	12.925	0.000	Junction	
N4-1.002	o	225	N4-1-2	12.925	11.790	0.910	Open Manhole	1050
N4-2.000	4 \=/	200	N4-2-0	14.052	13.852	0.000	Junction	
N4-2.001	4 \=/	200	N4-2-1	13.104	12.904	0.000	Junction	
N4-2.002	o	225	N4-2-2	12.904	12.144	0.535	Open Manhole	1050
N4-2.003	o	225	N4-2-3	13.852	11.463	2.164	Open Manhole	1050
N4-1.003	o	225	N4-1-3	13.696	11.367	2.104	Open Manhole	1050
N4-3.000	4 \=/	200	N4-3-0	13.896	13.696	0.000	Junction	
N4-3.001	4 \=/	200	N4-3-1	13.442	13.242	0.000	Junction	
N4-1.004	o	225	N4-1-4	13.242	11.038	1.979	Open Manhole	1050
N4-4.000	4 \=/	200	N4-4-0	13.442	13.242	0.000	Junction	
N4-4.001	4 \=/	200	N4-4-1	12.753	12.553	0.000	Junction	
N4-1.005	o	225	N4-1-5	12.553	10.705	1.623	Open Manhole	1050
N4-5.000	4 \=/	200	N4-5-0	12.753	12.553	0.000	Junction	
N4-5.001	4 \=/	200	N4-5-1	12.079	11.879	0.000	Junction	
N4-1.006	o	225	N4-1-6	11.879	10.364	1.290	Open Manhole	1050
N4-6.000	4 \=/	200	N4-6-0	12.079	11.879	0.000	Junction	

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)
N4-1.000	67.839	88.0	N4-1-1	13.125	12.925	0.000	Junction	
N4-1.001	0.830	4.2	N4-1-2	12.925	12.725	0.000	Open Manhole	1050
N4-1.002	69.691	164.8	N4-1-3	13.696	11.367	2.104	Open Manhole	1050
N4-2.000	68.250	72.0	N4-2-1	13.104	12.904	0.000	Junction	
N4-2.001	1.353	6.8	N4-2-2	12.904	12.704	0.000	Open Manhole	1050
N4-2.002	70.504	103.5	N4-2-3	13.852	11.463	2.164	Open Manhole	1050
N4-2.003	9.322	97.1	N4-1-3	13.696	11.367	2.104	Open Manhole	1050
N4-1.003	81.346	247.3	N4-1-4	13.242	11.038	1.979	Open Manhole	1050
N4-3.000	79.707	175.6	N4-3-1	13.442	13.242	0.000	Junction	
N4-3.001	0.893	4.5	N4-1-4	13.242	13.042	0.000	Open Manhole	1050
N4-1.004	59.534	178.8	N4-1-5	12.553	10.705	1.623	Open Manhole	1050
N4-4.000	57.652	83.7	N4-4-1	12.753	12.553	0.000	Junction	
N4-4.001	1.074	5.4	N4-1-5	12.553	12.353	0.000	Open Manhole	1050
N4-1.005	60.770	178.2	N4-1-6	11.879	10.364	1.290	Open Manhole	1050
N4-5.000	59.009	87.6	N4-5-1	12.079	11.879	0.000	Junction	
N4-5.001	0.976	4.9	N4-1-6	11.879	11.679	0.000	Open Manhole	1050
N4-1.006	82.856	88.5	N4-1-7	10.687	9.428	1.034	Open Manhole	1050
N4-6.000	81.384	68.3	N4-6-1	10.887	10.687	0.000	Junction	

PIPELINE SCHEDULES for Network 4-Lover's Lane Diversion

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)
N4-6.001	4 \=/	200	N4-6-1	10.887	10.687	0.000	Junction	
N4-1.007	o	225	N4-1-7	10.687	9.428	1.034	Open Manhole	1050
N4-7.000	4 \=/	600	N4-7-0	10.887	10.687	0.000	Junction	
N4-7.001	4 \=/	600	N4-7-1	6.722	6.522	0.000	Junction	
N4-1.008	o	225	N4-1-8	6.522	5.238	1.059	Open Manhole	1050
N4-1.009	o	225	N4-1-9	4.964	3.815	0.924	Open Manhole	1050
N4-8.000	o	225	N4-8-0	14.341	13.116	1.000	Open Manhole	1050
N4-8.001	o	225	N4-8-1	14.453	12.228	2.000	Open Manhole	1050
N4-8.002	o	225	N4-8-2	13.284	11.862	1.197	Open Manhole	1050
N4-8.003	o	225	N4-8-3	13.071	11.523	1.323	Open Manhole	1050
N4-8.004	o	225	N4-8-4	12.186	10.725	1.236	Open Manhole	1050
N4-8.005	o	225	N4-8-5	12.233	10.170	1.838	Open Manhole	1050
N4-8.006	o	225	N4-8-6	11.726	9.990	1.511	Open Manhole	1050
N4-8.007	o	225	N4-8-7	10.636	9.398	1.013	Open Manhole	1050
N4-8.008	o	225	N4-8-8	10.587	8.976	1.386	Open Manhole	1050
N4-8.009	o	225	N4-8-9	9.857	8.421	1.211	Open Manhole	1050
N4-8.010	o	225	N4-8-10	9.491	7.690	1.576	Open Manhole	1050
N4-8.011	o	225	N4-8-11	7.152	5.989	0.938	Open Manhole	1050
N4-8.012	o	225	N4-8-12	4.041	2.880	0.936	Open Manhole	1050
N4-8.013	o	225	N4-8-13	3.257	2.423	0.609	Open Manhole	1050
N4-1.010	o	375	N4-1-10	3.108	2.392	0.341	Open Manhole	1050
N4-1.011	o	375	N4-1-11	2.776	2.042	0.359	Open Manhole	1050

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)
N4-6.001	0.941	4.7	N4-1-7	10.687	10.487	0.000	Open Manhole	1050
N4-1.007	90.852	21.7	N4-1-8	6.522	5.238	1.059	Open Manhole	1050
N4-7.000	89.520	21.5	N4-7-1	6.722	6.522	0.000	Junction	
N4-7.001	0.905	4.5	N4-1-8	6.522	6.322	0.000	Open Manhole	1050
N4-1.008	38.203	26.8	N4-1-9	4.964	3.815	0.924	Open Manhole	1050
N4-1.009	39.021	27.4	N4-1-10	3.108	2.392	0.491	Open Manhole	1050
N4-8.000	90.001	101.4	N4-8-1	14.453	12.228	2.000	Open Manhole	1050
N4-8.001	60.984	166.6	N4-8-2	13.284	11.862	1.197	Open Manhole	1050
N4-8.002	20.119	59.3	N4-8-3	13.071	11.523	1.323	Open Manhole	1050
N4-8.003	83.773	105.0	N4-8-4	12.186	10.725	1.236	Open Manhole	1050
N4-8.004	63.493	114.4	N4-8-5	12.233	10.170	1.838	Open Manhole	1050
N4-8.005	25.934	144.1	N4-8-6	11.726	9.990	1.511	Open Manhole	1050
N4-8.006	58.536	98.9	N4-8-7	10.636	9.398	1.013	Open Manhole	1050
N4-8.007	66.365	157.3	N4-8-8	10.587	8.976	1.386	Open Manhole	1050
N4-8.008	79.948	144.1	N4-8-9	9.857	8.421	1.211	Open Manhole	1050
N4-8.009	66.497	91.0	N4-8-10	9.491	7.690	1.576	Open Manhole	1050
N4-8.010	74.795	44.0	N4-8-11	7.152	5.989	0.938	Open Manhole	1050
N4-8.011	50.314	16.2	N4-8-12	4.041	2.880	0.936	Open Manhole	1050
N4-8.012	17.599	38.5	N4-8-13	3.257	2.423	0.609	Open Manhole	1050
N4-8.013	7.469	240.9	N4-1-10	3.108	2.392	0.491	Open Manhole	1050
N4-1.010	40.020	114.3	N4-1-11	2.776	2.042	0.359	Open Manhole	1050
N4-1.011	21.507	188.7	N4-	2.761	1.928	0.458	Open Manhole	0

Area Summary for Network 4-Lover's Lane Diversion

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.054	0.054	0.054
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.037	0.037	0.037
2.001	-	-	100	0.000	0.000	0.000
2.002	-	-	100	0.000	0.000	0.000
2.003	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.072	0.072	0.072
3.001	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.075	0.075	0.075
4.001	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.090	0.090	0.090
5.001	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.134	0.134	0.134
6.001	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.117	0.117	0.117
7.001	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.019	0.019	0.019
8.001	-	-	100	0.015	0.015	0.015
8.002	-	-	100	0.000	0.000	0.000
8.003	-	-	100	0.019	0.019	0.019
8.004	-	-	100	0.013	0.013	0.013
8.005	-	-	100	0.005	0.005	0.005
8.006	-	-	100	0.013	0.013	0.013
8.007	-	-	100	0.014	0.014	0.014
8.008	-	-	100	0.018	0.018	0.018
8.009	-	-	100	0.013	0.013	0.013
8.010	-	-	100	0.018	0.018	0.018
8.011	-	-	100	0.010	0.010	0.010
8.012	-	-	100	0.003	0.003	0.003
8.013	-	-	100	0.000	0.000	0.000
1.010	-	-	100	0.009	0.009	0.009
1.011	-	-	100	0.006	0.006	0.006
				Total	Total	Total
				0.754	0.754	0.754

Network Classifications for Network 4-Lover's Lane Diversion

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
N4-1.000	N4-1-0	200	0.000	0.430	Unclassified				Junction
N4-1.001	N4-1-1	200	0.000	0.376	Unclassified				Junction
N4-1.002	N4-1-2	225	0.910	2.310	Unclassified	1050	0	0.910	Unclassified
N4-2.000	N4-2-0	200	0.000	0.622	Unclassified				Junction
N4-2.001	N4-2-1	200	0.000	0.402	Unclassified				Junction
N4-2.002	N4-2-2	225	0.535	2.444	Unclassified	1050	0	0.535	Unclassified
N4-2.003	N4-2-3	225	2.104	2.733	Unclassified	1050	0	2.164	Unclassified
N4-1.003	N4-1-3	225	1.979	2.695	Unclassified	1050	0	2.104	Unclassified
N4-3.000	N4-3-0	200	0.000	0.000	Unclassified				Junction
N4-3.001	N4-3-1	200	0.000	0.000	Unclassified				Junction
N4-1.004	N4-1-4	225	1.623	2.503	Unclassified	1050	0	1.979	Unclassified
N4-4.000	N4-4-0	200	0.000	0.508	Unclassified				Junction
N4-4.001	N4-4-1	200	0.000	0.666	Unclassified				Junction
N4-1.005	N4-1-5	225	1.290	1.918	Unclassified	1050	0	1.623	Unclassified
N4-5.000	N4-5-0	200	0.000	0.427	Unclassified				Junction
N4-5.001	N4-5-1	200	0.000	0.394	Unclassified				Junction
N4-1.006	N4-1-6	225	1.034	1.830	Unclassified	1050	0	1.290	Unclassified
N4-6.000	N4-6-0	200	0.000	0.686	Unclassified				Junction
N4-6.001	N4-6-1	200	0.000	0.080	Unclassified				Junction
N4-1.007	N4-1-7	225	1.034	1.369	Unclassified	1050	0	1.034	Unclassified
N4-7.000	N4-7-0	600	0.000	0.431	Unclassified				Junction
N4-7.001	N4-7-1	600	0.000	0.000	Unclassified				Junction
N4-1.008	N4-1-8	225	0.924	1.059	Unclassified	1050	0	1.059	Unclassified
N4-1.009	N4-1-9	225	0.491	0.924	Unclassified	1050	0	0.924	Unclassified
N4-8.000	N4-8-0	225	1.000	2.000	Unclassified	1050	0	1.000	Unclassified
N4-8.001	N4-8-1	225	1.197	2.000	Unclassified	1050	0	2.000	Unclassified
N4-8.002	N4-8-2	225	1.197	1.323	Unclassified	1050	0	1.197	Unclassified
N4-8.003	N4-8-3	225	0.522	1.323	Unclassified	1050	0	1.323	Unclassified
N4-8.004	N4-8-4	225	1.236	1.838	Unclassified	1050	0	1.236	Unclassified
N4-8.005	N4-8-5	225	1.511	1.838	Unclassified	1050	0	1.838	Unclassified
N4-8.006	N4-8-6	225	1.013	1.511	Unclassified	1050	0	1.511	Unclassified
N4-8.007	N4-8-7	225	0.469	1.386	Unclassified	1050	0	1.013	Unclassified
N4-8.008	N4-8-8	225	1.211	2.159	Unclassified	1050	0	1.386	Unclassified
N4-8.009	N4-8-9	225	0.898	1.576	Unclassified	1050	0	1.211	Unclassified
N4-8.010	N4-8-10	225	0.938	1.924	Unclassified	1050	0	1.576	Unclassified
N4-8.011	N4-8-11	225	0.568	0.938	Unclassified	1050	0	0.938	Unclassified
N4-8.012	N4-8-12	225	0.609	0.936	Unclassified	1050	0	0.936	Unclassified
N4-8.013	N4-8-13	225	0.491	0.609	Unclassified	1050	0	0.609	Unclassified
N4-1.010	N4-1-10	375	0.341	0.359	Unclassified	1050	0	0.341	Unclassified
N4-1.011	N4-1-11	375	0.359	0.458	Unclassified	1050	0	0.359	Unclassified

Free Flowing Outfall Details for Network 4-Lover's Lane Diversion

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N4-1.011	N4-	2.761	1.928	0.000	0	0

Simulation Criteria for Network 4-Lover's Lane Diversion

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	26	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Storage Structures for Network 4-Lover's Lane Diversion

Swale Manhole: N4-1-1, DS/PN: N4-1.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	83.5
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	87.0
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	13.034	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Swale Manhole: N4-2-1, DS/PN: N4-2.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	84.2
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	86.7
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	13.182	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-3, DS/PN: N4-1.003

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	201.2
Invert Level (m)	11.367	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	85.1		

Filter Drain Manhole: N4-1-4, DS/PN: N4-1.004

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	200.6
Invert Level (m)	11.038	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	66.0		

Swale Manhole: N4-4-1, DS/PN: N4-4.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	57.7
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	39.3
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	12.481	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-5, DS/PN: N4-1.005

Infiltration Coefficient Base (m/hr)	0.02008	Trench Width (m)	0.5
Infiltration Coefficient Side (m/hr)	0.02008	Trench Length (m)	59.5
Safety Factor	2.0	Pipe Diameter (m)	0.225
Porosity	0.30	Pipe Depth above Invert (m)	0.000
Invert Level (m)	10.705	Number of Pipes	1

Filter Drain Manhole: N4-1-5, DS/PN: N4-1.005

Slope (1:X) 178.6 Cap Infiltration Depth (m) 1.000
Cap Volume Depth (m) 1.000

Swale Manhole: N4-5-1, DS/PN: N4-5.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	59.3
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	78.2
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	11.807	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-6, DS/PN: N4-1.006

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	177.9
Invert Level (m)	10.364	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	60.7		

Swale Manhole: N4-6-1, DS/PN: N4-6.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	80.9
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	69.6
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	10.727	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-7, DS/PN: N4-1.007

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	88.5
Invert Level (m)	9.428	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	82.8		

Swale Manhole: N4-7-1, DS/PN: N4-7.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	89.8
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	21.7
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	6.592	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-8, DS/PN: N4-1.008

Infiltration Coefficient Base (m/hr)	0.02008	Porosity	0.30
Infiltration Coefficient Side (m/hr)	0.02008	Invert Level (m)	5.238
Safety Factor	2.0	Trench Width (m)	0.5

Filter Drain Manhole: N4-1-8, DS/PN: N4-1.008

Trench Length (m)	90.9	Slope (1:X)	21.7
Pipe Diameter (m)	0.225	Cap Volume Depth (m)	1.000
Pipe Depth above Invert (m)	0.000	Cap Infiltration Depth (m)	1.000
Number of Pipes	1		

Filter Drain Manhole: N4-8-1, DS/PN: N4-8.001

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	101.4
Invert Level (m)	12.228	Cap Volume Depth (m)	2.225
Trench Width (m)	0.5	Cap Infiltration Depth (m)	2.225
Trench Length (m)	90.0		

Filter Drain Manhole: N4-8-3, DS/PN: N4-8.003

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	111.4
Invert Level (m)	11.534	Cap Volume Depth (m)	1.595
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.595
Trench Length (m)	77.3		

Filter Drain Manhole: N4-8-4, DS/PN: N4-8.004

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	109.7
Invert Level (m)	10.736	Cap Volume Depth (m)	1.450
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.450
Trench Length (m)	87.6		

Filter Drain Manhole: N4-8-5, DS/PN: N4-8.005

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	114.4
Invert Level (m)	10.181	Cap Volume Depth (m)	2.050
Trench Width (m)	0.5	Cap Infiltration Depth (m)	2.050
Trench Length (m)	63.5		

Filter Drain Manhole: N4-8-6, DS/PN: N4-8.006

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	144.1
Invert Level (m)	10.276	Cap Volume Depth (m)	1.451
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.451
Trench Length (m)	25.9		

Filter Drain Manhole: N4-8-7, DS/PN: N4-8.007

Infiltration Coefficient Base (m/hr)	0.02008	Invert Level (m)	9.409
Infiltration Coefficient Side (m/hr)	0.02008	Trench Width (m)	0.5
Safety Factor	2.0	Trench Length (m)	58.5
Porosity	0.30	Pipe Diameter (m)	0.225

Filter Drain Manhole: N4-8-7, DS/PN: N4-8.007

Pipe Depth above Invert (m)	0.000	Cap Volume Depth (m)	1.225
Number of Pipes	1	Cap Infiltration Depth (m)	1.225
Slope (1:X)	98.9		

Filter Drain Manhole: N4-8-8, DS/PN: N4-8.008

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	157.3
Invert Level (m)	8.987	Cap Volume Depth (m)	1.600
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.600
Trench Length (m)	66.4		

Filter Drain Manhole: N4-8-9, DS/PN: N4-8.009

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	144.1
Invert Level (m)	8.432	Cap Volume Depth (m)	1.425
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.425
Trench Length (m)	79.9		

Filter Drain Manhole: N4-8-10, DS/PN: N4-8.010

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	91.0
Invert Level (m)	7.701	Cap Volume Depth (m)	1.785
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.785
Trench Length (m)	66.5		

Filter Drain Manhole: N4-8-11, DS/PN: N4-8.011

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	44.0
Invert Level (m)	6.000	Cap Volume Depth (m)	1.125
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.125
Trench Length (m)	74.8		

Filter Drain Manhole: N4-8-12, DS/PN: N4-8.012

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	16.3
Invert Level (m)	2.891	Cap Volume Depth (m)	1.125
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.125
Trench Length (m)	50.7		

Filter Drain Manhole: N4-8-13, DS/PN: N4-8.013

Infiltration Coefficient Base (m/hr)	0.02008	Trench Width (m)	0.5
Infiltration Coefficient Side (m/hr)	0.02008	Trench Length (m)	17.5
Safety Factor	2.0	Pipe Diameter (m)	0.225
Porosity	0.30	Pipe Depth above Invert (m)	0.000
Invert Level (m)	2.434	Number of Pipes	1

Filter Drain Manhole: N4-8-13, DS/PN: N4-8.013

Slope (1:X)	38.3	Cap Infiltration Depth (m)	1.125
Cap Volume Depth (m)	1.125		

Filter Drain Manhole: N4-1-10, DS/PN: N4-1.010

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	27.1
Invert Level (m)	2.392	Cap Volume Depth (m)	0.716
Trench Width (m)	0.5	Cap Infiltration Depth (m)	0.716
Trench Length (m)	77.0		

Filter Drain Manhole: N4-1-11, DS/PN: N4-1.011

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.375
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	114.3
Invert Level (m)	2.042	Cap Volume Depth (m)	0.734
Trench Width (m)	0.8	Cap Infiltration Depth (m)	0.734
Trench Length (m)	40.0		

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4- Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 26 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	2	+0%					13.743	-0.153	0.000
N4-1.001	N4-1-1	30 Winter	2	+0%					12.946	-0.179	0.000
N4-1.002	N4-1-2	30 Winter	2	+0%					11.842	-0.173	0.000
N4-2.000	N4-2-0	30 Winter	2	+0%					13.889	-0.163	0.000
N4-2.001	N4-2-1	30 Winter	2	+0%					12.924	-0.180	0.000
N4-2.002	N4-2-2	30 Winter	2	+0%					12.182	-0.187	0.000
N4-2.003	N4-2-3	30 Winter	2	+0%	100/30 Summer				11.501	-0.187	0.000
N4-1.003	N4-1-3	30 Winter	2	+0%	100/15 Winter				11.443	-0.149	0.000
N4-3.000	N4-3-0	30 Winter	2	+0%					13.759	-0.137	0.000
N4-3.001	N4-3-1	30 Winter	2	+0%					13.266	-0.176	0.000
N4-1.004	N4-1-4	30 Winter	2	+0%	100/15 Summer				11.133	-0.130	0.000
N4-4.000	N4-4-0	30 Winter	2	+0%					13.296	-0.146	0.000
N4-4.001	N4-4-1	30 Winter	2	+0%					12.579	-0.174	0.000
N4-1.005	N4-1-5	30 Winter	2	+0%	30/15 Winter				10.821	-0.109	0.000
N4-5.000	N4-5-0	30 Winter	2	+0%					12.613	-0.140	0.000
N4-5.001	N4-5-1	30 Winter	2	+0%					11.907	-0.172	0.000
N4-1.006	N4-1-6	30 Winter	2	+0%	100/15 Summer				10.476	-0.113	0.000
N4-6.000	N4-6-0	30 Winter	2	+0%					11.947	-0.132	0.000
N4-6.001	N4-6-1	30 Winter	2	+0%					10.721	-0.166	0.000
N4-1.007	N4-1-7	30 Winter	2	+0%	100/15 Winter				9.518	-0.135	0.000
N4-7.000	N4-7-0	30 Winter	2	+0%					10.717	-0.170	0.000
N4-7.001	N4-7-1	30 Winter	2	+0%					6.542	-0.180	0.000
N4-1.008	N4-1-8	30 Winter	2	+0%	30/15 Winter	100/15 Summer			5.348	-0.115	0.000
N4-1.009	N4-1-9	30 Winter	2	+0%	30/15 Winter				3.925	-0.115	0.000
N4-8.000	N4-8-0	30 Winter	2	+0%					13.143	-0.198	0.000
N4-8.001	N4-8-1	15 Winter	2	+0%					12.273	-0.180	0.000
N4-8.002	N4-8-2	15 Winter	2	+0%					11.895	-0.192	0.000
N4-8.003	N4-8-3	15 Winter	2	+0%					11.574	-0.174	0.000
N4-8.004	N4-8-4	15 Winter	2	+0%					10.782	-0.168	0.000
N4-8.005	N4-8-5	15 Winter	2	+0%					10.234	-0.161	0.000
N4-8.006	N4-8-6	15 Winter	2	+0%					10.052	-0.163	0.000
N4-8.007	N4-8-7	15 Winter	2	+0%					9.473	-0.150	0.000
N4-8.008	N4-8-8	15 Winter	2	+0%					9.053	-0.148	0.000

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.04		4.3	FLOOD RISK*	
N4-1.001	N4-1-1	0.01		4.3	FLOOD RISK*	
N4-1.002	N4-1-2	0.12		4.2	OK	
N4-2.000	N4-2-0	0.02		3.0	FLOOD RISK*	
N4-2.001	N4-2-1	0.01		3.0	FLOOD RISK*	
N4-2.002	N4-2-2	0.07		2.9	OK	
N4-2.003	N4-2-3	0.07		2.9	OK	
N4-1.003	N4-1-3	0.25		7.0	OK	
N4-3.000	N4-3-0	0.07		5.6	FLOOD RISK*	
N4-3.001	N4-3-1	0.02		5.6	FLOOD RISK*	
N4-1.004	N4-1-4	0.37		12.2	OK	
N4-4.000	N4-4-0	0.05		5.9	FLOOD RISK*	
N4-4.001	N4-4-1	0.02		5.9	FLOOD RISK*	
N4-1.005	N4-1-5	0.52		17.3	OK	
N4-5.000	N4-5-0	0.07		7.0	FLOOD RISK*	
N4-5.001	N4-5-1	0.02		7.0	FLOOD RISK*	
N4-1.006	N4-1-6	0.49		23.3	OK	
N4-6.000	N4-6-0	0.08		10.3	FLOOD RISK*	
N4-6.001	N4-6-1	0.03		10.3	FLOOD RISK*	
N4-1.007	N4-1-7	0.34		32.6	OK	
N4-7.000	N4-7-0	0.03		9.4	FLOOD RISK*	
N4-7.001	N4-7-1	0.02		9.4	FLOOD RISK*	
N4-1.008	N4-1-8	0.48		40.6	OK	7
N4-1.009	N4-1-9	0.48		40.6	OK	
N4-8.000	N4-8-0	0.03		1.5	OK	
N4-8.001	N4-8-1	0.08		2.9	OK	
N4-8.002	N4-8-2	0.05		2.9	OK	
N4-8.003	N4-8-3	0.11		4.8	OK	
N4-8.004	N4-8-4	0.14		6.0	OK	
N4-8.005	N4-8-5	0.18		6.4	OK	
N4-8.006	N4-8-6	0.17		7.4	OK	
N4-8.007	N4-8-7	0.23		8.3	OK	
N4-8.008	N4-8-8	0.25		9.2	OK	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	30 Winter	2	+0%					8.491	-0.155	0.000	0.21
N4-8.010	N4-8-10	30 Winter	2	+0%					7.750	-0.165	0.000	0.16
N4-8.011	N4-8-11	30 Winter	2	+0%					6.037	-0.177	0.000	0.10
N4-8.012	N4-8-12	30 Winter	2	+0%	100/15 Summer				2.942	-0.163	0.000	0.17
N4-8.013	N4-8-13	30 Winter	2	+0%	5/30 Winter				2.621	-0.027	0.000	0.43
N4-1.010	N4-1-10	30 Winter	2	+0%	30/15 Winter				2.610	-0.157	0.000	0.64
N4-1.011	N4-1-11	30 Winter	2	+0%	30/15 Summer				2.313	-0.104	0.000	0.87

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		9.8	OK	
N4-8.010	N4-8-10		10.8	OK	
N4-8.011	N4-8-11		11.4	OK	
N4-8.012	N4-8-12		11.6	OK	
N4-8.013	N4-8-13		11.3	OK	
N4-1.010	N4-1-10		98.2	OK	
N4-1.011	N4-1-11		98.0	OK	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4- Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 26 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	5	+0%					13.750	-0.146	0.000
N4-1.001	N4-1-1	30 Winter	5	+0%					12.949	-0.176	0.000
N4-1.002	N4-1-2	30 Winter	5	+0%					11.851	-0.164	0.000
N4-2.000	N4-2-0	30 Winter	5	+0%					13.895	-0.157	0.000
N4-2.001	N4-2-1	30 Winter	5	+0%					12.927	-0.177	0.000
N4-2.002	N4-2-2	30 Winter	5	+0%					12.190	-0.179	0.000
N4-2.003	N4-2-3	30 Winter	5	+0%	100/30 Summer				11.509	-0.179	0.000
N4-1.003	N4-1-3	30 Winter	5	+0%	100/15 Winter				11.457	-0.135	0.000
N4-3.000	N4-3-0	30 Winter	5	+0%					13.769	-0.127	0.000
N4-3.001	N4-3-1	30 Winter	5	+0%					13.271	-0.171	0.000
N4-1.004	N4-1-4	30 Winter	5	+0%	100/15 Summer				11.151	-0.112	0.000
N4-4.000	N4-4-0	30 Winter	5	+0%					13.305	-0.137	0.000
N4-4.001	N4-4-1	30 Winter	5	+0%					12.584	-0.169	0.000
N4-1.005	N4-1-5	30 Winter	5	+0%	30/15 Winter				10.846	-0.084	0.000
N4-5.000	N4-5-0	30 Winter	5	+0%					12.622	-0.131	0.000
N4-5.001	N4-5-1	30 Winter	5	+0%					11.912	-0.167	0.000
N4-1.006	N4-1-6	30 Winter	5	+0%	100/15 Summer				10.499	-0.090	0.000
N4-6.000	N4-6-0	30 Winter	5	+0%					11.958	-0.121	0.000
N4-6.001	N4-6-1	30 Winter	5	+0%					10.728	-0.159	0.000
N4-1.007	N4-1-7	30 Winter	5	+0%	100/15 Winter				9.535	-0.118	0.000
N4-7.000	N4-7-0	30 Winter	5	+0%					10.723	-0.164	0.000
N4-7.001	N4-7-1	30 Winter	5	+0%					6.545	-0.177	0.000
N4-1.008	N4-1-8	30 Winter	5	+0%	30/15 Winter	100/15 Summer			5.371	-0.092	0.000
N4-1.009	N4-1-9	30 Winter	5	+0%	30/15 Winter				3.949	-0.091	0.000
N4-8.000	N4-8-0	30 Winter	5	+0%					13.147	-0.194	0.000
N4-8.001	N4-8-1	15 Winter	5	+0%					12.280	-0.173	0.000
N4-8.002	N4-8-2	15 Winter	5	+0%					11.901	-0.186	0.000
N4-8.003	N4-8-3	15 Winter	5	+0%					11.582	-0.166	0.000
N4-8.004	N4-8-4	15 Winter	5	+0%					10.793	-0.157	0.000
N4-8.005	N4-8-5	15 Winter	5	+0%					10.245	-0.150	0.000
N4-8.006	N4-8-6	15 Winter	5	+0%					10.063	-0.152	0.000
N4-8.007	N4-8-7	15 Winter	5	+0%					9.487	-0.136	0.000
N4-8.008	N4-8-8	15 Winter	5	+0%					9.068	-0.133	0.000

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.05		5.8	FLOOD RISK*	
N4-1.001	N4-1-1	0.02		5.8	FLOOD RISK*	
N4-1.002	N4-1-2	0.17		5.7	OK	
N4-2.000	N4-2-0	0.03		4.0	FLOOD RISK*	
N4-2.001	N4-2-1	0.01		4.0	FLOOD RISK*	
N4-2.002	N4-2-2	0.09		4.0	OK	
N4-2.003	N4-2-3	0.09		4.0	OK	
N4-1.003	N4-1-3	0.33		9.4	OK	
N4-3.000	N4-3-0	0.10		7.6	FLOOD RISK*	
N4-3.001	N4-3-1	0.02		7.6	FLOOD RISK*	
N4-1.004	N4-1-4	0.50		16.5	OK	
N4-4.000	N4-4-0	0.07		8.0	FLOOD RISK*	
N4-4.001	N4-4-1	0.03		8.0	FLOOD RISK*	
N4-1.005	N4-1-5	0.70		23.4	OK	
N4-5.000	N4-5-0	0.09		9.6	FLOOD RISK*	
N4-5.001	N4-5-1	0.03		9.6	FLOOD RISK*	
N4-1.006	N4-1-6	0.66		31.5	OK	
N4-6.000	N4-6-0	0.12		14.1	FLOOD RISK*	
N4-6.001	N4-6-1	0.04		14.1	FLOOD RISK*	
N4-1.007	N4-1-7	0.46		44.3	OK	
N4-7.000	N4-7-0	0.04		12.7	FLOOD RISK*	
N4-7.001	N4-7-1	0.03		12.7	FLOOD RISK*	
N4-1.008	N4-1-8	0.65		55.2	OK	7
N4-1.009	N4-1-9	0.66		55.1	OK	
N4-8.000	N4-8-0	0.05		2.1	OK	
N4-8.001	N4-8-1	0.11		4.0	OK	
N4-8.002	N4-8-2	0.07		3.9	OK	
N4-8.003	N4-8-3	0.15		6.5	OK	
N4-8.004	N4-8-4	0.20		8.1	OK	
N4-8.005	N4-8-5	0.24		8.7	OK	
N4-8.006	N4-8-6	0.23		10.1	OK	
N4-8.007	N4-8-7	0.32		11.3	OK	
N4-8.008	N4-8-8	0.34		12.5	OK	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	15 Winter	5	+0%					8.503	-0.143	0.000	0.28
N4-8.010	N4-8-10	30 Winter	5	+0%					7.761	-0.154	0.000	0.22
N4-8.011	N4-8-11	30 Winter	5	+0%					6.045	-0.169	0.000	0.14
N4-8.012	N4-8-12	30 Winter	5	+0%	100/15 Summer				2.953	-0.152	0.000	0.23
N4-8.013	N4-8-13	30 Winter	5	+0%	5/30 Winter				2.652	0.004	0.000	0.59
N4-1.010	N4-1-10	30 Winter	5	+0%	30/15 Winter				2.637	-0.130	0.000	0.76
N4-1.011	N4-1-11	30 Winter	5	+0%	30/15 Summer				2.372	-0.045	0.000	1.00

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		13.3	OK	
N4-8.010	N4-8-10		14.7	OK	
N4-8.011	N4-8-11		15.5	OK	
N4-8.012	N4-8-12		15.8	OK	
N4-8.013	N4-8-13		15.6	SURCHARGED	
N4-1.010	N4-1-10		116.5	OK	
N4-1.011	N4-1-11		112.7	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000   Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0   MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0   Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500   Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0   Number of Offline Controls 0   Number of Time/Area Diagrams 0
Number of Online Controls 0   Number of Storage Structures 26   Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH   Data Type Point
FEH Rainfall Version 2013   Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538   Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	30	+0%					13.766	-0.130	0.000
N4-1.001	N4-1-1	30 Winter	30	+0%					12.957	-0.168	0.000
N4-1.002	N4-1-2	30 Winter	30	+0%					11.871	-0.144	0.000
N4-2.000	N4-2-0	30 Winter	30	+0%					13.908	-0.144	0.000
N4-2.001	N4-2-1	30 Winter	30	+0%					12.934	-0.170	0.000
N4-2.002	N4-2-2	30 Winter	30	+0%					12.202	-0.167	0.000
N4-2.003	N4-2-3	30 Winter	30	+0%	100/30 Summer				11.521	-0.167	0.000
N4-1.003	N4-1-3	30 Winter	30	+0%	100/15 Winter				11.489	-0.103	0.000
N4-3.000	N4-3-0	30 Winter	30	+0%					13.789	-0.107	0.000
N4-3.001	N4-3-1	30 Winter	30	+0%					13.281	-0.161	0.000
N4-1.004	N4-1-4	30 Winter	30	+0%	100/15 Summer				11.196	-0.067	0.000
N4-4.000	N4-4-0	30 Winter	30	+0%					13.323	-0.119	0.000
N4-4.001	N4-4-1	30 Winter	30	+0%					12.594	-0.159	0.000
N4-1.005	N4-1-5	30 Winter	30	+0%	30/15 Winter				10.981	0.051	0.000
N4-5.000	N4-5-0	30 Winter	30	+0%					12.641	-0.112	0.000
N4-5.001	N4-5-1	30 Winter	30	+0%					11.923	-0.156	0.000
N4-1.006	N4-1-6	30 Winter	30	+0%	100/15 Summer				10.568	-0.021	0.000
N4-6.000	N4-6-0	30 Winter	30	+0%					11.979	-0.100	0.000
N4-6.001	N4-6-1	30 Winter	30	+0%					10.740	-0.147	0.000
N4-1.007	N4-1-7	30 Winter	30	+0%	100/15 Winter				9.571	-0.082	0.000
N4-7.000	N4-7-0	30 Winter	30	+0%					10.736	-0.151	0.000
N4-7.001	N4-7-1	30 Winter	30	+0%					6.553	-0.169	0.000
N4-1.008	N4-1-8	30 Winter	30	+0%	30/15 Winter	100/15 Summer			5.768	0.305	0.000
N4-1.009	N4-1-9	30 Winter	30	+0%	30/15 Winter				4.314	0.274	0.000
N4-8.000	N4-8-0	30 Winter	30	+0%					13.158	-0.183	0.000
N4-8.001	N4-8-1	15 Winter	30	+0%					12.300	-0.153	0.000
N4-8.002	N4-8-2	15 Winter	30	+0%					11.916	-0.171	0.000
N4-8.003	N4-8-3	15 Winter	30	+0%					11.608	-0.140	0.000
N4-8.004	N4-8-4	15 Winter	30	+0%					10.822	-0.128	0.000
N4-8.005	N4-8-5	15 Winter	30	+0%					10.276	-0.119	0.000
N4-8.006	N4-8-6	15 Winter	30	+0%					10.092	-0.123	0.000
N4-8.007	N4-8-7	15 Winter	30	+0%					9.524	-0.099	0.000
N4-8.008	N4-8-8	15 Winter	30	+0%					9.104	-0.097	0.000

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.09		9.7	FLOOD RISK*	
N4-1.001	N4-1-1	0.03		9.7	FLOOD RISK*	
N4-1.002	N4-1-2	0.28		9.6	OK	
N4-2.000	N4-2-0	0.06		6.7	FLOOD RISK*	
N4-2.001	N4-2-1	0.02		6.7	FLOOD RISK*	
N4-2.002	N4-2-2	0.15		6.6	OK	
N4-2.003	N4-2-3	0.15		6.6	OK	
N4-1.003	N4-1-3	0.56		15.8	OK	
N4-3.000	N4-3-0	0.17		12.8	FLOOD RISK*	
N4-3.001	N4-3-1	0.04		12.8	FLOOD RISK*	
N4-1.004	N4-1-4	0.83		27.5	OK	
N4-4.000	N4-4-0	0.12		13.5	FLOOD RISK*	
N4-4.001	N4-4-1	0.04		13.5	FLOOD RISK*	
N4-1.005	N4-1-5	1.08		36.0	SURCHARGED	
N4-5.000	N4-5-0	0.15		16.3	FLOOD RISK*	
N4-5.001	N4-5-1	0.05		16.2	FLOOD RISK*	
N4-1.006	N4-1-6	1.00		47.6	OK	
N4-6.000	N4-6-0	0.20		23.9	FLOOD RISK*	
N4-6.001	N4-6-1	0.08		23.9	FLOOD RISK*	
N4-1.007	N4-1-7	0.73		70.1	OK	
N4-7.000	N4-7-0	0.06		21.2	FLOOD RISK*	
N4-7.001	N4-7-1	0.05		21.2	FLOOD RISK*	
N4-1.008	N4-1-8	1.01		85.6	SURCHARGED	7
N4-1.009	N4-1-9	1.02		85.4	SURCHARGED	
N4-8.000	N4-8-0	0.08		3.5	OK	
N4-8.001	N4-8-1	0.21		7.1	OK	
N4-8.002	N4-8-2	0.13		7.1	OK	
N4-8.003	N4-8-3	0.28		12.2	OK	
N4-8.004	N4-8-4	0.36		15.2	OK	
N4-8.005	N4-8-5	0.45		16.1	OK	
N4-8.006	N4-8-6	0.41		18.4	OK	
N4-8.007	N4-8-7	0.57		20.2	OK	
N4-8.008	N4-8-8	0.59		22.0	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	15 Winter	30	+0%					8.533	-0.113	0.000	0.49
N4-8.010	N4-8-10	30 Winter	30	+0%					7.785	-0.130	0.000	0.37
N4-8.011	N4-8-11	30 Winter	30	+0%					6.064	-0.150	0.000	0.24
N4-8.012	N4-8-12	30 Winter	30	+0%	100/15 Summer				2.978	-0.127	0.000	0.40
N4-8.013	N4-8-13	30 Winter	30	+0%	5/30 Winter				2.880	0.232	0.000	0.96
N4-1.010	N4-1-10	30 Winter	30	+0%	30/15 Winter				2.841	0.074	0.000	1.00
N4-1.011	N4-1-11	30 Winter	30	+0%	30/15 Summer				2.493	0.076	0.000	1.35

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		22.9	OK	
N4-8.010	N4-8-10		25.1	OK	
N4-8.011	N4-8-11		26.4	OK	
N4-8.012	N4-8-12		26.8	OK	
N4-8.013	N4-8-13		25.5	SURCHARGED	
N4-1.010	N4-1-10		152.8	FLOOD RISK	
N4-1.011	N4-1-11		152.5	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 26 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	100	+40%					13.788	-0.108	0.000
N4-1.001	N4-1-1	30 Winter	100	+40%					12.969	-0.156	0.000
N4-1.002	N4-1-2	30 Winter	100	+40%					11.904	-0.111	0.000
N4-2.000	N4-2-0	30 Winter	100	+40%					13.926	-0.126	0.000
N4-2.001	N4-2-1	30 Winter	100	+40%					12.946	-0.158	0.000
N4-2.002	N4-2-2	30 Winter	100	+40%					12.224	-0.145	0.000
N4-2.003	N4-2-3	30 Winter	100	+40%	100/30 Summer				11.828	0.140	0.000
N4-1.003	N4-1-3	30 Winter	100	+40%	100/15 Winter				11.821	0.229	0.000
N4-3.000	N4-3-0	30 Winter	100	+40%					13.818	-0.078	0.000
N4-3.001	N4-3-1	30 Winter	100	+40%					13.293	-0.149	0.000
N4-1.004	N4-1-4	30 Winter	100	+40%	100/15 Summer				11.745	0.482	0.000
N4-4.000	N4-4-0	30 Winter	100	+40%					13.348	-0.094	0.000
N4-4.001	N4-4-1	30 Winter	100	+40%					12.608	-0.145	0.000
N4-1.005	N4-1-5	30 Winter	100	+40%	30/15 Winter				11.566	0.636	0.000
N4-5.000	N4-5-0	30 Winter	100	+40%					12.669	-0.084	0.000
N4-5.001	N4-5-1	30 Winter	100	+40%					11.939	-0.140	0.000
N4-1.006	N4-1-6	30 Winter	100	+40%	100/15 Summer				11.126	0.537	0.000
N4-6.000	N4-6-0	30 Winter	100	+40%					12.009	-0.070	0.000
N4-6.001	N4-6-1	30 Winter	100	+40%					10.757	-0.130	0.000
N4-1.007	N4-1-7	30 Winter	100	+40%	100/15 Winter				9.903	0.250	0.000
N4-7.000	N4-7-0	30 Winter	100	+40%					10.755	-0.132	0.000
N4-7.001	N4-7-1	30 Winter	100	+40%					6.566	-0.156	0.000
N4-1.008	N4-1-8	30 Winter	100	+40%	30/15 Winter	100/15 Summer			6.539	1.076	17.172
N4-1.009	N4-1-9	30 Winter	100	+40%	30/15 Winter				4.825	0.785	0.000
N4-8.000	N4-8-0	30 Winter	100	+40%					13.172	-0.169	0.000
N4-8.001	N4-8-1	15 Winter	100	+40%					12.327	-0.126	0.000
N4-8.002	N4-8-2	15 Winter	100	+40%					11.936	-0.151	0.000
N4-8.003	N4-8-3	15 Winter	100	+40%					11.642	-0.106	0.000
N4-8.004	N4-8-4	15 Winter	100	+40%					10.862	-0.088	0.000
N4-8.005	N4-8-5	15 Winter	100	+40%					10.324	-0.071	0.000
N4-8.006	N4-8-6	15 Winter	100	+40%					10.135	-0.080	0.000
N4-8.007	N4-8-7	15 Winter	100	+40%					9.592	-0.031	0.000
N4-8.008	N4-8-8	30 Winter	100	+40%					9.181	-0.020	0.000

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.16		17.7	FLOOD RISK*	
N4-1.001	N4-1-1	0.06		17.8	FLOOD RISK*	
N4-1.002	N4-1-2	0.51		17.6	OK	
N4-2.000	N4-2-0	0.10		12.2	FLOOD RISK*	
N4-2.001	N4-2-1	0.04		12.2	FLOOD RISK*	
N4-2.002	N4-2-2	0.28		12.1	OK	
N4-2.003	N4-2-3	0.26		11.2	SURCHARGED	
N4-1.003	N4-1-3	0.79		22.5	SURCHARGED	
N4-3.000	N4-3-0	0.31		23.5	FLOOD RISK*	
N4-3.001	N4-3-1	0.07		23.5	FLOOD RISK*	
N4-1.004	N4-1-4	0.92		30.6	SURCHARGED	
N4-4.000	N4-4-0	0.22		24.7	FLOOD RISK*	
N4-4.001	N4-4-1	0.08		24.7	FLOOD RISK*	
N4-1.005	N4-1-5	1.20		40.0	SURCHARGED	
N4-5.000	N4-5-0	0.27		29.6	FLOOD RISK*	
N4-5.001	N4-5-1	0.09		29.6	FLOOD RISK*	
N4-1.006	N4-1-6	1.18		56.2	SURCHARGED	
N4-6.000	N4-6-0	0.36		43.7	FLOOD RISK*	
N4-6.001	N4-6-1	0.14		43.7	FLOOD RISK*	
N4-1.007	N4-1-7	0.90		86.5	SURCHARGED	
N4-7.000	N4-7-0	0.12		38.7	FLOOD RISK*	
N4-7.001	N4-7-1	0.09		38.6	FLOOD RISK*	
N4-1.008	N4-1-8	1.14		96.1	FLOOD	7
N4-1.009	N4-1-9	1.15		96.2	FLOOD RISK	
N4-8.000	N4-8-0	0.14		6.3	OK	
N4-8.001	N4-8-1	0.37		12.7	OK	
N4-8.002	N4-8-2	0.23		12.7	OK	
N4-8.003	N4-8-3	0.50		22.0	OK	
N4-8.004	N4-8-4	0.65		27.0	OK	
N4-8.005	N4-8-5	0.80		28.6	OK	
N4-8.006	N4-8-6	0.72		32.2	OK	
N4-8.007	N4-8-7	0.98		34.8	OK	
N4-8.008	N4-8-8	1.00		37.2	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.
N4-8.009	N4-8-9	30 Winter	100	+40%					8.582	-0.064	0.000	0.85
N4-8.010	N4-8-10	30 Winter	100	+40%					7.823	-0.092	0.000	0.65
N4-8.011	N4-8-11	30 Winter	100	+40%					6.091	-0.123	0.000	0.42
N4-8.012	N4-8-12	30 Winter	100	+40%	100/15 Summer				3.356	0.251	0.000	0.66
N4-8.013	N4-8-13	30 Winter	100	+40%	5/30 Winter				3.175	0.527	0.000	1.62
N4-1.010	N4-1-10	30 Winter	100	+40%	30/15 Winter				3.085	0.318	0.000	1.19
N4-1.011	N4-1-11	30 Winter	100	+40%	30/15 Summer				2.586	0.169	0.000	1.63

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		39.7	OK	
N4-8.010	N4-8-10		43.7	OK	
N4-8.011	N4-8-11		46.3	OK	
N4-8.012	N4-8-12		44.6	SURCHARGED	
N4-8.013	N4-8-13		42.8	FLOOD RISK	
N4-1.010	N4-1-10		183.3	FLOOD RISK	
N4-1.011	N4-1-11		183.5	FLOOD RISK	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 4-Lover's Lane Diversion

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 4-Lover's Lane Diversion

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.045	4-8	0.151	8-12	0.186	12-16	0.174	16-20	0.133	20-24	0.053	24-28	0.013

Total Area Contributing (ha) = 0.754

Total Pipe Volume (m³) = 170.486

Network Design Table for Network 4-Lover's Lane Diversion

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N4-1.000	67.839	0.771	88.0	0.054	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.001	0.830	0.200	4.2	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.002	69.691	0.423	164.8	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-2.000	68.250	0.948	72.0	0.037	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-2.001	1.353	0.200	6.8	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-2.002	70.504	0.681	103.5	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-2.003	9.322	0.096	97.1	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)
N4-1.000	31.64	17.10	13.696	0.054	0.0	0.0	0.0	0.54	107.6	4.6
N4-1.001	31.63	17.11	12.925	0.054	0.0	0.0	0.0	2.48	495.2	4.6
N4-1.002	30.22	18.41	11.790	0.054	0.0	0.0	0.0	0.89	35.5	4.6
N4-2.000	31.86	16.91	13.852	0.037	0.0	0.0	0.0	0.59	118.9	3.2
N4-2.001	31.84	16.92	12.904	0.037	0.0	0.0	0.0	1.94	387.9	3.2
N4-2.002	30.68	17.97	12.144	0.037	0.0	0.0	0.0	1.13	44.9	3.2
N4-2.003	30.56	18.08	11.463	0.037	0.0	0.0	0.0	1.33	52.8	3.2

Network Design Table for Network 4-Lover's Lane Diversion

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N4-1.003	81.346	0.329	247.3	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-3.000	79.707	0.454	175.6	0.072	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-3.001	0.893	0.200	4.5	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.004	59.534	0.333	178.8	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-4.000	57.652	0.689	83.7	0.075	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-4.001	1.074	0.200	5.4	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.005	60.770	0.341	178.2	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-5.000	59.009	0.674	87.6	0.090	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-5.001	0.976	0.200	4.9	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.006	82.856	0.936	88.5	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-6.000	81.384	1.192	68.3	0.134	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-6.001	0.941	0.200	4.7	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.007	90.852	4.190	21.7	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-7.000	89.520	4.165	21.5	0.117	15.00	0.0		0.045	4 \=/	600	1:4 Swale	
N4-7.001	0.905	0.200	4.5	0.000	0.00	0.0		0.045	4 \=/	600	1:4 Swale	
N4-1.008	38.203	1.423	26.8	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-1.009	39.021	1.423	27.4	0.000	0.00	0.0	1.500		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)
N4-1.003	28.41	20.27	11.367	0.091	0.0	0.0	0.0	0.73	29.0	7.0
N4-3.000	30.13	18.49	13.696	0.072	0.0	0.0	0.0	0.38	76.1	5.9
N4-3.001	30.13	18.50	13.242	0.072	0.0	0.0	0.0	2.39	477.4	5.9
N4-1.004	27.40	21.43	11.038	0.163	0.0	0.0	0.0	0.86	34.1	12.1
N4-4.000	32.06	16.74	13.242	0.075	0.0	0.0	0.0	0.55	110.3	6.5
N4-4.001	32.05	16.75	12.553	0.075	0.0	0.0	0.0	2.18	435.3	6.5
N4-1.005	26.46	22.61	10.705	0.238	0.0	0.0	0.0	0.86	34.1	17.1
N4-5.000	31.96	16.82	12.553	0.090	0.0	0.0	0.0	0.54	107.8	7.8
N4-5.001	31.95	16.83	11.879	0.090	0.0	0.0	0.0	2.28	456.7	7.8
N4-1.006	25.62	23.74	10.364	0.328	0.0	0.0	0.0	1.22	48.5	22.8
N4-6.000	31.50	17.22	11.879	0.134	0.0	0.0	0.0	0.61	122.1	11.4
N4-6.001	31.50	17.23	10.687	0.134	0.0	0.0	0.0	2.32	465.0	11.4
N4-1.007	25.19	24.35	9.428	0.462	0.0	0.0	0.0	2.47	98.3	31.5
N4-7.000	32.65	16.25	10.687	0.117	0.0	0.0	0.0	1.20	334.6	10.3
N4-7.001	32.64	16.25	6.522	0.117	0.0	0.0	0.0	2.61	729.4	10.3
N4-1.008	24.99	24.64	5.238	0.579	0.0	0.0	0.0	2.22	88.3	39.2
N4-1.009	24.79	24.93	3.815	0.579	0.0	0.0	0.0	2.20	87.3	39.2

Network Design Table for Network 4-Lover's Lane Diversion

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N4-8.000	90.001	0.888	101.4	0.019	15.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.001	60.984	0.366	166.6	0.015	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.002	20.119	0.339	59.3	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.003	83.773	0.798	105.0	0.019	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.004	63.493	0.555	114.4	0.013	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.005	25.934	0.180	144.1	0.005	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.006	58.536	0.592	98.9	0.013	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.007	66.365	0.422	157.3	0.014	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.008	79.948	0.555	144.1	0.018	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.009	66.497	0.731	91.0	0.013	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.010	74.795	1.701	44.0	0.018	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.011	50.314	3.109	16.2	0.010	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.012	17.599	0.457	38.5	0.003	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.013	7.469	0.031	240.9	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
N4-1.010	40.020	0.350	114.3	0.009	0.00	47.7	1.500		o	375	Pipe/Conduit	
N4-1.011	21.507	0.114	188.7	0.006	0.00	0.0	1.500		o	375	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)
N4-8.000	32.57	16.32	13.116	0.019	0.0	0.0	0.0	1.14	45.3	1.7
N4-8.001	31.24	17.46	12.228	0.034	0.0	0.0	0.0	0.89	35.3	2.9
N4-8.002	30.99	17.68	11.862	0.034	0.0	0.0	0.0	1.49	59.3	2.9
N4-8.003	29.68	18.93	11.523	0.053	0.0	0.0	0.0	1.12	44.5	4.3
N4-8.004	28.73	19.92	10.725	0.066	0.0	0.0	0.0	1.07	42.7	5.1
N4-8.005	28.32	20.37	10.170	0.071	0.0	0.0	0.0	0.96	38.0	5.4
N4-8.006	27.58	21.22	9.990	0.084	0.0	0.0	0.0	1.15	45.9	6.3
N4-8.007	26.60	22.42	9.398	0.098	0.0	0.0	0.0	0.91	36.4	7.1
N4-8.008	25.56	23.82	8.976	0.116	0.0	0.0	0.0	0.96	38.0	8.0
N4-8.009	24.92	24.74	8.421	0.129	0.0	0.0	0.0	1.20	47.9	8.7
N4-8.010	24.45	25.46	7.690	0.147	0.0	0.0	0.0	1.73	68.9	9.7
N4-8.011	24.26	25.75	5.989	0.157	0.0	0.0	0.0	2.86	113.8	10.3
N4-8.012	24.16	25.91	2.880	0.160	0.0	0.0	0.0	1.85	73.7	10.5
N4-8.013	24.07	26.06	2.423	0.160	0.0	0.0	0.0	0.84	33.3	10.5
N4-1.010	23.80	26.50	2.392	0.748	47.7	0.0	0.0	1.50	165.6	95.9
N4-1.011	23.61	26.81	2.042	0.754	47.7	0.0	0.0	1.17	128.8	95.9

Manhole Schedules for Network 4-Lover's Lane Diversion

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)
N4-1-0	13.896	0.200	Junction		N4-1.000	13.696	200				
N4-1-1	13.125	0.200	Junction		N4-1.001	12.925	200	N4-1.000	12.925	200	
N4-1-2	12.925	1.135	Open Manhole	1050	N4-1.002	11.790	225	N4-1.001	12.725	200	910
N4-2-0	14.052	0.200	Junction		N4-2.000	13.852	200				
N4-2-1	13.104	0.200	Junction		N4-2.001	12.904	200	N4-2.000	12.904	200	
N4-2-2	12.904	0.760	Open Manhole	1050	N4-2.002	12.144	225	N4-2.001	12.704	200	535
N4-2-3	13.852	2.389	Open Manhole	1050	N4-2.003	11.463	225	N4-2.002	11.463	225	
N4-1-3	13.696	2.329	Open Manhole	1050	N4-1.003	11.367	225	N4-1.002	11.367	225	
								N4-2.003	11.367	225	
N4-3-0	13.896	0.200	Junction		N4-3.000	13.696	200				
N4-3-1	13.442	0.200	Junction		N4-3.001	13.242	200	N4-3.000	13.242	200	
N4-1-4	13.242	2.204	Open Manhole	1050	N4-1.004	11.038	225	N4-1.003	11.038	225	
								N4-3.001	13.042	200	1979
N4-4-0	13.442	0.200	Junction		N4-4.000	13.242	200				
N4-4-1	12.753	0.200	Junction		N4-4.001	12.553	200	N4-4.000	12.553	200	
N4-1-5	12.553	1.848	Open Manhole	1050	N4-1.005	10.705	225	N4-1.004	10.705	225	
								N4-4.001	12.353	200	1623
N4-5-0	12.753	0.200	Junction		N4-5.000	12.553	200				
N4-5-1	12.079	0.200	Junction		N4-5.001	11.879	200	N4-5.000	11.879	200	
N4-1-6	11.879	1.515	Open Manhole	1050	N4-1.006	10.364	225	N4-1.005	10.364	225	
								N4-5.001	11.679	200	1290
N4-6-0	12.079	0.200	Junction		N4-6.000	11.879	200				
N4-6-1	10.887	0.200	Junction		N4-6.001	10.687	200	N4-6.000	10.687	200	
N4-1-7	10.687	1.259	Open Manhole	1050	N4-1.007	9.428	225	N4-1.006	9.428	225	
								N4-6.001	10.487	200	1034
N4-7-0	10.887	0.200	Junction		N4-7.000	10.687	600				
N4-7-1	6.722	0.200	Junction		N4-7.001	6.522	600	N4-7.000	6.522	600	
N4-1-8	6.522	1.284	Open Manhole	1050	N4-1.008	5.238	225	N4-1.007	5.238	225	
								N4-7.001	6.322	600	1059
N4-1-9	4.964	1.149	Open Manhole	1050	N4-1.009	3.815	225	N4-1.008	3.815	225	
N4-8-0	14.341	1.225	Open Manhole	1050	N4-8.000	13.116	225				
N4-8-1	14.453	2.225	Open Manhole	1050	N4-8.001	12.228	225	N4-8.000	12.228	225	
N4-8-2	13.284	1.422	Open Manhole	1050	N4-8.002	11.862	225	N4-8.001	11.862	225	
N4-8-3	13.071	1.548	Open Manhole	1050	N4-8.003	11.523	225	N4-8.002	11.523	225	
N4-8-4	12.186	1.461	Open Manhole	1050	N4-8.004	10.725	225	N4-8.003	10.725	225	
N4-8-5	12.233	2.063	Open Manhole	1050	N4-8.005	10.170	225	N4-8.004	10.170	225	
N4-8-6	11.726	1.736	Open Manhole	1050	N4-8.006	9.990	225	N4-8.005	9.990	225	
N4-8-7	10.636	1.238	Open Manhole	1050	N4-8.007	9.398	225	N4-8.006	9.398	225	
N4-8-8	10.587	1.611	Open Manhole	1050	N4-8.008	8.976	225	N4-8.007	8.976	225	
N4-8-9	9.857	1.436	Open Manhole	1050	N4-8.009	8.421	225	N4-8.008	8.421	225	
N4-8-10	9.491	1.801	Open Manhole	1050	N4-8.010	7.690	225	N4-8.009	7.690	225	
N4-8-11	7.152	1.163	Open Manhole	1050	N4-8.011	5.989	225	N4-8.010	5.989	225	
N4-8-12	4.041	1.161	Open Manhole	1050	N4-8.012	2.880	225	N4-8.011	2.880	225	
N4-8-13	3.257	0.834	Open Manhole	1050	N4-8.013	2.423	225	N4-8.012	2.423	225	
N4-1-10	3.108	0.716	Open Manhole	1050	N4-1.010	2.392	375	N4-1.009	2.392	225	
								N4-8.013	2.392	225	
N4-1-11	2.776	0.734	Open Manhole	1050	N4-1.011	2.042	375	N4-1.010	2.042	375	

Manhole Schedules for Network 4-Lover's Lane Diversion

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)
N4-	2.761	0.833	Open Manhole	0	OUTFALL			N4-1.011	1.928	375	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N4-1-0	645068.147	263774.382			No Entry	
N4-1-1	645000.810	263766.282			No Entry	
N4-1-2	645000.116	263765.825	645000.116	263765.825	Required	
N4-2-0	645067.534	263783.029			No Entry	
N4-2-1	644999.827	263774.656			No Entry	
N4-2-2	644998.521	263775.012	644998.521	263775.012	Required	
N4-2-3	645068.463	263783.469	645068.463	263783.469	Required	
N4-1-3	645069.298	263774.184	645069.298	263774.184	Required	
N4-3-0	645070.191	263774.581			No Entry	
N4-3-1	645149.820	263775.622			No Entry	
N4-1-4	645150.602	263775.191	645150.602	263775.191	Required	
N4-4-0	645151.544	263775.636			No Entry	
N4-4-1	645208.838	263769.309			No Entry	
N4-1-5	645209.777	263768.786	645209.777	263768.786	Required	
N4-5-0	645210.775	263769.030			No Entry	
N4-5-1	645268.342	263756.422			No Entry	
N4-1-6	645269.042	263755.742	645269.042	263755.742	Required	

Manhole Schedules for Network 4-Lover's Lane Diversion

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N4-6-0	645269.972	263755.820			No Entry	
N4-6-1	645339.386	263714.498			No Entry	
N4-1-7	645339.675	263713.602	645339.675	263713.602	Required	
N4-7-0	645340.565	263713.396			No Entry	
N4-7-1	645382.824	263635.391			No Entry	
N4-1-8	645382.610	263634.512	645382.610	263634.512	Required	
N4-1-9	645396.670	263598.996	645396.670	263598.996	Required	
N4-8-0	644730.917	263724.564	644730.917	263724.564	Required	
N4-8-1	644820.655	263731.378	644820.655	263731.378	Required	
N4-8-2	644881.405	263736.448	644881.405	263736.448	Required	
N4-8-3	644901.310	263739.376	644901.310	263739.376	Required	
N4-8-4	644984.206	263751.450	644984.206	263751.450	Required	
N4-8-5	645038.630	263726.744	645038.630	263726.744	Required	
N4-8-6	645046.653	263702.361	645046.653	263702.361	Required	
N4-8-7	645075.042	263653.518	645075.042	263653.518	Required	
N4-8-8	645136.362	263628.253	645136.362	263628.253	Required	
N4-8-9	645213.824	263608.762	645213.824	263608.762	Required	
N4-8-10	645279.909	263601.838	645279.909	263601.838	Required	
N4-8-11	645354.669	263599.563	645354.669	263599.563	Required	
N4-8-12	645396.521	263575.069	645396.521	263575.069	Required	

Manhole Schedules for Network 4-Lover's Lane Diversion

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N4-8-13	645405.285	263559.807	645405.285	263559.807	Required	
N4-1-10	645411.985	263563.106	645411.985	263563.106	Required	
N4-1-11	645427.817	263526.351	645427.817	263526.351	Required	
N4-	645436.669	263506.751			No Entry	

PIPELINE SCHEDULES for Network 4-Lover's Lane Diversion

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)
N4-1.000	4 \=/	200	N4-1-0	13.896	13.696	0.000	Junction	
N4-1.001	4 \=/	200	N4-1-1	13.125	12.925	0.000	Junction	
N4-1.002	o	225	N4-1-2	12.925	11.790	0.910	Open Manhole	1050
N4-2.000	4 \=/	200	N4-2-0	14.052	13.852	0.000	Junction	
N4-2.001	4 \=/	200	N4-2-1	13.104	12.904	0.000	Junction	
N4-2.002	o	225	N4-2-2	12.904	12.144	0.535	Open Manhole	1050
N4-2.003	o	225	N4-2-3	13.852	11.463	2.164	Open Manhole	1050
N4-1.003	o	225	N4-1-3	13.696	11.367	2.104	Open Manhole	1050
N4-3.000	4 \=/	200	N4-3-0	13.896	13.696	0.000	Junction	
N4-3.001	4 \=/	200	N4-3-1	13.442	13.242	0.000	Junction	
N4-1.004	o	225	N4-1-4	13.242	11.038	1.979	Open Manhole	1050
N4-4.000	4 \=/	200	N4-4-0	13.442	13.242	0.000	Junction	
N4-4.001	4 \=/	200	N4-4-1	12.753	12.553	0.000	Junction	
N4-1.005	o	225	N4-1-5	12.553	10.705	1.623	Open Manhole	1050
N4-5.000	4 \=/	200	N4-5-0	12.753	12.553	0.000	Junction	
N4-5.001	4 \=/	200	N4-5-1	12.079	11.879	0.000	Junction	
N4-1.006	o	225	N4-1-6	11.879	10.364	1.290	Open Manhole	1050
N4-6.000	4 \=/	200	N4-6-0	12.079	11.879	0.000	Junction	

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)
N4-1.000	67.839	88.0	N4-1-1	13.125	12.925	0.000	Junction	
N4-1.001	0.830	4.2	N4-1-2	12.925	12.725	0.000	Open Manhole	1050
N4-1.002	69.691	164.8	N4-1-3	13.696	11.367	2.104	Open Manhole	1050
N4-2.000	68.250	72.0	N4-2-1	13.104	12.904	0.000	Junction	
N4-2.001	1.353	6.8	N4-2-2	12.904	12.704	0.000	Open Manhole	1050
N4-2.002	70.504	103.5	N4-2-3	13.852	11.463	2.164	Open Manhole	1050
N4-2.003	9.322	97.1	N4-1-3	13.696	11.367	2.104	Open Manhole	1050
N4-1.003	81.346	247.3	N4-1-4	13.242	11.038	1.979	Open Manhole	1050
N4-3.000	79.707	175.6	N4-3-1	13.442	13.242	0.000	Junction	
N4-3.001	0.893	4.5	N4-1-4	13.242	13.042	0.000	Open Manhole	1050
N4-1.004	59.534	178.8	N4-1-5	12.553	10.705	1.623	Open Manhole	1050
N4-4.000	57.652	83.7	N4-4-1	12.753	12.553	0.000	Junction	
N4-4.001	1.074	5.4	N4-1-5	12.553	12.353	0.000	Open Manhole	1050
N4-1.005	60.770	178.2	N4-1-6	11.879	10.364	1.290	Open Manhole	1050
N4-5.000	59.009	87.6	N4-5-1	12.079	11.879	0.000	Junction	
N4-5.001	0.976	4.9	N4-1-6	11.879	11.679	0.000	Open Manhole	1050
N4-1.006	82.856	88.5	N4-1-7	10.687	9.428	1.034	Open Manhole	1050
N4-6.000	81.384	68.3	N4-6-1	10.887	10.687	0.000	Junction	

PIPELINE SCHEDULES for Network 4-Lover's Lane Diversion

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)
N4-6.001	4 \=/	200	N4-6-1	10.887	10.687	0.000	Junction	
N4-1.007	o	225	N4-1-7	10.687	9.428	1.034	Open Manhole	1050
N4-7.000	4 \=/	600	N4-7-0	10.887	10.687	0.000	Junction	
N4-7.001	4 \=/	600	N4-7-1	6.722	6.522	0.000	Junction	
N4-1.008	o	225	N4-1-8	6.522	5.238	1.059	Open Manhole	1050
N4-1.009	o	225	N4-1-9	4.964	3.815	0.924	Open Manhole	1050
N4-8.000	o	225	N4-8-0	14.341	13.116	1.000	Open Manhole	1050
N4-8.001	o	225	N4-8-1	14.453	12.228	2.000	Open Manhole	1050
N4-8.002	o	225	N4-8-2	13.284	11.862	1.197	Open Manhole	1050
N4-8.003	o	225	N4-8-3	13.071	11.523	1.323	Open Manhole	1050
N4-8.004	o	225	N4-8-4	12.186	10.725	1.236	Open Manhole	1050
N4-8.005	o	225	N4-8-5	12.233	10.170	1.838	Open Manhole	1050
N4-8.006	o	225	N4-8-6	11.726	9.990	1.511	Open Manhole	1050
N4-8.007	o	225	N4-8-7	10.636	9.398	1.013	Open Manhole	1050
N4-8.008	o	225	N4-8-8	10.587	8.976	1.386	Open Manhole	1050
N4-8.009	o	225	N4-8-9	9.857	8.421	1.211	Open Manhole	1050
N4-8.010	o	225	N4-8-10	9.491	7.690	1.576	Open Manhole	1050
N4-8.011	o	225	N4-8-11	7.152	5.989	0.938	Open Manhole	1050
N4-8.012	o	225	N4-8-12	4.041	2.880	0.936	Open Manhole	1050
N4-8.013	o	225	N4-8-13	3.257	2.423	0.609	Open Manhole	1050
N4-1.010	o	375	N4-1-10	3.108	2.392	0.341	Open Manhole	1050
N4-1.011	o	375	N4-1-11	2.776	2.042	0.359	Open Manhole	1050

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)
N4-6.001	0.941	4.7	N4-1-7	10.687	10.487	0.000	Open Manhole	1050
N4-1.007	90.852	21.7	N4-1-8	6.522	5.238	1.059	Open Manhole	1050
N4-7.000	89.520	21.5	N4-7-1	6.722	6.522	0.000	Junction	
N4-7.001	0.905	4.5	N4-1-8	6.522	6.322	0.000	Open Manhole	1050
N4-1.008	38.203	26.8	N4-1-9	4.964	3.815	0.924	Open Manhole	1050
N4-1.009	39.021	27.4	N4-1-10	3.108	2.392	0.491	Open Manhole	1050
N4-8.000	90.001	101.4	N4-8-1	14.453	12.228	2.000	Open Manhole	1050
N4-8.001	60.984	166.6	N4-8-2	13.284	11.862	1.197	Open Manhole	1050
N4-8.002	20.119	59.3	N4-8-3	13.071	11.523	1.323	Open Manhole	1050
N4-8.003	83.773	105.0	N4-8-4	12.186	10.725	1.236	Open Manhole	1050
N4-8.004	63.493	114.4	N4-8-5	12.233	10.170	1.838	Open Manhole	1050
N4-8.005	25.934	144.1	N4-8-6	11.726	9.990	1.511	Open Manhole	1050
N4-8.006	58.536	98.9	N4-8-7	10.636	9.398	1.013	Open Manhole	1050
N4-8.007	66.365	157.3	N4-8-8	10.587	8.976	1.386	Open Manhole	1050
N4-8.008	79.948	144.1	N4-8-9	9.857	8.421	1.211	Open Manhole	1050
N4-8.009	66.497	91.0	N4-8-10	9.491	7.690	1.576	Open Manhole	1050
N4-8.010	74.795	44.0	N4-8-11	7.152	5.989	0.938	Open Manhole	1050
N4-8.011	50.314	16.2	N4-8-12	4.041	2.880	0.936	Open Manhole	1050
N4-8.012	17.599	38.5	N4-8-13	3.257	2.423	0.609	Open Manhole	1050
N4-8.013	7.469	240.9	N4-1-10	3.108	2.392	0.491	Open Manhole	1050
N4-1.010	40.020	114.3	N4-1-11	2.776	2.042	0.359	Open Manhole	1050
N4-1.011	21.507	188.7	N4-	2.761	1.928	0.458	Open Manhole	0

Area Summary for Network 4-Lover's Lane Diversion

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.054	0.054	0.054
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.037	0.037	0.037
2.001	-	-	100	0.000	0.000	0.000
2.002	-	-	100	0.000	0.000	0.000
2.003	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.072	0.072	0.072
3.001	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.075	0.075	0.075
4.001	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.090	0.090	0.090
5.001	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.134	0.134	0.134
6.001	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.117	0.117	0.117
7.001	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.019	0.019	0.019
8.001	-	-	100	0.015	0.015	0.015
8.002	-	-	100	0.000	0.000	0.000
8.003	-	-	100	0.019	0.019	0.019
8.004	-	-	100	0.013	0.013	0.013
8.005	-	-	100	0.005	0.005	0.005
8.006	-	-	100	0.013	0.013	0.013
8.007	-	-	100	0.014	0.014	0.014
8.008	-	-	100	0.018	0.018	0.018
8.009	-	-	100	0.013	0.013	0.013
8.010	-	-	100	0.018	0.018	0.018
8.011	-	-	100	0.010	0.010	0.010
8.012	-	-	100	0.003	0.003	0.003
8.013	-	-	100	0.000	0.000	0.000
1.010	-	-	100	0.009	0.009	0.009
1.011	-	-	100	0.006	0.006	0.006
				Total 0.754	Total 0.754	Total 0.754

Network Classifications for Network 4-Lover's Lane Diversion

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
N4-1.000	N4-1-0	200	0.000	0.430	Unclassified				Junction
N4-1.001	N4-1-1	200	0.000	0.376	Unclassified				Junction
N4-1.002	N4-1-2	225	0.910	2.310	Unclassified	1050	0	0.910	Unclassified
N4-2.000	N4-2-0	200	0.000	0.622	Unclassified				Junction
N4-2.001	N4-2-1	200	0.000	0.402	Unclassified				Junction
N4-2.002	N4-2-2	225	0.535	2.444	Unclassified	1050	0	0.535	Unclassified
N4-2.003	N4-2-3	225	2.104	2.733	Unclassified	1050	0	2.164	Unclassified
N4-1.003	N4-1-3	225	1.979	2.695	Unclassified	1050	0	2.104	Unclassified
N4-3.000	N4-3-0	200	0.000	0.000	Unclassified				Junction
N4-3.001	N4-3-1	200	0.000	0.000	Unclassified				Junction
N4-1.004	N4-1-4	225	1.623	2.503	Unclassified	1050	0	1.979	Unclassified
N4-4.000	N4-4-0	200	0.000	0.508	Unclassified				Junction
N4-4.001	N4-4-1	200	0.000	0.666	Unclassified				Junction
N4-1.005	N4-1-5	225	1.290	1.918	Unclassified	1050	0	1.623	Unclassified
N4-5.000	N4-5-0	200	0.000	0.427	Unclassified				Junction
N4-5.001	N4-5-1	200	0.000	0.394	Unclassified				Junction
N4-1.006	N4-1-6	225	1.034	1.830	Unclassified	1050	0	1.290	Unclassified
N4-6.000	N4-6-0	200	0.000	0.686	Unclassified				Junction
N4-6.001	N4-6-1	200	0.000	0.080	Unclassified				Junction
N4-1.007	N4-1-7	225	1.034	1.369	Unclassified	1050	0	1.034	Unclassified
N4-7.000	N4-7-0	600	0.000	0.431	Unclassified				Junction
N4-7.001	N4-7-1	600	0.000	0.000	Unclassified				Junction
N4-1.008	N4-1-8	225	0.924	1.059	Unclassified	1050	0	1.059	Unclassified
N4-1.009	N4-1-9	225	0.491	0.924	Unclassified	1050	0	0.924	Unclassified
N4-8.000	N4-8-0	225	1.000	2.000	Unclassified	1050	0	1.000	Unclassified
N4-8.001	N4-8-1	225	1.197	2.000	Unclassified	1050	0	2.000	Unclassified
N4-8.002	N4-8-2	225	1.197	1.323	Unclassified	1050	0	1.197	Unclassified
N4-8.003	N4-8-3	225	0.522	1.323	Unclassified	1050	0	1.323	Unclassified
N4-8.004	N4-8-4	225	1.236	1.838	Unclassified	1050	0	1.236	Unclassified
N4-8.005	N4-8-5	225	1.511	1.838	Unclassified	1050	0	1.838	Unclassified
N4-8.006	N4-8-6	225	1.013	1.511	Unclassified	1050	0	1.511	Unclassified
N4-8.007	N4-8-7	225	0.469	1.386	Unclassified	1050	0	1.013	Unclassified
N4-8.008	N4-8-8	225	1.211	2.159	Unclassified	1050	0	1.386	Unclassified
N4-8.009	N4-8-9	225	0.898	1.576	Unclassified	1050	0	1.211	Unclassified
N4-8.010	N4-8-10	225	0.938	1.924	Unclassified	1050	0	1.576	Unclassified
N4-8.011	N4-8-11	225	0.568	0.938	Unclassified	1050	0	0.938	Unclassified
N4-8.012	N4-8-12	225	0.609	0.936	Unclassified	1050	0	0.936	Unclassified
N4-8.013	N4-8-13	225	0.491	0.609	Unclassified	1050	0	0.609	Unclassified
N4-1.010	N4-1-10	375	0.341	0.359	Unclassified	1050	0	0.341	Unclassified
N4-1.011	N4-1-11	375	0.359	0.458	Unclassified	1050	0	0.359	Unclassified

Free Flowing Outfall Details for Network 4-Lover's Lane Diversion

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N4-1.011	N4-	2.761	1.928	0.000	0	0

Simulation Criteria for Network 4-Lover's Lane Diversion

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	26	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Storage Structures for Network 4-Lover's Lane Diversion

Swale Manhole: N4-1-1, DS/PN: N4-1.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	83.5
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	87.0
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	13.034	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Swale Manhole: N4-2-1, DS/PN: N4-2.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	84.2
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	86.7
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	13.182	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-3, DS/PN: N4-1.003

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	201.2
Invert Level (m)	11.367	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	85.1		

Filter Drain Manhole: N4-1-4, DS/PN: N4-1.004

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	200.6
Invert Level (m)	11.038	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	66.0		

Swale Manhole: N4-4-1, DS/PN: N4-4.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	57.7
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	39.3
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	12.481	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-5, DS/PN: N4-1.005

Infiltration Coefficient Base (m/hr)	0.02008	Trench Width (m)	0.5
Infiltration Coefficient Side (m/hr)	0.02008	Trench Length (m)	59.5
Safety Factor	2.0	Pipe Diameter (m)	0.225
Porosity	0.30	Pipe Depth above Invert (m)	0.000
Invert Level (m)	10.705	Number of Pipes	1

Filter Drain Manhole: N4-1-5, DS/PN: N4-1.005

Slope (1:X) 178.6 Cap Infiltration Depth (m) 1.000
Cap Volume Depth (m) 1.000

Swale Manhole: N4-5-1, DS/PN: N4-5.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	59.3
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	78.2
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	11.807	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-6, DS/PN: N4-1.006

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	177.9
Invert Level (m)	10.364	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	60.7		

Swale Manhole: N4-6-1, DS/PN: N4-6.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	80.9
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	69.6
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	10.727	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-7, DS/PN: N4-1.007

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	88.5
Invert Level (m)	9.428	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	82.8		

Swale Manhole: N4-7-1, DS/PN: N4-7.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	89.8
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	21.7
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	6.592	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-8, DS/PN: N4-1.008

Infiltration Coefficient Base (m/hr)	0.02008	Porosity	0.30
Infiltration Coefficient Side (m/hr)	0.02008	Invert Level (m)	5.238
Safety Factor	2.0	Trench Width (m)	0.5

Filter Drain Manhole: N4-1-8, DS/PN: N4-1.008

Trench Length (m)	90.9	Slope (1:X)	21.7
Pipe Diameter (m)	0.225	Cap Volume Depth (m)	1.000
Pipe Depth above Invert (m)	0.000	Cap Infiltration Depth (m)	1.000
Number of Pipes	1		

Filter Drain Manhole: N4-8-1, DS/PN: N4-8.001

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	101.4
Invert Level (m)	12.228	Cap Volume Depth (m)	2.225
Trench Width (m)	0.5	Cap Infiltration Depth (m)	2.225
Trench Length (m)	90.0		

Filter Drain Manhole: N4-8-3, DS/PN: N4-8.003

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	111.4
Invert Level (m)	11.534	Cap Volume Depth (m)	1.595
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.595
Trench Length (m)	77.3		

Filter Drain Manhole: N4-8-4, DS/PN: N4-8.004

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	109.7
Invert Level (m)	10.736	Cap Volume Depth (m)	1.450
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.450
Trench Length (m)	87.6		

Filter Drain Manhole: N4-8-5, DS/PN: N4-8.005

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	114.4
Invert Level (m)	10.181	Cap Volume Depth (m)	2.050
Trench Width (m)	0.5	Cap Infiltration Depth (m)	2.050
Trench Length (m)	63.5		

Filter Drain Manhole: N4-8-6, DS/PN: N4-8.006

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	144.1
Invert Level (m)	10.276	Cap Volume Depth (m)	1.451
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.451
Trench Length (m)	25.9		

Filter Drain Manhole: N4-8-7, DS/PN: N4-8.007

Infiltration Coefficient Base (m/hr)	0.02008	Invert Level (m)	9.409
Infiltration Coefficient Side (m/hr)	0.02008	Trench Width (m)	0.5
Safety Factor	2.0	Trench Length (m)	58.5
Porosity	0.30	Pipe Diameter (m)	0.225

Filter Drain Manhole: N4-8-7, DS/PN: N4-8.007

Pipe Depth above Invert (m)	0.000	Cap Volume Depth (m)	1.225
Number of Pipes	1	Cap Infiltration Depth (m)	1.225
Slope (1:X)	98.9		

Filter Drain Manhole: N4-8-8, DS/PN: N4-8.008

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	157.3
Invert Level (m)	8.987	Cap Volume Depth (m)	1.600
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.600
Trench Length (m)	66.4		

Filter Drain Manhole: N4-8-9, DS/PN: N4-8.009

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	144.1
Invert Level (m)	8.432	Cap Volume Depth (m)	1.425
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.425
Trench Length (m)	79.9		

Filter Drain Manhole: N4-8-10, DS/PN: N4-8.010

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	91.0
Invert Level (m)	7.701	Cap Volume Depth (m)	1.785
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.785
Trench Length (m)	66.5		

Filter Drain Manhole: N4-8-11, DS/PN: N4-8.011

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	44.0
Invert Level (m)	6.000	Cap Volume Depth (m)	1.125
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.125
Trench Length (m)	74.8		

Filter Drain Manhole: N4-8-12, DS/PN: N4-8.012

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	16.3
Invert Level (m)	2.891	Cap Volume Depth (m)	1.125
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.125
Trench Length (m)	50.7		

Filter Drain Manhole: N4-8-13, DS/PN: N4-8.013

Infiltration Coefficient Base (m/hr)	0.02008	Trench Width (m)	0.5
Infiltration Coefficient Side (m/hr)	0.02008	Trench Length (m)	17.5
Safety Factor	2.0	Pipe Diameter (m)	0.225
Porosity	0.30	Pipe Depth above Invert (m)	0.000
Invert Level (m)	2.434	Number of Pipes	1

Filter Drain Manhole: N4-8-13, DS/PN: N4-8.013

Slope (1:X)	38.3	Cap Infiltration Depth (m)	1.125
Cap Volume Depth (m)	1.125		

Filter Drain Manhole: N4-1-10, DS/PN: N4-1.010

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	27.1
Invert Level (m)	2.392	Cap Volume Depth (m)	0.716
Trench Width (m)	0.5	Cap Infiltration Depth (m)	0.716
Trench Length (m)	77.0		

Filter Drain Manhole: N4-1-11, DS/PN: N4-1.011

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.375
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	114.3
Invert Level (m)	2.042	Cap Volume Depth (m)	0.734
Trench Width (m)	0.8	Cap Infiltration Depth (m)	0.734
Trench Length (m)	40.0		

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4- Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 26 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	2	+0%					13.743	-0.153	0.000
N4-1.001	N4-1-1	30 Winter	2	+0%					12.946	-0.179	0.000
N4-1.002	N4-1-2	30 Winter	2	+0%					11.842	-0.173	0.000
N4-2.000	N4-2-0	30 Winter	2	+0%					13.889	-0.163	0.000
N4-2.001	N4-2-1	30 Winter	2	+0%					12.924	-0.180	0.000
N4-2.002	N4-2-2	30 Winter	2	+0%					12.182	-0.187	0.000
N4-2.003	N4-2-3	30 Winter	2	+0%	100/30 Summer				11.501	-0.187	0.000
N4-1.003	N4-1-3	30 Winter	2	+0%	100/15 Winter				11.443	-0.149	0.000
N4-3.000	N4-3-0	30 Winter	2	+0%					13.759	-0.137	0.000
N4-3.001	N4-3-1	30 Winter	2	+0%					13.266	-0.176	0.000
N4-1.004	N4-1-4	30 Winter	2	+0%	100/15 Summer				11.133	-0.130	0.000
N4-4.000	N4-4-0	30 Winter	2	+0%					13.296	-0.146	0.000
N4-4.001	N4-4-1	30 Winter	2	+0%					12.579	-0.174	0.000
N4-1.005	N4-1-5	30 Winter	2	+0%	30/15 Winter				10.821	-0.109	0.000
N4-5.000	N4-5-0	30 Winter	2	+0%					12.613	-0.140	0.000
N4-5.001	N4-5-1	30 Winter	2	+0%					11.907	-0.172	0.000
N4-1.006	N4-1-6	30 Winter	2	+0%	100/15 Summer				10.476	-0.113	0.000
N4-6.000	N4-6-0	30 Winter	2	+0%					11.947	-0.132	0.000
N4-6.001	N4-6-1	30 Winter	2	+0%					10.721	-0.166	0.000
N4-1.007	N4-1-7	30 Winter	2	+0%	100/15 Winter				9.518	-0.135	0.000
N4-7.000	N4-7-0	30 Winter	2	+0%					10.717	-0.170	0.000
N4-7.001	N4-7-1	30 Winter	2	+0%					6.542	-0.180	0.000
N4-1.008	N4-1-8	30 Winter	2	+0%	30/15 Winter	100/15 Summer			5.348	-0.115	0.000
N4-1.009	N4-1-9	30 Winter	2	+0%	30/15 Winter				3.925	-0.115	0.000
N4-8.000	N4-8-0	30 Winter	2	+0%					13.143	-0.198	0.000
N4-8.001	N4-8-1	15 Winter	2	+0%					12.273	-0.180	0.000
N4-8.002	N4-8-2	15 Winter	2	+0%					11.895	-0.192	0.000
N4-8.003	N4-8-3	15 Winter	2	+0%					11.574	-0.174	0.000
N4-8.004	N4-8-4	15 Winter	2	+0%					10.782	-0.168	0.000
N4-8.005	N4-8-5	15 Winter	2	+0%					10.234	-0.161	0.000
N4-8.006	N4-8-6	15 Winter	2	+0%					10.052	-0.163	0.000
N4-8.007	N4-8-7	15 Winter	2	+0%					9.473	-0.150	0.000
N4-8.008	N4-8-8	15 Winter	2	+0%					9.053	-0.148	0.000

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	**US/MH Name**	**Flow / Cap.**	**Overflow (l/s)**	**Pipe Flow (l/s)**	**Status**	**Level Exceeded**
N4-1.000	N4-1-0	0.04		4.3	FLOOD RISK*	
N4-1.001	N4-1-1	0.01		4.3	FLOOD RISK*	
N4-1.002	N4-1-2	0.12		4.2	OK	
N4-2.000	N4-2-0	0.02		3.0	FLOOD RISK*	
N4-2.001	N4-2-1	0.01		3.0	FLOOD RISK*	
N4-2.002	N4-2-2	0.07		2.9	OK	
N4-2.003	N4-2-3	0.07		2.9	OK	
N4-1.003	N4-1-3	0.25		7.0	OK	
N4-3.000	N4-3-0	0.07		5.6	FLOOD RISK*	
N4-3.001	N4-3-1	0.02		5.6	FLOOD RISK*	
N4-1.004	N4-1-4	0.37		12.2	OK	
N4-4.000	N4-4-0	0.05		5.9	FLOOD RISK*	
N4-4.001	N4-4-1	0.02		5.9	FLOOD RISK*	
N4-1.005	N4-1-5	0.52		17.3	OK	
N4-5.000	N4-5-0	0.07		7.0	FLOOD RISK*	
N4-5.001	N4-5-1	0.02		7.0	FLOOD RISK*	
N4-1.006	N4-1-6	0.49		23.3	OK	
N4-6.000	N4-6-0	0.08		10.3	FLOOD RISK*	
N4-6.001	N4-6-1	0.03		10.3	FLOOD RISK*	
N4-1.007	N4-1-7	0.34		32.6	OK	
N4-7.000	N4-7-0	0.03		9.4	FLOOD RISK*	
N4-7.001	N4-7-1	0.02		9.4	FLOOD RISK*	
N4-1.008	N4-1-8	0.48		40.6	OK	7
N4-1.009	N4-1-9	0.48		40.6	OK	
N4-8.000	N4-8-0	0.03		1.5	OK	
N4-8.001	N4-8-1	0.08		2.9	OK	
N4-8.002	N4-8-2	0.05		2.9	OK	
N4-8.003	N4-8-3	0.11		4.8	OK	
N4-8.004	N4-8-4	0.14		6.0	OK	
N4-8.005	N4-8-5	0.18		6.4	OK	
N4-8.006	N4-8-6	0.17		7.4	OK	
N4-8.007	N4-8-7	0.23		8.3	OK	
N4-8.008	N4-8-8	0.25		9.2	OK	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	30 Winter	2	+0%					8.491	-0.155	0.000	0.21
N4-8.010	N4-8-10	30 Winter	2	+0%					7.750	-0.165	0.000	0.16
N4-8.011	N4-8-11	30 Winter	2	+0%					6.037	-0.177	0.000	0.10
N4-8.012	N4-8-12	30 Winter	2	+0%	100/15 Summer				2.942	-0.163	0.000	0.17
N4-8.013	N4-8-13	30 Winter	2	+0%	5/30 Winter				2.621	-0.027	0.000	0.43
N4-1.010	N4-1-10	30 Winter	2	+0%	30/15 Winter				2.610	-0.157	0.000	0.64
N4-1.011	N4-1-11	30 Winter	2	+0%	30/15 Summer				2.313	-0.104	0.000	0.87

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		9.8	OK	
N4-8.010	N4-8-10		10.8	OK	
N4-8.011	N4-8-11		11.4	OK	
N4-8.012	N4-8-12		11.6	OK	
N4-8.013	N4-8-13		11.3	OK	
N4-1.010	N4-1-10		98.2	OK	
N4-1.011	N4-1-11		98.0	OK	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 26 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	5	+0%					13.750	-0.146	0.000
N4-1.001	N4-1-1	30 Winter	5	+0%					12.949	-0.176	0.000
N4-1.002	N4-1-2	30 Winter	5	+0%					11.851	-0.164	0.000
N4-2.000	N4-2-0	30 Winter	5	+0%					13.895	-0.157	0.000
N4-2.001	N4-2-1	30 Winter	5	+0%					12.927	-0.177	0.000
N4-2.002	N4-2-2	30 Winter	5	+0%					12.190	-0.179	0.000
N4-2.003	N4-2-3	30 Winter	5	+0%	100/30 Summer				11.509	-0.179	0.000
N4-1.003	N4-1-3	30 Winter	5	+0%	100/15 Winter				11.457	-0.135	0.000
N4-3.000	N4-3-0	30 Winter	5	+0%					13.769	-0.127	0.000
N4-3.001	N4-3-1	30 Winter	5	+0%					13.271	-0.171	0.000
N4-1.004	N4-1-4	30 Winter	5	+0%	100/15 Summer				11.151	-0.112	0.000
N4-4.000	N4-4-0	30 Winter	5	+0%					13.305	-0.137	0.000
N4-4.001	N4-4-1	30 Winter	5	+0%					12.584	-0.169	0.000
N4-1.005	N4-1-5	30 Winter	5	+0%	30/15 Winter				10.846	-0.084	0.000
N4-5.000	N4-5-0	30 Winter	5	+0%					12.622	-0.131	0.000
N4-5.001	N4-5-1	30 Winter	5	+0%					11.912	-0.167	0.000
N4-1.006	N4-1-6	30 Winter	5	+0%	100/15 Summer				10.499	-0.090	0.000
N4-6.000	N4-6-0	30 Winter	5	+0%					11.958	-0.121	0.000
N4-6.001	N4-6-1	30 Winter	5	+0%					10.728	-0.159	0.000
N4-1.007	N4-1-7	30 Winter	5	+0%	100/15 Winter				9.535	-0.118	0.000
N4-7.000	N4-7-0	30 Winter	5	+0%					10.723	-0.164	0.000
N4-7.001	N4-7-1	30 Winter	5	+0%					6.545	-0.177	0.000
N4-1.008	N4-1-8	30 Winter	5	+0%	30/15 Winter	100/15 Summer			5.371	-0.092	0.000
N4-1.009	N4-1-9	30 Winter	5	+0%	30/15 Winter				3.949	-0.091	0.000
N4-8.000	N4-8-0	30 Winter	5	+0%					13.147	-0.194	0.000
N4-8.001	N4-8-1	15 Winter	5	+0%					12.280	-0.173	0.000
N4-8.002	N4-8-2	15 Winter	5	+0%					11.901	-0.186	0.000
N4-8.003	N4-8-3	15 Winter	5	+0%					11.582	-0.166	0.000
N4-8.004	N4-8-4	15 Winter	5	+0%					10.793	-0.157	0.000
N4-8.005	N4-8-5	15 Winter	5	+0%					10.245	-0.150	0.000
N4-8.006	N4-8-6	15 Winter	5	+0%					10.063	-0.152	0.000
N4-8.007	N4-8-7	15 Winter	5	+0%					9.487	-0.136	0.000
N4-8.008	N4-8-8	15 Winter	5	+0%					9.068	-0.133	0.000

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.05		5.8	FLOOD RISK*	
N4-1.001	N4-1-1	0.02		5.8	FLOOD RISK*	
N4-1.002	N4-1-2	0.17		5.7	OK	
N4-2.000	N4-2-0	0.03		4.0	FLOOD RISK*	
N4-2.001	N4-2-1	0.01		4.0	FLOOD RISK*	
N4-2.002	N4-2-2	0.09		4.0	OK	
N4-2.003	N4-2-3	0.09		4.0	OK	
N4-1.003	N4-1-3	0.33		9.4	OK	
N4-3.000	N4-3-0	0.10		7.6	FLOOD RISK*	
N4-3.001	N4-3-1	0.02		7.6	FLOOD RISK*	
N4-1.004	N4-1-4	0.50		16.5	OK	
N4-4.000	N4-4-0	0.07		8.0	FLOOD RISK*	
N4-4.001	N4-4-1	0.03		8.0	FLOOD RISK*	
N4-1.005	N4-1-5	0.70		23.4	OK	
N4-5.000	N4-5-0	0.09		9.6	FLOOD RISK*	
N4-5.001	N4-5-1	0.03		9.6	FLOOD RISK*	
N4-1.006	N4-1-6	0.66		31.5	OK	
N4-6.000	N4-6-0	0.12		14.1	FLOOD RISK*	
N4-6.001	N4-6-1	0.04		14.1	FLOOD RISK*	
N4-1.007	N4-1-7	0.46		44.3	OK	
N4-7.000	N4-7-0	0.04		12.7	FLOOD RISK*	
N4-7.001	N4-7-1	0.03		12.7	FLOOD RISK*	
N4-1.008	N4-1-8	0.65		55.2	OK	7
N4-1.009	N4-1-9	0.66		55.1	OK	
N4-8.000	N4-8-0	0.05		2.1	OK	
N4-8.001	N4-8-1	0.11		4.0	OK	
N4-8.002	N4-8-2	0.07		3.9	OK	
N4-8.003	N4-8-3	0.15		6.5	OK	
N4-8.004	N4-8-4	0.20		8.1	OK	
N4-8.005	N4-8-5	0.24		8.7	OK	
N4-8.006	N4-8-6	0.23		10.1	OK	
N4-8.007	N4-8-7	0.32		11.3	OK	
N4-8.008	N4-8-8	0.34		12.5	OK	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	15 Winter	5	+0%					8.503	-0.143	0.000	0.28
N4-8.010	N4-8-10	30 Winter	5	+0%					7.761	-0.154	0.000	0.22
N4-8.011	N4-8-11	30 Winter	5	+0%					6.045	-0.169	0.000	0.14
N4-8.012	N4-8-12	30 Winter	5	+0%	100/15 Summer				2.953	-0.152	0.000	0.23
N4-8.013	N4-8-13	30 Winter	5	+0%	5/30 Winter				2.652	0.004	0.000	0.59
N4-1.010	N4-1-10	30 Winter	5	+0%	30/15 Winter				2.637	-0.130	0.000	0.76
N4-1.011	N4-1-11	30 Winter	5	+0%	30/15 Summer				2.372	-0.045	0.000	1.00

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		13.3	OK	
N4-8.010	N4-8-10		14.7	OK	
N4-8.011	N4-8-11		15.5	OK	
N4-8.012	N4-8-12		15.8	OK	
N4-8.013	N4-8-13		15.6	SURCHARGED	
N4-1.010	N4-1-10		116.5	OK	
N4-1.011	N4-1-11		112.7	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	0	Number of Storage Structures	26	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	30	+0%					13.766	-0.130	0.000
N4-1.001	N4-1-1	30 Winter	30	+0%					12.957	-0.168	0.000
N4-1.002	N4-1-2	30 Winter	30	+0%					11.871	-0.144	0.000
N4-2.000	N4-2-0	30 Winter	30	+0%					13.908	-0.144	0.000
N4-2.001	N4-2-1	30 Winter	30	+0%					12.934	-0.170	0.000
N4-2.002	N4-2-2	30 Winter	30	+0%					12.202	-0.167	0.000
N4-2.003	N4-2-3	30 Winter	30	+0%	100/30 Summer				11.521	-0.167	0.000
N4-1.003	N4-1-3	30 Winter	30	+0%	100/15 Winter				11.489	-0.103	0.000
N4-3.000	N4-3-0	30 Winter	30	+0%					13.789	-0.107	0.000
N4-3.001	N4-3-1	30 Winter	30	+0%					13.281	-0.161	0.000
N4-1.004	N4-1-4	30 Winter	30	+0%	100/15 Summer				11.196	-0.067	0.000
N4-4.000	N4-4-0	30 Winter	30	+0%					13.323	-0.119	0.000
N4-4.001	N4-4-1	30 Winter	30	+0%					12.594	-0.159	0.000
N4-1.005	N4-1-5	30 Winter	30	+0%	30/15 Winter				10.981	0.051	0.000
N4-5.000	N4-5-0	30 Winter	30	+0%					12.641	-0.112	0.000
N4-5.001	N4-5-1	30 Winter	30	+0%					11.923	-0.156	0.000
N4-1.006	N4-1-6	30 Winter	30	+0%	100/15 Summer				10.568	-0.021	0.000
N4-6.000	N4-6-0	30 Winter	30	+0%					11.979	-0.100	0.000
N4-6.001	N4-6-1	30 Winter	30	+0%					10.740	-0.147	0.000
N4-1.007	N4-1-7	30 Winter	30	+0%	100/15 Winter				9.571	-0.082	0.000
N4-7.000	N4-7-0	30 Winter	30	+0%					10.736	-0.151	0.000
N4-7.001	N4-7-1	30 Winter	30	+0%					6.553	-0.169	0.000
N4-1.008	N4-1-8	30 Winter	30	+0%	30/15 Winter	100/15 Summer			5.768	0.305	0.000
N4-1.009	N4-1-9	30 Winter	30	+0%	30/15 Winter				4.314	0.274	0.000
N4-8.000	N4-8-0	30 Winter	30	+0%					13.158	-0.183	0.000
N4-8.001	N4-8-1	15 Winter	30	+0%					12.300	-0.153	0.000
N4-8.002	N4-8-2	15 Winter	30	+0%					11.916	-0.171	0.000
N4-8.003	N4-8-3	15 Winter	30	+0%					11.608	-0.140	0.000
N4-8.004	N4-8-4	15 Winter	30	+0%					10.822	-0.128	0.000
N4-8.005	N4-8-5	15 Winter	30	+0%					10.276	-0.119	0.000
N4-8.006	N4-8-6	15 Winter	30	+0%					10.092	-0.123	0.000
N4-8.007	N4-8-7	15 Winter	30	+0%					9.524	-0.099	0.000
N4-8.008	N4-8-8	15 Winter	30	+0%					9.104	-0.097	0.000

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.09		9.7	FLOOD RISK*	
N4-1.001	N4-1-1	0.03		9.7	FLOOD RISK*	
N4-1.002	N4-1-2	0.28		9.6	OK	
N4-2.000	N4-2-0	0.06		6.7	FLOOD RISK*	
N4-2.001	N4-2-1	0.02		6.7	FLOOD RISK*	
N4-2.002	N4-2-2	0.15		6.6	OK	
N4-2.003	N4-2-3	0.15		6.6	OK	
N4-1.003	N4-1-3	0.56		15.8	OK	
N4-3.000	N4-3-0	0.17		12.8	FLOOD RISK*	
N4-3.001	N4-3-1	0.04		12.8	FLOOD RISK*	
N4-1.004	N4-1-4	0.83		27.5	OK	
N4-4.000	N4-4-0	0.12		13.5	FLOOD RISK*	
N4-4.001	N4-4-1	0.04		13.5	FLOOD RISK*	
N4-1.005	N4-1-5	1.08		36.0	SURCHARGED	
N4-5.000	N4-5-0	0.15		16.3	FLOOD RISK*	
N4-5.001	N4-5-1	0.05		16.2	FLOOD RISK*	
N4-1.006	N4-1-6	1.00		47.6	OK	
N4-6.000	N4-6-0	0.20		23.9	FLOOD RISK*	
N4-6.001	N4-6-1	0.08		23.9	FLOOD RISK*	
N4-1.007	N4-1-7	0.73		70.1	OK	
N4-7.000	N4-7-0	0.06		21.2	FLOOD RISK*	
N4-7.001	N4-7-1	0.05		21.2	FLOOD RISK*	
N4-1.008	N4-1-8	1.01		85.6	SURCHARGED	7
N4-1.009	N4-1-9	1.02		85.4	SURCHARGED	
N4-8.000	N4-8-0	0.08		3.5	OK	
N4-8.001	N4-8-1	0.21		7.1	OK	
N4-8.002	N4-8-2	0.13		7.1	OK	
N4-8.003	N4-8-3	0.28		12.2	OK	
N4-8.004	N4-8-4	0.36		15.2	OK	
N4-8.005	N4-8-5	0.45		16.1	OK	
N4-8.006	N4-8-6	0.41		18.4	OK	
N4-8.007	N4-8-7	0.57		20.2	OK	
N4-8.008	N4-8-8	0.59		22.0	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	15 Winter	30	+0%					8.533	-0.113	0.000	0.49
N4-8.010	N4-8-10	30 Winter	30	+0%					7.785	-0.130	0.000	0.37
N4-8.011	N4-8-11	30 Winter	30	+0%					6.064	-0.150	0.000	0.24
N4-8.012	N4-8-12	30 Winter	30	+0%	100/15 Summer				2.978	-0.127	0.000	0.40
N4-8.013	N4-8-13	30 Winter	30	+0%	5/30 Winter				2.880	0.232	0.000	0.96
N4-1.010	N4-1-10	30 Winter	30	+0%	30/15 Winter				2.841	0.074	0.000	1.00
N4-1.011	N4-1-11	30 Winter	30	+0%	30/15 Summer				2.493	0.076	0.000	1.35

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		22.9	OK	
N4-8.010	N4-8-10		25.1	OK	
N4-8.011	N4-8-11		26.4	OK	
N4-8.012	N4-8-12		26.8	OK	
N4-8.013	N4-8-13		25.5	SURCHARGED	
N4-1.010	N4-1-10		152.8	FLOOD RISK	
N4-1.011	N4-1-11		152.5	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4- Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 26 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	100	+40%					13.788	-0.108	0.000
N4-1.001	N4-1-1	30 Winter	100	+40%					12.969	-0.156	0.000
N4-1.002	N4-1-2	30 Winter	100	+40%					11.904	-0.111	0.000
N4-2.000	N4-2-0	30 Winter	100	+40%					13.926	-0.126	0.000
N4-2.001	N4-2-1	30 Winter	100	+40%					12.946	-0.158	0.000
N4-2.002	N4-2-2	30 Winter	100	+40%					12.224	-0.145	0.000
N4-2.003	N4-2-3	30 Winter	100	+40%	100/30 Summer				11.828	0.140	0.000
N4-1.003	N4-1-3	30 Winter	100	+40%	100/15 Winter				11.821	0.229	0.000
N4-3.000	N4-3-0	30 Winter	100	+40%					13.818	-0.078	0.000
N4-3.001	N4-3-1	30 Winter	100	+40%					13.293	-0.149	0.000
N4-1.004	N4-1-4	30 Winter	100	+40%	100/15 Summer				11.745	0.482	0.000
N4-4.000	N4-4-0	30 Winter	100	+40%					13.348	-0.094	0.000
N4-4.001	N4-4-1	30 Winter	100	+40%					12.608	-0.145	0.000
N4-1.005	N4-1-5	30 Winter	100	+40%	30/15 Winter				11.566	0.636	0.000
N4-5.000	N4-5-0	30 Winter	100	+40%					12.669	-0.084	0.000
N4-5.001	N4-5-1	30 Winter	100	+40%					11.939	-0.140	0.000
N4-1.006	N4-1-6	30 Winter	100	+40%	100/15 Summer				11.126	0.537	0.000
N4-6.000	N4-6-0	30 Winter	100	+40%					12.009	-0.070	0.000
N4-6.001	N4-6-1	30 Winter	100	+40%					10.757	-0.130	0.000
N4-1.007	N4-1-7	30 Winter	100	+40%	100/15 Winter				9.903	0.250	0.000
N4-7.000	N4-7-0	30 Winter	100	+40%					10.755	-0.132	0.000
N4-7.001	N4-7-1	30 Winter	100	+40%					6.566	-0.156	0.000
N4-1.008	N4-1-8	30 Winter	100	+40%	30/15 Winter	100/15 Summer			6.539	1.076	17.172
N4-1.009	N4-1-9	30 Winter	100	+40%	30/15 Winter				4.825	0.785	0.000
N4-8.000	N4-8-0	30 Winter	100	+40%					13.172	-0.169	0.000
N4-8.001	N4-8-1	15 Winter	100	+40%					12.327	-0.126	0.000
N4-8.002	N4-8-2	15 Winter	100	+40%					11.936	-0.151	0.000
N4-8.003	N4-8-3	15 Winter	100	+40%					11.642	-0.106	0.000
N4-8.004	N4-8-4	15 Winter	100	+40%					10.862	-0.088	0.000
N4-8.005	N4-8-5	15 Winter	100	+40%					10.324	-0.071	0.000
N4-8.006	N4-8-6	15 Winter	100	+40%					10.135	-0.080	0.000
N4-8.007	N4-8-7	15 Winter	100	+40%					9.592	-0.031	0.000
N4-8.008	N4-8-8	30 Winter	100	+40%					9.181	-0.020	0.000

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.16		17.7	FLOOD RISK*	
N4-1.001	N4-1-1	0.06		17.8	FLOOD RISK*	
N4-1.002	N4-1-2	0.51		17.6	OK	
N4-2.000	N4-2-0	0.10		12.2	FLOOD RISK*	
N4-2.001	N4-2-1	0.04		12.2	FLOOD RISK*	
N4-2.002	N4-2-2	0.28		12.1	OK	
N4-2.003	N4-2-3	0.26		11.2	SURCHARGED	
N4-1.003	N4-1-3	0.79		22.5	SURCHARGED	
N4-3.000	N4-3-0	0.31		23.5	FLOOD RISK*	
N4-3.001	N4-3-1	0.07		23.5	FLOOD RISK*	
N4-1.004	N4-1-4	0.92		30.6	SURCHARGED	
N4-4.000	N4-4-0	0.22		24.7	FLOOD RISK*	
N4-4.001	N4-4-1	0.08		24.7	FLOOD RISK*	
N4-1.005	N4-1-5	1.20		40.0	SURCHARGED	
N4-5.000	N4-5-0	0.27		29.6	FLOOD RISK*	
N4-5.001	N4-5-1	0.09		29.6	FLOOD RISK*	
N4-1.006	N4-1-6	1.18		56.2	SURCHARGED	
N4-6.000	N4-6-0	0.36		43.7	FLOOD RISK*	
N4-6.001	N4-6-1	0.14		43.7	FLOOD RISK*	
N4-1.007	N4-1-7	0.90		86.5	SURCHARGED	
N4-7.000	N4-7-0	0.12		38.7	FLOOD RISK*	
N4-7.001	N4-7-1	0.09		38.6	FLOOD RISK*	
N4-1.008	N4-1-8	1.14		96.1	FLOOD	7
N4-1.009	N4-1-9	1.15		96.2	FLOOD RISK	
N4-8.000	N4-8-0	0.14		6.3	OK	
N4-8.001	N4-8-1	0.37		12.7	OK	
N4-8.002	N4-8-2	0.23		12.7	OK	
N4-8.003	N4-8-3	0.50		22.0	OK	
N4-8.004	N4-8-4	0.65		27.0	OK	
N4-8.005	N4-8-5	0.80		28.6	OK	
N4-8.006	N4-8-6	0.72		32.2	OK	
N4-8.007	N4-8-7	0.98		34.8	OK	
N4-8.008	N4-8-8	1.00		37.2	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	30 Winter	100	+40%					8.582	-0.064	0.000	0.85
N4-8.010	N4-8-10	30 Winter	100	+40%					7.823	-0.092	0.000	0.65
N4-8.011	N4-8-11	30 Winter	100	+40%					6.091	-0.123	0.000	0.42
N4-8.012	N4-8-12	30 Winter	100	+40%	100/15 Summer				3.356	0.251	0.000	0.66
N4-8.013	N4-8-13	30 Winter	100	+40%	5/30 Winter				3.175	0.527	0.000	1.62
N4-1.010	N4-1-10	30 Winter	100	+40%	30/15 Winter				3.085	0.318	0.000	1.19
N4-1.011	N4-1-11	30 Winter	100	+40%	30/15 Summer				2.586	0.169	0.000	1.63

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		39.7	OK	
N4-8.010	N4-8-10		43.7	OK	
N4-8.011	N4-8-11		46.3	OK	
N4-8.012	N4-8-12		44.6	SURCHARGED	
N4-8.013	N4-8-13		42.8	FLOOD RISK	
N4-1.010	N4-1-10		183.3	FLOOD RISK	
N4-1.011	N4-1-11		183.5	FLOOD RISK	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 4-Lover's Lane Diversion

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 4-Lover's Lane Diversion

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.045	4-8	0.151	8-12	0.186	12-16	0.174	16-20	0.133	20-24	0.053	24-28	0.013

Total Area Contributing (ha) = 0.754

Total Pipe Volume (m³) = 170.486

Network Design Table for Network 4-Lover's Lane Diversion

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N4-1.000	67.839	0.771	88.0	0.054	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.001	0.830	0.200	4.2	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.002	69.691	0.423	164.8	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-2.000	68.250	0.948	72.0	0.037	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-2.001	1.353	0.200	6.8	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-2.002	70.504	0.681	103.5	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-2.003	9.322	0.096	97.1	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)
N4-1.000	31.64	17.10	13.696	0.054	0.0	0.0	0.0	0.54	107.6	4.6
N4-1.001	31.63	17.11	12.925	0.054	0.0	0.0	0.0	2.48	495.2	4.6
N4-1.002	30.22	18.41	11.790	0.054	0.0	0.0	0.0	0.89	35.5	4.6
N4-2.000	31.86	16.91	13.852	0.037	0.0	0.0	0.0	0.59	118.9	3.2
N4-2.001	31.84	16.92	12.904	0.037	0.0	0.0	0.0	1.94	387.9	3.2
N4-2.002	30.68	17.97	12.144	0.037	0.0	0.0	0.0	1.13	44.9	3.2
N4-2.003	30.56	18.08	11.463	0.037	0.0	0.0	0.0	1.33	52.8	3.2

Network Design Table for Network 4-Lover's Lane Diversion

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N4-1.003	81.346	0.329	247.3	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-3.000	79.707	0.454	175.6	0.072	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-3.001	0.893	0.200	4.5	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.004	59.534	0.333	178.8	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-4.000	57.652	0.689	83.7	0.075	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-4.001	1.074	0.200	5.4	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.005	60.770	0.341	178.2	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-5.000	59.009	0.674	87.6	0.090	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-5.001	0.976	0.200	4.9	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.006	82.856	0.936	88.5	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-6.000	81.384	1.192	68.3	0.134	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-6.001	0.941	0.200	4.7	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N4-1.007	90.852	4.190	21.7	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-7.000	89.520	4.165	21.5	0.117	15.00	0.0		0.045	4 \=/	600	1:4 Swale	
N4-7.001	0.905	0.200	4.5	0.000	0.00	0.0		0.045	4 \=/	600	1:4 Swale	
N4-1.008	38.203	1.423	26.8	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-1.009	39.021	1.423	27.4	0.000	0.00	0.0	1.500		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)
N4-1.003	28.41	20.27	11.367	0.091	0.0	0.0	0.0	0.73	29.0	7.0
N4-3.000	30.13	18.49	13.696	0.072	0.0	0.0	0.0	0.38	76.1	5.9
N4-3.001	30.13	18.50	13.242	0.072	0.0	0.0	0.0	2.39	477.4	5.9
N4-1.004	27.40	21.43	11.038	0.163	0.0	0.0	0.0	0.86	34.1	12.1
N4-4.000	32.06	16.74	13.242	0.075	0.0	0.0	0.0	0.55	110.3	6.5
N4-4.001	32.05	16.75	12.553	0.075	0.0	0.0	0.0	2.18	435.3	6.5
N4-1.005	26.46	22.61	10.705	0.238	0.0	0.0	0.0	0.86	34.1	17.1
N4-5.000	31.96	16.82	12.553	0.090	0.0	0.0	0.0	0.54	107.8	7.8
N4-5.001	31.95	16.83	11.879	0.090	0.0	0.0	0.0	2.28	456.7	7.8
N4-1.006	25.62	23.74	10.364	0.328	0.0	0.0	0.0	1.22	48.5	22.8
N4-6.000	31.50	17.22	11.879	0.134	0.0	0.0	0.0	0.61	122.1	11.4
N4-6.001	31.50	17.23	10.687	0.134	0.0	0.0	0.0	2.32	465.0	11.4
N4-1.007	25.19	24.35	9.428	0.462	0.0	0.0	0.0	2.47	98.3	31.5
N4-7.000	32.65	16.25	10.687	0.117	0.0	0.0	0.0	1.20	334.6	10.3
N4-7.001	32.64	16.25	6.522	0.117	0.0	0.0	0.0	2.61	729.4	10.3
N4-1.008	24.99	24.64	5.238	0.579	0.0	0.0	0.0	2.22	88.3	39.2
N4-1.009	24.79	24.93	3.815	0.579	0.0	0.0	0.0	2.20	87.3	39.2

Network Design Table for Network 4-Lover's Lane Diversion

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N4-8.000	90.001	0.888	101.4	0.019	15.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.001	60.984	0.366	166.6	0.015	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.002	20.119	0.339	59.3	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.003	83.773	0.798	105.0	0.019	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.004	63.493	0.555	114.4	0.013	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.005	25.934	0.180	144.1	0.005	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.006	58.536	0.592	98.9	0.013	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.007	66.365	0.422	157.3	0.014	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.008	79.948	0.555	144.1	0.018	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.009	66.497	0.731	91.0	0.013	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.010	74.795	1.701	44.0	0.018	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.011	50.314	3.109	16.2	0.010	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.012	17.599	0.457	38.5	0.003	0.00	0.0	1.500		o	225	Pipe/Conduit	
N4-8.013	7.469	0.031	240.9	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
N4-1.010	40.020	0.350	114.3	0.009	0.00	47.7	1.500		o	375	Pipe/Conduit	
N4-1.011	21.507	0.114	188.7	0.006	0.00	0.0	1.500		o	375	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)
N4-8.000	32.57	16.32	13.116	0.019	0.0	0.0	0.0	1.14	45.3	1.7
N4-8.001	31.24	17.46	12.228	0.034	0.0	0.0	0.0	0.89	35.3	2.9
N4-8.002	30.99	17.68	11.862	0.034	0.0	0.0	0.0	1.49	59.3	2.9
N4-8.003	29.68	18.93	11.523	0.053	0.0	0.0	0.0	1.12	44.5	4.3
N4-8.004	28.73	19.92	10.725	0.066	0.0	0.0	0.0	1.07	42.7	5.1
N4-8.005	28.32	20.37	10.170	0.071	0.0	0.0	0.0	0.96	38.0	5.4
N4-8.006	27.58	21.22	9.990	0.084	0.0	0.0	0.0	1.15	45.9	6.3
N4-8.007	26.60	22.42	9.398	0.098	0.0	0.0	0.0	0.91	36.4	7.1
N4-8.008	25.56	23.82	8.976	0.116	0.0	0.0	0.0	0.96	38.0	8.0
N4-8.009	24.92	24.74	8.421	0.129	0.0	0.0	0.0	1.20	47.9	8.7
N4-8.010	24.45	25.46	7.690	0.147	0.0	0.0	0.0	1.73	68.9	9.7
N4-8.011	24.26	25.75	5.989	0.157	0.0	0.0	0.0	2.86	113.8	10.3
N4-8.012	24.16	25.91	2.880	0.160	0.0	0.0	0.0	1.85	73.7	10.5
N4-8.013	24.07	26.06	2.423	0.160	0.0	0.0	0.0	0.84	33.3	10.5
N4-1.010	23.80	26.50	2.392	0.748	47.7	0.0	0.0	1.50	165.6	95.9
N4-1.011	23.61	26.81	2.042	0.754	47.7	0.0	0.0	1.17	128.8	95.9

Manhole Schedules for Network 4-Lover's Lane Diversion

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)
N4-1-0	13.896	0.200	Junction		N4-1.000	13.696	200				
N4-1-1	13.125	0.200	Junction		N4-1.001	12.925	200	N4-1.000	12.925	200	
N4-1-2	12.925	1.135	Open Manhole	1050	N4-1.002	11.790	225	N4-1.001	12.725	200	910
N4-2-0	14.052	0.200	Junction		N4-2.000	13.852	200				
N4-2-1	13.104	0.200	Junction		N4-2.001	12.904	200	N4-2.000	12.904	200	
N4-2-2	12.904	0.760	Open Manhole	1050	N4-2.002	12.144	225	N4-2.001	12.704	200	535
N4-2-3	13.852	2.389	Open Manhole	1050	N4-2.003	11.463	225	N4-2.002	11.463	225	
N4-1-3	13.696	2.329	Open Manhole	1050	N4-1.003	11.367	225	N4-1.002	11.367	225	
								N4-2.003	11.367	225	
N4-3-0	13.896	0.200	Junction		N4-3.000	13.696	200				
N4-3-1	13.442	0.200	Junction		N4-3.001	13.242	200	N4-3.000	13.242	200	
N4-1-4	13.242	2.204	Open Manhole	1050	N4-1.004	11.038	225	N4-1.003	11.038	225	
								N4-3.001	13.042	200	1979
N4-4-0	13.442	0.200	Junction		N4-4.000	13.242	200				
N4-4-1	12.753	0.200	Junction		N4-4.001	12.553	200	N4-4.000	12.553	200	
N4-1-5	12.553	1.848	Open Manhole	1050	N4-1.005	10.705	225	N4-1.004	10.705	225	
								N4-4.001	12.353	200	1623
N4-5-0	12.753	0.200	Junction		N4-5.000	12.553	200				
N4-5-1	12.079	0.200	Junction		N4-5.001	11.879	200	N4-5.000	11.879	200	
N4-1-6	11.879	1.515	Open Manhole	1050	N4-1.006	10.364	225	N4-1.005	10.364	225	
								N4-5.001	11.679	200	1290
N4-6-0	12.079	0.200	Junction		N4-6.000	11.879	200				
N4-6-1	10.887	0.200	Junction		N4-6.001	10.687	200	N4-6.000	10.687	200	
N4-1-7	10.687	1.259	Open Manhole	1050	N4-1.007	9.428	225	N4-1.006	9.428	225	
								N4-6.001	10.487	200	1034
N4-7-0	10.887	0.200	Junction		N4-7.000	10.687	600				
N4-7-1	6.722	0.200	Junction		N4-7.001	6.522	600	N4-7.000	6.522	600	
N4-1-8	6.522	1.284	Open Manhole	1050	N4-1.008	5.238	225	N4-1.007	5.238	225	
								N4-7.001	6.322	600	1059
N4-1-9	4.964	1.149	Open Manhole	1050	N4-1.009	3.815	225	N4-1.008	3.815	225	
N4-8-0	14.341	1.225	Open Manhole	1050	N4-8.000	13.116	225				
N4-8-1	14.453	2.225	Open Manhole	1050	N4-8.001	12.228	225	N4-8.000	12.228	225	
N4-8-2	13.284	1.422	Open Manhole	1050	N4-8.002	11.862	225	N4-8.001	11.862	225	
N4-8-3	13.071	1.548	Open Manhole	1050	N4-8.003	11.523	225	N4-8.002	11.523	225	
N4-8-4	12.186	1.461	Open Manhole	1050	N4-8.004	10.725	225	N4-8.003	10.725	225	
N4-8-5	12.233	2.063	Open Manhole	1050	N4-8.005	10.170	225	N4-8.004	10.170	225	
N4-8-6	11.726	1.736	Open Manhole	1050	N4-8.006	9.990	225	N4-8.005	9.990	225	
N4-8-7	10.636	1.238	Open Manhole	1050	N4-8.007	9.398	225	N4-8.006	9.398	225	
N4-8-8	10.587	1.611	Open Manhole	1050	N4-8.008	8.976	225	N4-8.007	8.976	225	
N4-8-9	9.857	1.436	Open Manhole	1050	N4-8.009	8.421	225	N4-8.008	8.421	225	
N4-8-10	9.491	1.801	Open Manhole	1050	N4-8.010	7.690	225	N4-8.009	7.690	225	
N4-8-11	7.152	1.163	Open Manhole	1050	N4-8.011	5.989	225	N4-8.010	5.989	225	
N4-8-12	4.041	1.161	Open Manhole	1050	N4-8.012	2.880	225	N4-8.011	2.880	225	
N4-8-13	3.257	0.834	Open Manhole	1050	N4-8.013	2.423	225	N4-8.012	2.423	225	
N4-1-10	3.108	0.716	Open Manhole	1050	N4-1.010	2.392	375	N4-1.009	2.392	225	
								N4-8.013	2.392	225	
N4-1-11	2.776	0.734	Open Manhole	1050	N4-1.011	2.042	375	N4-1.010	2.042	375	

Manhole Schedules for Network 4-Lover's Lane Diversion

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)
N4-	2.761	0.833	Open Manhole	0		OUTFALL		N4-1.011	1.928	375	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N4-1-0	645068.147	263774.382			No Entry	
N4-1-1	645000.810	263766.282			No Entry	
N4-1-2	645000.116	263765.825	645000.116	263765.825	Required	
N4-2-0	645067.534	263783.029			No Entry	
N4-2-1	644999.827	263774.656			No Entry	
N4-2-2	644998.521	263775.012	644998.521	263775.012	Required	
N4-2-3	645068.463	263783.469	645068.463	263783.469	Required	
N4-1-3	645069.298	263774.184	645069.298	263774.184	Required	
N4-3-0	645070.191	263774.581			No Entry	
N4-3-1	645149.820	263775.622			No Entry	
N4-1-4	645150.602	263775.191	645150.602	263775.191	Required	
N4-4-0	645151.544	263775.636			No Entry	
N4-4-1	645208.838	263769.309			No Entry	
N4-1-5	645209.777	263768.786	645209.777	263768.786	Required	
N4-5-0	645210.775	263769.030			No Entry	
N4-5-1	645268.342	263756.422			No Entry	
N4-1-6	645269.042	263755.742	645269.042	263755.742	Required	

Manhole Schedules for Network 4-Lover's Lane Diversion

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N4-6-0	645269.972	263755.820			No Entry	
N4-6-1	645339.386	263714.498			No Entry	
N4-1-7	645339.675	263713.602	645339.675	263713.602	Required	
N4-7-0	645340.565	263713.396			No Entry	
N4-7-1	645382.824	263635.391			No Entry	
N4-1-8	645382.610	263634.512	645382.610	263634.512	Required	
N4-1-9	645396.670	263598.996	645396.670	263598.996	Required	
N4-8-0	644730.917	263724.564	644730.917	263724.564	Required	
N4-8-1	644820.655	263731.378	644820.655	263731.378	Required	
N4-8-2	644881.405	263736.448	644881.405	263736.448	Required	
N4-8-3	644901.310	263739.376	644901.310	263739.376	Required	
N4-8-4	644984.206	263751.450	644984.206	263751.450	Required	
N4-8-5	645038.630	263726.744	645038.630	263726.744	Required	
N4-8-6	645046.653	263702.361	645046.653	263702.361	Required	
N4-8-7	645075.042	263653.518	645075.042	263653.518	Required	
N4-8-8	645136.362	263628.253	645136.362	263628.253	Required	
N4-8-9	645213.824	263608.762	645213.824	263608.762	Required	
N4-8-10	645279.909	263601.838	645279.909	263601.838	Required	
N4-8-11	645354.669	263599.563	645354.669	263599.563	Required	
N4-8-12	645396.521	263575.069	645396.521	263575.069	Required	

Manhole Schedules for Network 4-Lover's Lane Diversion

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N4-8-13	645405.285	263559.807	645405.285	263559.807	Required	
N4-1-10	645411.985	263563.106	645411.985	263563.106	Required	
N4-1-11	645427.817	263526.351	645427.817	263526.351	Required	
N4-	645436.669	263506.751			No Entry	

PIPELINE SCHEDULES for Network 4-Lover's Lane Diversion

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)
N4-1.000	4 \=/	200	N4-1-0	13.896	13.696	0.000	Junction	
N4-1.001	4 \=/	200	N4-1-1	13.125	12.925	0.000	Junction	
N4-1.002	o	225	N4-1-2	12.925	11.790	0.910	Open Manhole	1050
N4-2.000	4 \=/	200	N4-2-0	14.052	13.852	0.000	Junction	
N4-2.001	4 \=/	200	N4-2-1	13.104	12.904	0.000	Junction	
N4-2.002	o	225	N4-2-2	12.904	12.144	0.535	Open Manhole	1050
N4-2.003	o	225	N4-2-3	13.852	11.463	2.164	Open Manhole	1050
N4-1.003	o	225	N4-1-3	13.696	11.367	2.104	Open Manhole	1050
N4-3.000	4 \=/	200	N4-3-0	13.896	13.696	0.000	Junction	
N4-3.001	4 \=/	200	N4-3-1	13.442	13.242	0.000	Junction	
N4-1.004	o	225	N4-1-4	13.242	11.038	1.979	Open Manhole	1050
N4-4.000	4 \=/	200	N4-4-0	13.442	13.242	0.000	Junction	
N4-4.001	4 \=/	200	N4-4-1	12.753	12.553	0.000	Junction	
N4-1.005	o	225	N4-1-5	12.553	10.705	1.623	Open Manhole	1050
N4-5.000	4 \=/	200	N4-5-0	12.753	12.553	0.000	Junction	
N4-5.001	4 \=/	200	N4-5-1	12.079	11.879	0.000	Junction	
N4-1.006	o	225	N4-1-6	11.879	10.364	1.290	Open Manhole	1050
N4-6.000	4 \=/	200	N4-6-0	12.079	11.879	0.000	Junction	

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)
N4-1.000	67.839	88.0	N4-1-1	13.125	12.925	0.000	Junction	
N4-1.001	0.830	4.2	N4-1-2	12.925	12.725	0.000	Open Manhole	1050
N4-1.002	69.691	164.8	N4-1-3	13.696	11.367	2.104	Open Manhole	1050
N4-2.000	68.250	72.0	N4-2-1	13.104	12.904	0.000	Junction	
N4-2.001	1.353	6.8	N4-2-2	12.904	12.704	0.000	Open Manhole	1050
N4-2.002	70.504	103.5	N4-2-3	13.852	11.463	2.164	Open Manhole	1050
N4-2.003	9.322	97.1	N4-1-3	13.696	11.367	2.104	Open Manhole	1050
N4-1.003	81.346	247.3	N4-1-4	13.242	11.038	1.979	Open Manhole	1050
N4-3.000	79.707	175.6	N4-3-1	13.442	13.242	0.000	Junction	
N4-3.001	0.893	4.5	N4-1-4	13.242	13.042	0.000	Open Manhole	1050
N4-1.004	59.534	178.8	N4-1-5	12.553	10.705	1.623	Open Manhole	1050
N4-4.000	57.652	83.7	N4-4-1	12.753	12.553	0.000	Junction	
N4-4.001	1.074	5.4	N4-1-5	12.553	12.353	0.000	Open Manhole	1050
N4-1.005	60.770	178.2	N4-1-6	11.879	10.364	1.290	Open Manhole	1050
N4-5.000	59.009	87.6	N4-5-1	12.079	11.879	0.000	Junction	
N4-5.001	0.976	4.9	N4-1-6	11.879	11.679	0.000	Open Manhole	1050
N4-1.006	82.856	88.5	N4-1-7	10.687	9.428	1.034	Open Manhole	1050
N4-6.000	81.384	68.3	N4-6-1	10.887	10.687	0.000	Junction	

PIPELINE SCHEDULES for Network 4-Lover's Lane Diversion

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)
N4-6.001	4 \=/	200	N4-6-1	10.887	10.687	0.000	Junction	
N4-1.007	o	225	N4-1-7	10.687	9.428	1.034	Open Manhole	1050
N4-7.000	4 \=/	600	N4-7-0	10.887	10.687	0.000	Junction	
N4-7.001	4 \=/	600	N4-7-1	6.722	6.522	0.000	Junction	
N4-1.008	o	225	N4-1-8	6.522	5.238	1.059	Open Manhole	1050
N4-1.009	o	225	N4-1-9	4.964	3.815	0.924	Open Manhole	1050
N4-8.000	o	225	N4-8-0	14.341	13.116	1.000	Open Manhole	1050
N4-8.001	o	225	N4-8-1	14.453	12.228	2.000	Open Manhole	1050
N4-8.002	o	225	N4-8-2	13.284	11.862	1.197	Open Manhole	1050
N4-8.003	o	225	N4-8-3	13.071	11.523	1.323	Open Manhole	1050
N4-8.004	o	225	N4-8-4	12.186	10.725	1.236	Open Manhole	1050
N4-8.005	o	225	N4-8-5	12.233	10.170	1.838	Open Manhole	1050
N4-8.006	o	225	N4-8-6	11.726	9.990	1.511	Open Manhole	1050
N4-8.007	o	225	N4-8-7	10.636	9.398	1.013	Open Manhole	1050
N4-8.008	o	225	N4-8-8	10.587	8.976	1.386	Open Manhole	1050
N4-8.009	o	225	N4-8-9	9.857	8.421	1.211	Open Manhole	1050
N4-8.010	o	225	N4-8-10	9.491	7.690	1.576	Open Manhole	1050
N4-8.011	o	225	N4-8-11	7.152	5.989	0.938	Open Manhole	1050
N4-8.012	o	225	N4-8-12	4.041	2.880	0.936	Open Manhole	1050
N4-8.013	o	225	N4-8-13	3.257	2.423	0.609	Open Manhole	1050
N4-1.010	o	375	N4-1-10	3.108	2.392	0.341	Open Manhole	1050
N4-1.011	o	375	N4-1-11	2.776	2.042	0.359	Open Manhole	1050

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)
N4-6.001	0.941	4.7	N4-1-7	10.687	10.487	0.000	Open Manhole	1050
N4-1.007	90.852	21.7	N4-1-8	6.522	5.238	1.059	Open Manhole	1050
N4-7.000	89.520	21.5	N4-7-1	6.722	6.522	0.000	Junction	
N4-7.001	0.905	4.5	N4-1-8	6.522	6.322	0.000	Open Manhole	1050
N4-1.008	38.203	26.8	N4-1-9	4.964	3.815	0.924	Open Manhole	1050
N4-1.009	39.021	27.4	N4-1-10	3.108	2.392	0.491	Open Manhole	1050
N4-8.000	90.001	101.4	N4-8-1	14.453	12.228	2.000	Open Manhole	1050
N4-8.001	60.984	166.6	N4-8-2	13.284	11.862	1.197	Open Manhole	1050
N4-8.002	20.119	59.3	N4-8-3	13.071	11.523	1.323	Open Manhole	1050
N4-8.003	83.773	105.0	N4-8-4	12.186	10.725	1.236	Open Manhole	1050
N4-8.004	63.493	114.4	N4-8-5	12.233	10.170	1.838	Open Manhole	1050
N4-8.005	25.934	144.1	N4-8-6	11.726	9.990	1.511	Open Manhole	1050
N4-8.006	58.536	98.9	N4-8-7	10.636	9.398	1.013	Open Manhole	1050
N4-8.007	66.365	157.3	N4-8-8	10.587	8.976	1.386	Open Manhole	1050
N4-8.008	79.948	144.1	N4-8-9	9.857	8.421	1.211	Open Manhole	1050
N4-8.009	66.497	91.0	N4-8-10	9.491	7.690	1.576	Open Manhole	1050
N4-8.010	74.795	44.0	N4-8-11	7.152	5.989	0.938	Open Manhole	1050
N4-8.011	50.314	16.2	N4-8-12	4.041	2.880	0.936	Open Manhole	1050
N4-8.012	17.599	38.5	N4-8-13	3.257	2.423	0.609	Open Manhole	1050
N4-8.013	7.469	240.9	N4-1-10	3.108	2.392	0.491	Open Manhole	1050
N4-1.010	40.020	114.3	N4-1-11	2.776	2.042	0.359	Open Manhole	1050
N4-1.011	21.507	188.7	N4-	2.761	1.928	0.458	Open Manhole	0

Area Summary for Network 4-Lover's Lane Diversion

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.054	0.054	0.054
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.037	0.037	0.037
2.001	-	-	100	0.000	0.000	0.000
2.002	-	-	100	0.000	0.000	0.000
2.003	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.072	0.072	0.072
3.001	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.075	0.075	0.075
4.001	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.090	0.090	0.090
5.001	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.134	0.134	0.134
6.001	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.117	0.117	0.117
7.001	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.019	0.019	0.019
8.001	-	-	100	0.015	0.015	0.015
8.002	-	-	100	0.000	0.000	0.000
8.003	-	-	100	0.019	0.019	0.019
8.004	-	-	100	0.013	0.013	0.013
8.005	-	-	100	0.005	0.005	0.005
8.006	-	-	100	0.013	0.013	0.013
8.007	-	-	100	0.014	0.014	0.014
8.008	-	-	100	0.018	0.018	0.018
8.009	-	-	100	0.013	0.013	0.013
8.010	-	-	100	0.018	0.018	0.018
8.011	-	-	100	0.010	0.010	0.010
8.012	-	-	100	0.003	0.003	0.003
8.013	-	-	100	0.000	0.000	0.000
1.010	-	-	100	0.009	0.009	0.009
1.011	-	-	100	0.006	0.006	0.006
				Total	Total	Total
				0.754	0.754	0.754

Network Classifications for Network 4-Lover's Lane Diversion

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
N4-1.000	N4-1-0	200	0.000	0.430	Unclassified				Junction
N4-1.001	N4-1-1	200	0.000	0.376	Unclassified				Junction
N4-1.002	N4-1-2	225	0.910	2.310	Unclassified	1050	0	0.910	Unclassified
N4-2.000	N4-2-0	200	0.000	0.622	Unclassified				Junction
N4-2.001	N4-2-1	200	0.000	0.402	Unclassified				Junction
N4-2.002	N4-2-2	225	0.535	2.444	Unclassified	1050	0	0.535	Unclassified
N4-2.003	N4-2-3	225	2.104	2.733	Unclassified	1050	0	2.164	Unclassified
N4-1.003	N4-1-3	225	1.979	2.695	Unclassified	1050	0	2.104	Unclassified
N4-3.000	N4-3-0	200	0.000	0.000	Unclassified				Junction
N4-3.001	N4-3-1	200	0.000	0.000	Unclassified				Junction
N4-1.004	N4-1-4	225	1.623	2.503	Unclassified	1050	0	1.979	Unclassified
N4-4.000	N4-4-0	200	0.000	0.508	Unclassified				Junction
N4-4.001	N4-4-1	200	0.000	0.666	Unclassified				Junction
N4-1.005	N4-1-5	225	1.290	1.918	Unclassified	1050	0	1.623	Unclassified
N4-5.000	N4-5-0	200	0.000	0.427	Unclassified				Junction
N4-5.001	N4-5-1	200	0.000	0.394	Unclassified				Junction
N4-1.006	N4-1-6	225	1.034	1.830	Unclassified	1050	0	1.290	Unclassified
N4-6.000	N4-6-0	200	0.000	0.686	Unclassified				Junction
N4-6.001	N4-6-1	200	0.000	0.080	Unclassified				Junction
N4-1.007	N4-1-7	225	1.034	1.369	Unclassified	1050	0	1.034	Unclassified
N4-7.000	N4-7-0	600	0.000	0.431	Unclassified				Junction
N4-7.001	N4-7-1	600	0.000	0.000	Unclassified				Junction
N4-1.008	N4-1-8	225	0.924	1.059	Unclassified	1050	0	1.059	Unclassified
N4-1.009	N4-1-9	225	0.491	0.924	Unclassified	1050	0	0.924	Unclassified
N4-8.000	N4-8-0	225	1.000	2.000	Unclassified	1050	0	1.000	Unclassified
N4-8.001	N4-8-1	225	1.197	2.000	Unclassified	1050	0	2.000	Unclassified
N4-8.002	N4-8-2	225	1.197	1.323	Unclassified	1050	0	1.197	Unclassified
N4-8.003	N4-8-3	225	0.522	1.323	Unclassified	1050	0	1.323	Unclassified
N4-8.004	N4-8-4	225	1.236	1.838	Unclassified	1050	0	1.236	Unclassified
N4-8.005	N4-8-5	225	1.511	1.838	Unclassified	1050	0	1.838	Unclassified
N4-8.006	N4-8-6	225	1.013	1.511	Unclassified	1050	0	1.511	Unclassified
N4-8.007	N4-8-7	225	0.469	1.386	Unclassified	1050	0	1.013	Unclassified
N4-8.008	N4-8-8	225	1.211	2.159	Unclassified	1050	0	1.386	Unclassified
N4-8.009	N4-8-9	225	0.898	1.576	Unclassified	1050	0	1.211	Unclassified
N4-8.010	N4-8-10	225	0.938	1.924	Unclassified	1050	0	1.576	Unclassified
N4-8.011	N4-8-11	225	0.568	0.938	Unclassified	1050	0	0.938	Unclassified
N4-8.012	N4-8-12	225	0.609	0.936	Unclassified	1050	0	0.936	Unclassified
N4-8.013	N4-8-13	225	0.491	0.609	Unclassified	1050	0	0.609	Unclassified
N4-1.010	N4-1-10	375	0.341	0.359	Unclassified	1050	0	0.341	Unclassified
N4-1.011	N4-1-11	375	0.359	0.458	Unclassified	1050	0	0.359	Unclassified

Free Flowing Outfall Details for Network 4-Lover's Lane Diversion

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N4-1.011	N4-	2.761	1.928	0.000	0	0

Simulation Criteria for Network 4-Lover's Lane Diversion

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	26	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Storage Structures for Network 4-Lover's Lane Diversion

Swale Manhole: N4-1-1, DS/PN: N4-1.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	83.5
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	87.0
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	13.034	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Swale Manhole: N4-2-1, DS/PN: N4-2.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	84.2
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	86.7
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	13.182	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-3, DS/PN: N4-1.003

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	201.2
Invert Level (m)	11.367	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	85.1		

Filter Drain Manhole: N4-1-4, DS/PN: N4-1.004

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	200.6
Invert Level (m)	11.038	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	66.0		

Swale Manhole: N4-4-1, DS/PN: N4-4.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	57.7
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	39.3
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	12.481	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-5, DS/PN: N4-1.005

Infiltration Coefficient Base (m/hr)	0.02008	Trench Width (m)	0.5
Infiltration Coefficient Side (m/hr)	0.02008	Trench Length (m)	59.5
Safety Factor	2.0	Pipe Diameter (m)	0.225
Porosity	0.30	Pipe Depth above Invert (m)	0.000
Invert Level (m)	10.705	Number of Pipes	1

Filter Drain Manhole: N4-1-5, DS/PN: N4-1.005

Slope (1:X) 178.6 Cap Infiltration Depth (m) 1.000
Cap Volume Depth (m) 1.000

Swale Manhole: N4-5-1, DS/PN: N4-5.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	59.3
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	78.2
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	11.807	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-6, DS/PN: N4-1.006

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	177.9
Invert Level (m)	10.364	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	60.7		

Swale Manhole: N4-6-1, DS/PN: N4-6.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	80.9
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	69.6
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	10.727	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-7, DS/PN: N4-1.007

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	88.5
Invert Level (m)	9.428	Cap Volume Depth (m)	1.000
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.000
Trench Length (m)	82.8		

Swale Manhole: N4-7-1, DS/PN: N4-7.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	89.8
Infiltration Coefficient Side (m/hr)	0.02008	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	21.7
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	6.592	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N4-1-8, DS/PN: N4-1.008

Infiltration Coefficient Base (m/hr)	0.02008	Porosity	0.30
Infiltration Coefficient Side (m/hr)	0.02008	Invert Level (m)	5.238
Safety Factor	2.0	Trench Width (m)	0.5

Filter Drain Manhole: N4-1-8, DS/PN: N4-1.008

Trench Length (m)	90.9	Slope (1:X)	21.7
Pipe Diameter (m)	0.225	Cap Volume Depth (m)	1.000
Pipe Depth above Invert (m)	0.000	Cap Infiltration Depth (m)	1.000
Number of Pipes	1		

Filter Drain Manhole: N4-8-1, DS/PN: N4-8.001

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	101.4
Invert Level (m)	12.228	Cap Volume Depth (m)	2.225
Trench Width (m)	0.5	Cap Infiltration Depth (m)	2.225
Trench Length (m)	90.0		

Filter Drain Manhole: N4-8-3, DS/PN: N4-8.003

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	111.4
Invert Level (m)	11.534	Cap Volume Depth (m)	1.595
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.595
Trench Length (m)	77.3		

Filter Drain Manhole: N4-8-4, DS/PN: N4-8.004

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	109.7
Invert Level (m)	10.736	Cap Volume Depth (m)	1.450
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.450
Trench Length (m)	87.6		

Filter Drain Manhole: N4-8-5, DS/PN: N4-8.005

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	114.4
Invert Level (m)	10.181	Cap Volume Depth (m)	2.050
Trench Width (m)	0.5	Cap Infiltration Depth (m)	2.050
Trench Length (m)	63.5		

Filter Drain Manhole: N4-8-6, DS/PN: N4-8.006

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	144.1
Invert Level (m)	10.276	Cap Volume Depth (m)	1.451
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.451
Trench Length (m)	25.9		

Filter Drain Manhole: N4-8-7, DS/PN: N4-8.007

Infiltration Coefficient Base (m/hr)	0.02008	Invert Level (m)	9.409
Infiltration Coefficient Side (m/hr)	0.02008	Trench Width (m)	0.5
Safety Factor	2.0	Trench Length (m)	58.5
Porosity	0.30	Pipe Diameter (m)	0.225

Filter Drain Manhole: N4-8-7, DS/PN: N4-8.007

Pipe Depth above Invert (m)	0.000	Cap Volume Depth (m)	1.225
Number of Pipes	1	Cap Infiltration Depth (m)	1.225
Slope (1:X)	98.9		

Filter Drain Manhole: N4-8-8, DS/PN: N4-8.008

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	157.3
Invert Level (m)	8.987	Cap Volume Depth (m)	1.600
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.600
Trench Length (m)	66.4		

Filter Drain Manhole: N4-8-9, DS/PN: N4-8.009

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	144.1
Invert Level (m)	8.432	Cap Volume Depth (m)	1.425
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.425
Trench Length (m)	79.9		

Filter Drain Manhole: N4-8-10, DS/PN: N4-8.010

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	91.0
Invert Level (m)	7.701	Cap Volume Depth (m)	1.785
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.785
Trench Length (m)	66.5		

Filter Drain Manhole: N4-8-11, DS/PN: N4-8.011

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	44.0
Invert Level (m)	6.000	Cap Volume Depth (m)	1.125
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.125
Trench Length (m)	74.8		

Filter Drain Manhole: N4-8-12, DS/PN: N4-8.012

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	16.3
Invert Level (m)	2.891	Cap Volume Depth (m)	1.125
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.125
Trench Length (m)	50.7		

Filter Drain Manhole: N4-8-13, DS/PN: N4-8.013

Infiltration Coefficient Base (m/hr)	0.02008	Trench Width (m)	0.5
Infiltration Coefficient Side (m/hr)	0.02008	Trench Length (m)	17.5
Safety Factor	2.0	Pipe Diameter (m)	0.225
Porosity	0.30	Pipe Depth above Invert (m)	0.000
Invert Level (m)	2.434	Number of Pipes	1

Filter Drain Manhole: N4-8-13, DS/PN: N4-8.013

Slope (1:X)	38.3	Cap Infiltration Depth (m)	1.125
Cap Volume Depth (m)	1.125		

Filter Drain Manhole: N4-1-10, DS/PN: N4-1.010

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	27.1
Invert Level (m)	2.392	Cap Volume Depth (m)	0.716
Trench Width (m)	0.5	Cap Infiltration Depth (m)	0.716
Trench Length (m)	77.0		

Filter Drain Manhole: N4-1-11, DS/PN: N4-1.011

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.375
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	114.3
Invert Level (m)	2.042	Cap Volume Depth (m)	0.734
Trench Width (m)	0.8	Cap Infiltration Depth (m)	0.734
Trench Length (m)	40.0		

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 26 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	2	+0%					13.743	-0.153	0.000
N4-1.001	N4-1-1	30 Winter	2	+0%					12.946	-0.179	0.000
N4-1.002	N4-1-2	30 Winter	2	+0%					11.842	-0.173	0.000
N4-2.000	N4-2-0	30 Winter	2	+0%					13.889	-0.163	0.000
N4-2.001	N4-2-1	30 Winter	2	+0%					12.924	-0.180	0.000
N4-2.002	N4-2-2	30 Winter	2	+0%					12.182	-0.187	0.000
N4-2.003	N4-2-3	30 Winter	2	+0%	100/30 Summer				11.501	-0.187	0.000
N4-1.003	N4-1-3	30 Winter	2	+0%	100/15 Winter				11.443	-0.149	0.000
N4-3.000	N4-3-0	30 Winter	2	+0%					13.759	-0.137	0.000
N4-3.001	N4-3-1	30 Winter	2	+0%					13.266	-0.176	0.000
N4-1.004	N4-1-4	30 Winter	2	+0%	100/15 Summer				11.133	-0.130	0.000
N4-4.000	N4-4-0	30 Winter	2	+0%					13.296	-0.146	0.000
N4-4.001	N4-4-1	30 Winter	2	+0%					12.579	-0.174	0.000
N4-1.005	N4-1-5	30 Winter	2	+0%	30/15 Winter				10.821	-0.109	0.000
N4-5.000	N4-5-0	30 Winter	2	+0%					12.613	-0.140	0.000
N4-5.001	N4-5-1	30 Winter	2	+0%					11.907	-0.172	0.000
N4-1.006	N4-1-6	30 Winter	2	+0%	100/15 Summer				10.476	-0.113	0.000
N4-6.000	N4-6-0	30 Winter	2	+0%					11.947	-0.132	0.000
N4-6.001	N4-6-1	30 Winter	2	+0%					10.721	-0.166	0.000
N4-1.007	N4-1-7	30 Winter	2	+0%	100/15 Winter				9.518	-0.135	0.000
N4-7.000	N4-7-0	30 Winter	2	+0%					10.717	-0.170	0.000
N4-7.001	N4-7-1	30 Winter	2	+0%					6.542	-0.180	0.000
N4-1.008	N4-1-8	30 Winter	2	+0%	30/15 Winter	100/15 Summer			5.348	-0.115	0.000
N4-1.009	N4-1-9	30 Winter	2	+0%	30/15 Winter				3.925	-0.115	0.000
N4-8.000	N4-8-0	30 Winter	2	+0%					13.143	-0.198	0.000
N4-8.001	N4-8-1	15 Winter	2	+0%					12.273	-0.180	0.000
N4-8.002	N4-8-2	15 Winter	2	+0%					11.895	-0.192	0.000
N4-8.003	N4-8-3	15 Winter	2	+0%					11.574	-0.174	0.000
N4-8.004	N4-8-4	15 Winter	2	+0%					10.782	-0.168	0.000
N4-8.005	N4-8-5	15 Winter	2	+0%					10.234	-0.161	0.000
N4-8.006	N4-8-6	15 Winter	2	+0%					10.052	-0.163	0.000
N4-8.007	N4-8-7	15 Winter	2	+0%					9.473	-0.150	0.000
N4-8.008	N4-8-8	15 Winter	2	+0%					9.053	-0.148	0.000

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4- Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.04		4.3	FLOOD RISK*	
N4-1.001	N4-1-1	0.01		4.3	FLOOD RISK*	
N4-1.002	N4-1-2	0.12		4.2	OK	
N4-2.000	N4-2-0	0.02		3.0	FLOOD RISK*	
N4-2.001	N4-2-1	0.01		3.0	FLOOD RISK*	
N4-2.002	N4-2-2	0.07		2.9	OK	
N4-2.003	N4-2-3	0.07		2.9	OK	
N4-1.003	N4-1-3	0.25		7.0	OK	
N4-3.000	N4-3-0	0.07		5.6	FLOOD RISK*	
N4-3.001	N4-3-1	0.02		5.6	FLOOD RISK*	
N4-1.004	N4-1-4	0.37		12.2	OK	
N4-4.000	N4-4-0	0.05		5.9	FLOOD RISK*	
N4-4.001	N4-4-1	0.02		5.9	FLOOD RISK*	
N4-1.005	N4-1-5	0.52		17.3	OK	
N4-5.000	N4-5-0	0.07		7.0	FLOOD RISK*	
N4-5.001	N4-5-1	0.02		7.0	FLOOD RISK*	
N4-1.006	N4-1-6	0.49		23.3	OK	
N4-6.000	N4-6-0	0.08		10.3	FLOOD RISK*	
N4-6.001	N4-6-1	0.03		10.3	FLOOD RISK*	
N4-1.007	N4-1-7	0.34		32.6	OK	
N4-7.000	N4-7-0	0.03		9.4	FLOOD RISK*	
N4-7.001	N4-7-1	0.02		9.4	FLOOD RISK*	
N4-1.008	N4-1-8	0.48		40.6	OK	7
N4-1.009	N4-1-9	0.48		40.6	OK	
N4-8.000	N4-8-0	0.03		1.5	OK	
N4-8.001	N4-8-1	0.08		2.9	OK	
N4-8.002	N4-8-2	0.05		2.9	OK	
N4-8.003	N4-8-3	0.11		4.8	OK	
N4-8.004	N4-8-4	0.14		6.0	OK	
N4-8.005	N4-8-5	0.18		6.4	OK	
N4-8.006	N4-8-6	0.17		7.4	OK	
N4-8.007	N4-8-7	0.23		8.3	OK	
N4-8.008	N4-8-8	0.25		9.2	OK	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4- Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	30 Winter	2	+0%					8.491	-0.155	0.000	0.21
N4-8.010	N4-8-10	30 Winter	2	+0%					7.750	-0.165	0.000	0.16
N4-8.011	N4-8-11	30 Winter	2	+0%					6.037	-0.177	0.000	0.10
N4-8.012	N4-8-12	30 Winter	2	+0%	100/15 Summer				2.942	-0.163	0.000	0.17
N4-8.013	N4-8-13	30 Winter	2	+0%	5/30 Winter				2.621	-0.027	0.000	0.43
N4-1.010	N4-1-10	30 Winter	2	+0%	30/15 Winter				2.610	-0.157	0.000	0.64
N4-1.011	N4-1-11	30 Winter	2	+0%	30/15 Summer				2.313	-0.104	0.000	0.87

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		9.8	OK	
N4-8.010	N4-8-10		10.8	OK	
N4-8.011	N4-8-11		11.4	OK	
N4-8.012	N4-8-12		11.6	OK	
N4-8.013	N4-8-13		11.3	OK	
N4-1.010	N4-1-10		98.2	OK	
N4-1.011	N4-1-11		98.0	OK	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 26 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	5	+0%					13.750	-0.146	0.000
N4-1.001	N4-1-1	30 Winter	5	+0%					12.949	-0.176	0.000
N4-1.002	N4-1-2	30 Winter	5	+0%					11.851	-0.164	0.000
N4-2.000	N4-2-0	30 Winter	5	+0%					13.895	-0.157	0.000
N4-2.001	N4-2-1	30 Winter	5	+0%					12.927	-0.177	0.000
N4-2.002	N4-2-2	30 Winter	5	+0%					12.190	-0.179	0.000
N4-2.003	N4-2-3	30 Winter	5	+0%	100/30 Summer				11.509	-0.179	0.000
N4-1.003	N4-1-3	30 Winter	5	+0%	100/15 Winter				11.457	-0.135	0.000
N4-3.000	N4-3-0	30 Winter	5	+0%					13.769	-0.127	0.000
N4-3.001	N4-3-1	30 Winter	5	+0%					13.271	-0.171	0.000
N4-1.004	N4-1-4	30 Winter	5	+0%	100/15 Summer				11.151	-0.112	0.000
N4-4.000	N4-4-0	30 Winter	5	+0%					13.305	-0.137	0.000
N4-4.001	N4-4-1	30 Winter	5	+0%					12.584	-0.169	0.000
N4-1.005	N4-1-5	30 Winter	5	+0%	30/15 Winter				10.846	-0.084	0.000
N4-5.000	N4-5-0	30 Winter	5	+0%					12.622	-0.131	0.000
N4-5.001	N4-5-1	30 Winter	5	+0%					11.912	-0.167	0.000
N4-1.006	N4-1-6	30 Winter	5	+0%	100/15 Summer				10.499	-0.090	0.000
N4-6.000	N4-6-0	30 Winter	5	+0%					11.958	-0.121	0.000
N4-6.001	N4-6-1	30 Winter	5	+0%					10.728	-0.159	0.000
N4-1.007	N4-1-7	30 Winter	5	+0%	100/15 Winter				9.535	-0.118	0.000
N4-7.000	N4-7-0	30 Winter	5	+0%					10.723	-0.164	0.000
N4-7.001	N4-7-1	30 Winter	5	+0%					6.545	-0.177	0.000
N4-1.008	N4-1-8	30 Winter	5	+0%	30/15 Winter	100/15 Summer			5.371	-0.092	0.000
N4-1.009	N4-1-9	30 Winter	5	+0%	30/15 Winter				3.949	-0.091	0.000
N4-8.000	N4-8-0	30 Winter	5	+0%					13.147	-0.194	0.000
N4-8.001	N4-8-1	15 Winter	5	+0%					12.280	-0.173	0.000
N4-8.002	N4-8-2	15 Winter	5	+0%					11.901	-0.186	0.000
N4-8.003	N4-8-3	15 Winter	5	+0%					11.582	-0.166	0.000
N4-8.004	N4-8-4	15 Winter	5	+0%					10.793	-0.157	0.000
N4-8.005	N4-8-5	15 Winter	5	+0%					10.245	-0.150	0.000
N4-8.006	N4-8-6	15 Winter	5	+0%					10.063	-0.152	0.000
N4-8.007	N4-8-7	15 Winter	5	+0%					9.487	-0.136	0.000
N4-8.008	N4-8-8	15 Winter	5	+0%					9.068	-0.133	0.000

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.05		5.8	FLOOD RISK*	
N4-1.001	N4-1-1	0.02		5.8	FLOOD RISK*	
N4-1.002	N4-1-2	0.17		5.7	OK	
N4-2.000	N4-2-0	0.03		4.0	FLOOD RISK*	
N4-2.001	N4-2-1	0.01		4.0	FLOOD RISK*	
N4-2.002	N4-2-2	0.09		4.0	OK	
N4-2.003	N4-2-3	0.09		4.0	OK	
N4-1.003	N4-1-3	0.33		9.4	OK	
N4-3.000	N4-3-0	0.10		7.6	FLOOD RISK*	
N4-3.001	N4-3-1	0.02		7.6	FLOOD RISK*	
N4-1.004	N4-1-4	0.50		16.5	OK	
N4-4.000	N4-4-0	0.07		8.0	FLOOD RISK*	
N4-4.001	N4-4-1	0.03		8.0	FLOOD RISK*	
N4-1.005	N4-1-5	0.70		23.4	OK	
N4-5.000	N4-5-0	0.09		9.6	FLOOD RISK*	
N4-5.001	N4-5-1	0.03		9.6	FLOOD RISK*	
N4-1.006	N4-1-6	0.66		31.5	OK	
N4-6.000	N4-6-0	0.12		14.1	FLOOD RISK*	
N4-6.001	N4-6-1	0.04		14.1	FLOOD RISK*	
N4-1.007	N4-1-7	0.46		44.3	OK	
N4-7.000	N4-7-0	0.04		12.7	FLOOD RISK*	
N4-7.001	N4-7-1	0.03		12.7	FLOOD RISK*	
N4-1.008	N4-1-8	0.65		55.2	OK	7
N4-1.009	N4-1-9	0.66		55.1	OK	
N4-8.000	N4-8-0	0.05		2.1	OK	
N4-8.001	N4-8-1	0.11		4.0	OK	
N4-8.002	N4-8-2	0.07		3.9	OK	
N4-8.003	N4-8-3	0.15		6.5	OK	
N4-8.004	N4-8-4	0.20		8.1	OK	
N4-8.005	N4-8-5	0.24		8.7	OK	
N4-8.006	N4-8-6	0.23		10.1	OK	
N4-8.007	N4-8-7	0.32		11.3	OK	
N4-8.008	N4-8-8	0.34		12.5	OK	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4- Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	15 Winter	5	+0%					8.503	-0.143	0.000	0.28
N4-8.010	N4-8-10	30 Winter	5	+0%					7.761	-0.154	0.000	0.22
N4-8.011	N4-8-11	30 Winter	5	+0%					6.045	-0.169	0.000	0.14
N4-8.012	N4-8-12	30 Winter	5	+0%	100/15 Summer				2.953	-0.152	0.000	0.23
N4-8.013	N4-8-13	30 Winter	5	+0%	5/30 Winter				2.652	0.004	0.000	0.59
N4-1.010	N4-1-10	30 Winter	5	+0%	30/15 Winter				2.637	-0.130	0.000	0.76
N4-1.011	N4-1-11	30 Winter	5	+0%	30/15 Summer				2.372	-0.045	0.000	1.00

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		13.3	OK	
N4-8.010	N4-8-10		14.7	OK	
N4-8.011	N4-8-11		15.5	OK	
N4-8.012	N4-8-12		15.8	OK	
N4-8.013	N4-8-13		15.6	SURCHARGED	
N4-1.010	N4-1-10		116.5	OK	
N4-1.011	N4-1-11		112.7	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	0	Number of Storage Structures	26	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	30	+0%					13.766	-0.130	0.000
N4-1.001	N4-1-1	30 Winter	30	+0%					12.957	-0.168	0.000
N4-1.002	N4-1-2	30 Winter	30	+0%					11.871	-0.144	0.000
N4-2.000	N4-2-0	30 Winter	30	+0%					13.908	-0.144	0.000
N4-2.001	N4-2-1	30 Winter	30	+0%					12.934	-0.170	0.000
N4-2.002	N4-2-2	30 Winter	30	+0%					12.202	-0.167	0.000
N4-2.003	N4-2-3	30 Winter	30	+0%	100/30 Summer				11.521	-0.167	0.000
N4-1.003	N4-1-3	30 Winter	30	+0%	100/15 Winter				11.489	-0.103	0.000
N4-3.000	N4-3-0	30 Winter	30	+0%					13.789	-0.107	0.000
N4-3.001	N4-3-1	30 Winter	30	+0%					13.281	-0.161	0.000
N4-1.004	N4-1-4	30 Winter	30	+0%	100/15 Summer				11.196	-0.067	0.000
N4-4.000	N4-4-0	30 Winter	30	+0%					13.323	-0.119	0.000
N4-4.001	N4-4-1	30 Winter	30	+0%					12.594	-0.159	0.000
N4-1.005	N4-1-5	30 Winter	30	+0%	30/15 Winter				10.981	0.051	0.000
N4-5.000	N4-5-0	30 Winter	30	+0%					12.641	-0.112	0.000
N4-5.001	N4-5-1	30 Winter	30	+0%					11.923	-0.156	0.000
N4-1.006	N4-1-6	30 Winter	30	+0%	100/15 Summer				10.568	-0.021	0.000
N4-6.000	N4-6-0	30 Winter	30	+0%					11.979	-0.100	0.000
N4-6.001	N4-6-1	30 Winter	30	+0%					10.740	-0.147	0.000
N4-1.007	N4-1-7	30 Winter	30	+0%	100/15 Winter				9.571	-0.082	0.000
N4-7.000	N4-7-0	30 Winter	30	+0%					10.736	-0.151	0.000
N4-7.001	N4-7-1	30 Winter	30	+0%					6.553	-0.169	0.000
N4-1.008	N4-1-8	30 Winter	30	+0%	30/15 Winter	100/15 Summer			5.768	0.305	0.000
N4-1.009	N4-1-9	30 Winter	30	+0%	30/15 Winter				4.314	0.274	0.000
N4-8.000	N4-8-0	30 Winter	30	+0%					13.158	-0.183	0.000
N4-8.001	N4-8-1	15 Winter	30	+0%					12.300	-0.153	0.000
N4-8.002	N4-8-2	15 Winter	30	+0%					11.916	-0.171	0.000
N4-8.003	N4-8-3	15 Winter	30	+0%					11.608	-0.140	0.000
N4-8.004	N4-8-4	15 Winter	30	+0%					10.822	-0.128	0.000
N4-8.005	N4-8-5	15 Winter	30	+0%					10.276	-0.119	0.000
N4-8.006	N4-8-6	15 Winter	30	+0%					10.092	-0.123	0.000
N4-8.007	N4-8-7	15 Winter	30	+0%					9.524	-0.099	0.000
N4-8.008	N4-8-8	15 Winter	30	+0%					9.104	-0.097	0.000

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.09		9.7	FLOOD RISK*	
N4-1.001	N4-1-1	0.03		9.7	FLOOD RISK*	
N4-1.002	N4-1-2	0.28		9.6	OK	
N4-2.000	N4-2-0	0.06		6.7	FLOOD RISK*	
N4-2.001	N4-2-1	0.02		6.7	FLOOD RISK*	
N4-2.002	N4-2-2	0.15		6.6	OK	
N4-2.003	N4-2-3	0.15		6.6	OK	
N4-1.003	N4-1-3	0.56		15.8	OK	
N4-3.000	N4-3-0	0.17		12.8	FLOOD RISK*	
N4-3.001	N4-3-1	0.04		12.8	FLOOD RISK*	
N4-1.004	N4-1-4	0.83		27.5	OK	
N4-4.000	N4-4-0	0.12		13.5	FLOOD RISK*	
N4-4.001	N4-4-1	0.04		13.5	FLOOD RISK*	
N4-1.005	N4-1-5	1.08		36.0	SURCHARGED	
N4-5.000	N4-5-0	0.15		16.3	FLOOD RISK*	
N4-5.001	N4-5-1	0.05		16.2	FLOOD RISK*	
N4-1.006	N4-1-6	1.00		47.6	OK	
N4-6.000	N4-6-0	0.20		23.9	FLOOD RISK*	
N4-6.001	N4-6-1	0.08		23.9	FLOOD RISK*	
N4-1.007	N4-1-7	0.73		70.1	OK	
N4-7.000	N4-7-0	0.06		21.2	FLOOD RISK*	
N4-7.001	N4-7-1	0.05		21.2	FLOOD RISK*	
N4-1.008	N4-1-8	1.01		85.6	SURCHARGED	7
N4-1.009	N4-1-9	1.02		85.4	SURCHARGED	
N4-8.000	N4-8-0	0.08		3.5	OK	
N4-8.001	N4-8-1	0.21		7.1	OK	
N4-8.002	N4-8-2	0.13		7.1	OK	
N4-8.003	N4-8-3	0.28		12.2	OK	
N4-8.004	N4-8-4	0.36		15.2	OK	
N4-8.005	N4-8-5	0.45		16.1	OK	
N4-8.006	N4-8-6	0.41		18.4	OK	
N4-8.007	N4-8-7	0.57		20.2	OK	
N4-8.008	N4-8-8	0.59		22.0	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	15 Winter	30	+0%					8.533	-0.113	0.000	0.49
N4-8.010	N4-8-10	30 Winter	30	+0%					7.785	-0.130	0.000	0.37
N4-8.011	N4-8-11	30 Winter	30	+0%					6.064	-0.150	0.000	0.24
N4-8.012	N4-8-12	30 Winter	30	+0%	100/15 Summer				2.978	-0.127	0.000	0.40
N4-8.013	N4-8-13	30 Winter	30	+0%	5/30 Winter				2.880	0.232	0.000	0.96
N4-1.010	N4-1-10	30 Winter	30	+0%	30/15 Winter				2.841	0.074	0.000	1.00
N4-1.011	N4-1-11	30 Winter	30	+0%	30/15 Summer				2.493	0.076	0.000	1.35

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		22.9	OK	
N4-8.010	N4-8-10		25.1	OK	
N4-8.011	N4-8-11		26.4	OK	
N4-8.012	N4-8-12		26.8	OK	
N4-8.013	N4-8-13		25.5	SURCHARGED	
N4-1.010	N4-1-10		152.8	FLOOD RISK	
N4-1.011	N4-1-11		152.5	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 26 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N4-1.000	N4-1-0	30 Winter	100	+40%					13.788	-0.108	0.000
N4-1.001	N4-1-1	30 Winter	100	+40%					12.969	-0.156	0.000
N4-1.002	N4-1-2	30 Winter	100	+40%					11.904	-0.111	0.000
N4-2.000	N4-2-0	30 Winter	100	+40%					13.926	-0.126	0.000
N4-2.001	N4-2-1	30 Winter	100	+40%					12.946	-0.158	0.000
N4-2.002	N4-2-2	30 Winter	100	+40%					12.224	-0.145	0.000
N4-2.003	N4-2-3	30 Winter	100	+40%	100/30 Summer				11.828	0.140	0.000
N4-1.003	N4-1-3	30 Winter	100	+40%	100/15 Winter				11.821	0.229	0.000
N4-3.000	N4-3-0	30 Winter	100	+40%					13.818	-0.078	0.000
N4-3.001	N4-3-1	30 Winter	100	+40%					13.293	-0.149	0.000
N4-1.004	N4-1-4	30 Winter	100	+40%	100/15 Summer				11.745	0.482	0.000
N4-4.000	N4-4-0	30 Winter	100	+40%					13.348	-0.094	0.000
N4-4.001	N4-4-1	30 Winter	100	+40%					12.608	-0.145	0.000
N4-1.005	N4-1-5	30 Winter	100	+40%	30/15 Winter				11.566	0.636	0.000
N4-5.000	N4-5-0	30 Winter	100	+40%					12.669	-0.084	0.000
N4-5.001	N4-5-1	30 Winter	100	+40%					11.939	-0.140	0.000
N4-1.006	N4-1-6	30 Winter	100	+40%	100/15 Summer				11.126	0.537	0.000
N4-6.000	N4-6-0	30 Winter	100	+40%					12.009	-0.070	0.000
N4-6.001	N4-6-1	30 Winter	100	+40%					10.757	-0.130	0.000
N4-1.007	N4-1-7	30 Winter	100	+40%	100/15 Winter				9.903	0.250	0.000
N4-7.000	N4-7-0	30 Winter	100	+40%					10.755	-0.132	0.000
N4-7.001	N4-7-1	30 Winter	100	+40%					6.566	-0.156	0.000
N4-1.008	N4-1-8	30 Winter	100	+40%	30/15 Winter	100/15 Summer			6.539	1.076	17.172
N4-1.009	N4-1-9	30 Winter	100	+40%	30/15 Winter				4.825	0.785	0.000
N4-8.000	N4-8-0	30 Winter	100	+40%					13.172	-0.169	0.000
N4-8.001	N4-8-1	15 Winter	100	+40%					12.327	-0.126	0.000
N4-8.002	N4-8-2	15 Winter	100	+40%					11.936	-0.151	0.000
N4-8.003	N4-8-3	15 Winter	100	+40%					11.642	-0.106	0.000
N4-8.004	N4-8-4	15 Winter	100	+40%					10.862	-0.088	0.000
N4-8.005	N4-8-5	15 Winter	100	+40%					10.324	-0.071	0.000
N4-8.006	N4-8-6	15 Winter	100	+40%					10.135	-0.080	0.000
N4-8.007	N4-8-7	15 Winter	100	+40%					9.592	-0.031	0.000
N4-8.008	N4-8-8	30 Winter	100	+40%					9.181	-0.020	0.000

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-1.000	N4-1-0	0.16		17.7	FLOOD RISK*	
N4-1.001	N4-1-1	0.06		17.8	FLOOD RISK*	
N4-1.002	N4-1-2	0.51		17.6	OK	
N4-2.000	N4-2-0	0.10		12.2	FLOOD RISK*	
N4-2.001	N4-2-1	0.04		12.2	FLOOD RISK*	
N4-2.002	N4-2-2	0.28		12.1	OK	
N4-2.003	N4-2-3	0.26		11.2	SURCHARGED	
N4-1.003	N4-1-3	0.79		22.5	SURCHARGED	
N4-3.000	N4-3-0	0.31		23.5	FLOOD RISK*	
N4-3.001	N4-3-1	0.07		23.5	FLOOD RISK*	
N4-1.004	N4-1-4	0.92		30.6	SURCHARGED	
N4-4.000	N4-4-0	0.22		24.7	FLOOD RISK*	
N4-4.001	N4-4-1	0.08		24.7	FLOOD RISK*	
N4-1.005	N4-1-5	1.20		40.0	SURCHARGED	
N4-5.000	N4-5-0	0.27		29.6	FLOOD RISK*	
N4-5.001	N4-5-1	0.09		29.6	FLOOD RISK*	
N4-1.006	N4-1-6	1.18		56.2	SURCHARGED	
N4-6.000	N4-6-0	0.36		43.7	FLOOD RISK*	
N4-6.001	N4-6-1	0.14		43.7	FLOOD RISK*	
N4-1.007	N4-1-7	0.90		86.5	SURCHARGED	
N4-7.000	N4-7-0	0.12		38.7	FLOOD RISK*	
N4-7.001	N4-7-1	0.09		38.6	FLOOD RISK*	
N4-1.008	N4-1-8	1.14		96.1	FLOOD	7
N4-1.009	N4-1-9	1.15		96.2	FLOOD RISK	
N4-8.000	N4-8-0	0.14		6.3	OK	
N4-8.001	N4-8-1	0.37		12.7	OK	
N4-8.002	N4-8-2	0.23		12.7	OK	
N4-8.003	N4-8-3	0.50		22.0	OK	
N4-8.004	N4-8-4	0.65		27.0	OK	
N4-8.005	N4-8-5	0.80		28.6	OK	
N4-8.006	N4-8-6	0.72		32.2	OK	
N4-8.007	N4-8-7	0.98		34.8	OK	
N4-8.008	N4-8-8	1.00		37.2	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 4-Lover's Lane Diversion

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N4-8.009	N4-8-9	30 Winter	100	+40%					8.582	-0.064	0.000	0.85
N4-8.010	N4-8-10	30 Winter	100	+40%					7.823	-0.092	0.000	0.65
N4-8.011	N4-8-11	30 Winter	100	+40%					6.091	-0.123	0.000	0.42
N4-8.012	N4-8-12	30 Winter	100	+40%	100/15 Summer				3.356	0.251	0.000	0.66
N4-8.013	N4-8-13	30 Winter	100	+40%	5/30 Winter				3.175	0.527	0.000	1.62
N4-1.010	N4-1-10	30 Winter	100	+40%	30/15 Winter				3.085	0.318	0.000	1.19
N4-1.011	N4-1-11	30 Winter	100	+40%	30/15 Summer				2.586	0.169	0.000	1.63

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N4-8.009	N4-8-9		39.7	OK	
N4-8.010	N4-8-10		43.7	OK	
N4-8.011	N4-8-11		46.3	OK	
N4-8.012	N4-8-12		44.6	SURCHARGED	
N4-8.013	N4-8-13		42.8	FLOOD RISK	
N4-1.010	N4-1-10		183.3	FLOOD RISK	
N4-1.011	N4-1-11		183.5	FLOOD RISK	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 5-Bridleway 19

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 5-Bridleway 19

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.051	4-8	0.083	8-12	0.019	12-16	0.019	16-20	0.015

Total Area Contributing (ha) = 0.186

Total Pipe Volume (m³) = 15.569

Network Design Table for Network 5-Bridleway 19

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
N5-1.000	7.819	0.469	16.7	0.000	15.00	15.0	0.600	o	225	Pipe/Conduit	
N5-2.000	40.942	0.362	113.1	0.070	15.00	0.0	0.600	o	225	Pipe/Conduit	
N5-1.001	14.503	0.131	110.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
N5-1.002	54.813	0.285	192.3	0.034	0.00	0.0	1.500	o	225	Pipe/Conduit	
N5-1.003	75.441	2.336	32.3	0.044	0.00	0.0	1.500	o	225	Pipe/Conduit	
N5-1.004	26.302	0.364	72.3	0.004	0.00	0.0	0.600	o	225	Pipe/Conduit	
N5-1.005	33.897	2.515	13.5	0.006	0.00	0.0	1.500	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)
N5-1.000	34.17	15.04	12.809	0.000	15.0	0.0	0.0	3.22	128.1	15.0
N5-2.000	33.51	15.56	12.702	0.070	0.0	0.0	0.0	1.23	48.9	6.3
N5-1.001	33.27	15.75	12.340	0.070	15.0	0.0	0.0	1.24	49.4	21.3
N5-1.002	31.93	16.86	12.209	0.104	15.0	0.0	0.0	0.83	32.9	24.0
N5-1.003	31.22	17.48	11.924	0.148	15.0	0.0	0.0	2.02	80.5	27.5
N5-1.004	30.90	17.76	9.588	0.152	15.0	0.0	0.0	1.54	61.2	27.7
N5-1.005	30.71	17.94	9.224	0.158	15.0	0.0	0.0	3.14	124.7	28.1

Network Design Table for Network 5-Bridleway 19

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
N5-1.006	51.327	3.318	15.5	0.008	0.00	0.0	1.500	o	225	Pipe/Conduit	
N5-1.007	51.327	0.780	65.8	0.008	0.00	0.0	1.500	o	225	Pipe/Conduit	
N5-1.008	11.106	0.319	34.8	0.002	0.00	0.0	1.500	o	225	Pipe/Conduit	
N5-1.009	24.078	0.317	76.0	0.010	0.00	0.0	1.500	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)
N5-1.006	30.40	18.23	6.709	0.167	15.0	0.0	0.0	2.93	116.4	28.7
N5-1.007	29.78	18.84	3.391	0.175	15.0	0.0	0.0	1.42	56.3	29.1
N5-1.008	29.68	18.93	2.611	0.177	15.0	0.0	0.0	1.95	77.5	29.2
N5-1.009	29.38	19.24	2.292	0.186	15.0	0.0	0.0	1.32	52.4	29.8

Manhole Schedules for Network 5-Bridleway 19

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)
N5-1-0	13.999	1.190	Open Manhole	1050	N5-1.000	12.809	225				
N5-2-0	13.961	1.259	Open Manhole	1050	N5-2.000	12.702	225				
N5-1-1	13.452	1.112	Open Manhole	1050	N5-1.001	12.340	225	N5-1.000	12.340	225	
								N5-2.000	12.340	225	
N5-1-2	14.305	2.096	Open Manhole	1050	N5-1.002	12.209	225	N5-1.001	12.209	225	
N5-1-3	14.678	2.754	Open Manhole	1050	N5-1.003	11.924	225	N5-1.002	11.924	225	
N5-1-4	13.558	3.970	Open Manhole	1050	N5-1.004	9.588	225	N5-1.003	9.588	225	
N5-1-5	12.365	3.141	Open Manhole	1200	N5-1.005	9.224	225	N5-1.004	9.224	225	
N5-1-6	9.838	3.129	Open Manhole	1200	N5-1.006	6.709	225	N5-1.005	6.709	225	
N5-1-7	6.520	3.129	Open Manhole	1200	N5-1.007	3.391	225	N5-1.006	3.391	225	
N5-1-8	4.024	1.413	Open Manhole	1200	N5-1.008	2.611	225	N5-1.007	2.611	225	
N5-1-9	3.517	1.225	Open Manhole	1200 x 750	N5-1.009	2.292	225	N5-1.008	2.292	225	
N5-1-10	2.657	0.682	Open Manhole	0		OUTFALL		N5-1.009	1.975	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N5-1-0	645615.388	263150.181	645615.388	263150.181	Required	
N5-2-0	645577.252	263155.023	645577.252	263155.023	Required	
N5-1-1	645618.112	263157.510	645618.112	263157.510	Required	
N5-1-2	645616.653	263171.940	645616.653	263171.940	Required	
N5-1-3	645599.396	263223.956	645599.396	263223.956	Required	
N5-1-4	645573.682	263294.867	645573.682	263294.867	Required	
N5-1-5	645561.655	263318.243	645561.655	263318.243	Required	
N5-1-6	645543.787	263346.949	645543.787	263346.949	Required	
N5-1-7	645514.471	263389.077	645514.471	263389.077	Required	
N5-1-8	645486.779	263432.290	645486.779	263432.290	Required	
N5-1-9	645483.181	263442.793	645483.181	263442.793	Required	
N5-1-10	645467.211	263460.812			No Entry	

PIPELINE SCHEDULES for Network 5-Bridleway 19

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)
N5-1.000	o	225	N5-1-0	13.999	12.809	0.965	Open Manhole	1050
N5-2.000	o	225	N5-2-0	13.961	12.702	1.034	Open Manhole	1050
N5-1.001	o	225	N5-1-1	13.452	12.340	0.887	Open Manhole	1050
N5-1.002	o	225	N5-1-2	14.305	12.209	1.871	Open Manhole	1050
N5-1.003	o	225	N5-1-3	14.678	11.924	2.529	Open Manhole	1050
N5-1.004	o	225	N5-1-4	13.558	9.588	3.745	Open Manhole	1050
N5-1.005	o	225	N5-1-5	12.365	9.224	2.916	Open Manhole	1200
N5-1.006	o	225	N5-1-6	9.838	6.709	2.904	Open Manhole	1200
N5-1.007	o	225	N5-1-7	6.520	3.391	2.904	Open Manhole	1200
N5-1.008	o	225	N5-1-8	4.024	2.611	1.188	Open Manhole	1200
N5-1.009	o	225	N5-1-9	3.517	2.292	1.000	Open Manhole	1200 x 750

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)
N5-1.000	7.819	16.7	N5-1-1	13.452	12.340	0.887	Open Manhole	1050
N5-2.000	40.942	113.1	N5-1-1	13.452	12.340	0.887	Open Manhole	1050
N5-1.001	14.503	110.7	N5-1-2	14.305	12.209	1.871	Open Manhole	1050
N5-1.002	54.813	192.3	N5-1-3	14.678	11.924	2.529	Open Manhole	1050
N5-1.003	75.441	32.3	N5-1-4	13.558	9.588	3.745	Open Manhole	1050
N5-1.004	26.302	72.3	N5-1-5	12.365	9.224	2.916	Open Manhole	1200
N5-1.005	33.897	13.5	N5-1-6	9.838	6.709	2.904	Open Manhole	1200
N5-1.006	51.327	15.5	N5-1-7	6.520	3.391	2.904	Open Manhole	1200
N5-1.007	51.327	65.8	N5-1-8	4.024	2.611	1.188	Open Manhole	1200
N5-1.008	11.106	34.8	N5-1-9	3.517	2.292	1.000	Open Manhole	1200 x 750
N5-1.009	24.078	76.0	N5-1-10	2.657	1.975	0.457	Open Manhole	0

Area Summary for Network 5-Bridleway 19

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
2.000	Classification	Carriageway	100	0.070	0.070	0.070
1.001	-	-	100	0.000	0.000	0.000
1.002	Classification	Footway	100	0.034	0.034	0.034
1.003	Classification	Footway	100	0.044	0.044	0.044
1.004	Classification	Bridleway	25	0.017	0.004	0.004
1.005	Classification	Earthworks	25	0.003	0.001	0.001
	Classification	Verge	25	0.005	0.001	0.002
	Classification	Bridleway	25	0.017	0.004	0.006
1.006	Classification	Verge	25	0.008	0.002	0.002
	Classification	Earthworks	25	0.000	0.000	0.002
	Classification	Bridleway	25	0.026	0.006	0.008
1.007	Classification	Verge	25	0.008	0.002	0.002
	Classification	Bridleway	25	0.026	0.006	0.008
1.008	Classification	Verge	25	0.002	0.000	0.000
	Classification	Bridleway	25	0.005	0.001	0.002
1.009	Classification	Verge	25	0.009	0.002	0.002
	Classification	Bridleway	25	0.030	0.007	0.010
				Total	Total	Total
				0.302	0.186	0.186

Network Classifications for Network 5-Bridleway 19

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
N5-1.000	N5-1-0	225	0.734	1.262	Unclassified	1050	0	0.965	Unclassified
N5-2.000	N5-2-0	225	0.887	1.048	Unclassified	1050	0	1.034	Unclassified
N5-1.001	N5-1-1	225	0.887	1.871	Unclassified	1050	0	0.887	Unclassified
N5-1.002	N5-1-2	225	1.871	2.529	Unclassified	1050	0	1.871	Unclassified
N5-1.003	N5-1-3	225	2.529	3.745	Unclassified	1050	0	2.529	Unclassified
N5-1.004	N5-1-4	225	2.916	3.745	Unclassified	1050	0	3.745	Unclassified
N5-1.005	N5-1-5	225	2.904	2.916	Unclassified	1200	0	2.916	Unclassified
N5-1.006	N5-1-6	225	2.657	2.904	Unclassified	1200	0	2.904	Unclassified
N5-1.007	N5-1-7	225	1.188	2.904	Unclassified	1200	0	2.904	Unclassified
N5-1.008	N5-1-8	225	1.000	1.275	Unclassified	1200	0	1.188	Unclassified
N5-1.009	N5-1-9	225	0.085	1.000	Unclassified	1200	750	1.000	Unclassified

Free Flowing Outfall Details for Network 5-Bridleway 19

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N5-1.009	N5-1-10	2.657	1.975	0.000	0	0

Simulation Criteria for Network 5-Bridleway 19

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	7	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Storage Structures for Network 5-Bridleway 19

Filter Drain Manhole: N5-1-2, DS/PN: N5-1.002

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	94.3
Invert Level (m)	12.209	Cap Volume Depth (m)	2.096
Trench Width (m)	0.5	Cap Infiltration Depth (m)	2.096
Trench Length (m)	12.4		

Filter Drain Manhole: N5-1-3, DS/PN: N5-1.003

Infiltration Coefficient Base (m/hr)	0.00208	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.00208	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	192.3
Invert Level (m)	11.924	Cap Volume Depth (m)	2.754
Trench Width (m)	0.5	Cap Infiltration Depth (m)	2.754
Trench Length (m)	54.1		

Filter Drain Manhole: N5-1-4, DS/PN: N5-1.004

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.300
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	174.7
Invert Level (m)	9.588	Cap Volume Depth (m)	3.970
Trench Width (m)	0.6	Cap Infiltration Depth (m)	3.970
Trench Length (m)	75.5		

Filter Drain Manhole: N5-1-5, DS/PN: N5-1.005

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.300
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	72.2
Invert Level (m)	9.224	Cap Volume Depth (m)	3.141
Trench Width (m)	0.6	Cap Infiltration Depth (m)	3.141
Trench Length (m)	26.3		

Filter Drain Manhole: N5-1-7, DS/PN: N5-1.007

Infiltration Coefficient Base (m/hr)	0.00000	Pipe Diameter (m)	0.300
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	15.5
Invert Level (m)	3.391	Cap Volume Depth (m)	3.129
Trench Width (m)	0.6	Cap Infiltration Depth (m)	3.129
Trench Length (m)	51.3		

Filter Drain Manhole: N5-1-8, DS/PN: N5-1.008

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.300
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	21.5
Invert Level (m)	2.611	Cap Volume Depth (m)	1.413
Trench Width (m)	0.6	Cap Infiltration Depth (m)	1.413
Trench Length (m)	51.3		

Filter Drain Manhole: N5-1-9, DS/PN: N5-1.009

Infiltration Coefficient Base (m/hr)	0.02008	Pipe Diameter (m)	0.300
Infiltration Coefficient Side (m/hr)	0.02008	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	34.8
Invert Level (m)	2.292	Cap Volume Depth (m)	1.225
Trench Width (m)	0.6	Cap Infiltration Depth (m)	1.225
Trench Length (m)	11.1		

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 5-Bridleway 19

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	0	Number of Storage Structures	7	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N5-1.000	N5-1-0	180 Summer	2	+0%					12.868	-0.166	0.000	0.16
N5-2.000	N5-2-0	30 Winter	2	+0%					12.754	-0.173	0.000	0.12
N5-1.001	N5-1-1	30 Winter	2	+0%	100/15 Summer				12.449	-0.116	0.000	0.48
N5-1.002	N5-1-2	15 Winter	2	+0%	30/15 Summer				12.354	-0.080	0.000	0.74
N5-1.003	N5-1-3	15 Winter	2	+0%					12.017	-0.132	0.000	0.36
N5-1.004	N5-1-4	15 Winter	2	+0%	100/15 Summer				9.701	-0.112	0.000	0.50
N5-1.005	N5-1-5	15 Winter	2	+0%					9.299	-0.150	0.000	0.24
N5-1.006	N5-1-6	15 Winter	2	+0%					6.787	-0.147	0.000	0.26
N5-1.007	N5-1-7	15 Winter	2	+0%	100/15 Summer				3.512	-0.104	0.000	0.56
N5-1.008	N5-1-8	15 Winter	2	+0%	100/15 Summer				2.717	-0.119	0.000	0.45
N5-1.009	N5-1-9	15 Winter	2	+0%	30/15 Winter				2.423	-0.094	0.000	0.64

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N5-1.000	N5-1-0		15.0	OK	
N5-2.000	N5-2-0		5.6	OK	
N5-1.001	N5-1-1		20.6	OK	
N5-1.002	N5-1-2		23.5	OK	
N5-1.003	N5-1-3		28.0	OK	
N5-1.004	N5-1-4		28.3	OK	
N5-1.005	N5-1-5		28.9	OK	
N5-1.006	N5-1-6		29.7	OK	
N5-1.007	N5-1-7		30.5	OK	
N5-1.008	N5-1-8		30.6	OK	
N5-1.009	N5-1-9		31.3	OK	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 5-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N5-1.000	N5-1-0	180 Summer	5	+0%					12.868	-0.166	0.000	0.16
N5-2.000	N5-2-0	30 Winter	5	+0%					12.763	-0.164	0.000	0.16
N5-1.001	N5-1-1	30 Winter	5	+0%	100/15 Summer				12.456	-0.109	0.000	0.52
N5-1.002	N5-1-2	15 Winter	5	+0%	30/15 Summer				12.368	-0.066	0.000	0.83
N5-1.003	N5-1-3	15 Winter	5	+0%					12.025	-0.124	0.000	0.41
N5-1.004	N5-1-4	15 Winter	5	+0%	100/15 Summer				9.712	-0.101	0.000	0.58
N5-1.005	N5-1-5	15 Winter	5	+0%					9.306	-0.143	0.000	0.28
N5-1.006	N5-1-6	15 Winter	5	+0%					6.795	-0.139	0.000	0.31
N5-1.007	N5-1-7	15 Winter	5	+0%	100/15 Summer				3.525	-0.091	0.000	0.66
N5-1.008	N5-1-8	15 Winter	5	+0%	100/15 Summer				2.728	-0.108	0.000	0.53
N5-1.009	N5-1-9	15 Winter	5	+0%	30/15 Winter				2.439	-0.078	0.000	0.76

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N5-1.000	N5-1-0		15.0	OK	
N5-2.000	N5-2-0		7.6	OK	
N5-1.001	N5-1-1		22.6	OK	
N5-1.002	N5-1-2		26.5	OK	
N5-1.003	N5-1-3		32.6	OK	
N5-1.004	N5-1-4		33.1	OK	
N5-1.005	N5-1-5		33.9	OK	
N5-1.006	N5-1-6		34.9	OK	
N5-1.007	N5-1-7		35.9	OK	
N5-1.008	N5-1-8		36.1	OK	
N5-1.009	N5-1-9		37.1	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 5-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N5-1.000	N5-1-0	180 Summer	30	+0%					12.868	-0.166	0.000	0.16
N5-2.000	N5-2-0	30 Winter	30	+0%					12.782	-0.145	0.000	0.28
N5-1.001	N5-1-1	15 Winter	30	+0%	100/15 Summer				12.495	-0.070	0.000	0.64
N5-1.002	N5-1-2	15 Winter	30	+0%	30/15 Summer				12.447	0.013	0.000	1.03
N5-1.003	N5-1-3	15 Winter	30	+0%					12.048	-0.101	0.000	0.58
N5-1.004	N5-1-4	15 Winter	30	+0%	100/15 Summer				9.743	-0.070	0.000	0.81
N5-1.005	N5-1-5	15 Winter	30	+0%					9.323	-0.126	0.000	0.40
N5-1.006	N5-1-6	15 Winter	30	+0%					6.814	-0.120	0.000	0.44
N5-1.007	N5-1-7	15 Winter	30	+0%	100/15 Summer				3.565	-0.051	0.000	0.94
N5-1.008	N5-1-8	15 Winter	30	+0%	100/15 Summer				2.759	-0.077	0.000	0.76
N5-1.009	N5-1-9	15 Winter	30	+0%	30/15 Winter				2.546	0.029	0.000	1.06

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N5-1.000	N5-1-0		15.0	OK	
N5-2.000	N5-2-0		12.8	OK	
N5-1.001	N5-1-1		27.9	OK	
N5-1.002	N5-1-2		32.8	SURCHARGED	
N5-1.003	N5-1-3		45.3	OK	
N5-1.004	N5-1-4		46.2	OK	
N5-1.005	N5-1-5		47.8	OK	
N5-1.006	N5-1-6		49.9	OK	
N5-1.007	N5-1-7		51.1	OK	
N5-1.008	N5-1-8		51.6	OK	
N5-1.009	N5-1-9		51.9	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 5-Bridleway 19

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	0	Number of Storage Structures	7	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
N5-1.000	N5-1-0	180 Summer	100	+40%					12.868	-0.166	0.000	0.16
N5-2.000	N5-2-0	30 Winter	100	+40%					12.906	-0.021	0.000	0.51
N5-1.001	N5-1-1	30 Winter	100	+40%	100/15 Summer				12.816	0.251	0.000	0.91
N5-1.002	N5-1-2	30 Winter	100	+40%	30/15 Summer				12.711	0.277	0.000	1.41
N5-1.003	N5-1-3	15 Winter	100	+40%					12.080	-0.069	0.000	0.80
N5-1.004	N5-1-4	15 Winter	100	+40%	100/15 Summer				9.845	0.032	0.000	1.06
N5-1.005	N5-1-5	15 Winter	100	+40%					9.339	-0.110	0.000	0.52
N5-1.006	N5-1-6	15 Winter	100	+40%					6.833	-0.101	0.000	0.58
N5-1.007	N5-1-7	15 Winter	100	+40%	100/15 Summer				4.038	0.422	0.000	1.17
N5-1.008	N5-1-8	30 Winter	100	+40%	100/15 Summer				2.993	0.157	0.000	0.92
N5-1.009	N5-1-9	30 Winter	100	+40%	30/15 Winter				2.723	0.206	0.000	1.30

PN	US/MH Name	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N5-1.000	N5-1-0		15.0	OK	
N5-2.000	N5-2-0		23.5	OK	
N5-1.001	N5-1-1		39.3	SURCHARGED	
N5-1.002	N5-1-2		44.9	SURCHARGED	
N5-1.003	N5-1-3		63.3	OK	
N5-1.004	N5-1-4		59.8	SURCHARGED	
N5-1.005	N5-1-5		61.6	OK	
N5-1.006	N5-1-6		65.4	OK	
N5-1.007	N5-1-7		63.9	SURCHARGED	
N5-1.008	N5-1-8		62.5	SURCHARGED	
N5-1.009	N5-1-9		63.7	SURCHARGED	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 6-ACA

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 6-ACA at outfall N6- (pipe N6-1.004)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.021	4-8	0.041	8-12	0.041	12-16	0.040	16-20	0.011

Total Area Contributing (ha) = 0.155

Total Pipe Volume (m³) = 39.281

Time Area Diagram at outfall N6- (pipe N6-6.007)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.031	8-12	0.053	12-16	0.053	16-20	0.052	20-24	0.011

Total Area Contributing (ha) = 0.200

Total Pipe Volume (m³) = 50.914

Network Design Table for Network 6-ACA

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N6-1.000	88.496	0.679	130.3	0.000	15.00	0.0	1.500		o	225	Pipe/Conduit	🔒
N6-2.000	87.701	1.106	79.3	0.066	15.00	0.0		0.045	4 \=/	200	1:4 Swale	🔒

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)
N6-1.000	32.38	16.47	15.316	0.000	0.0	0.0	0.0	1.00	40.0	0.0
N6-2.000	31.10	17.58	16.362	0.066	0.0	0.0	0.0	0.57	113.3	5.6

Network Design Table for Network 6-ACA

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N6-2.001	1.366	0.200	6.8	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-1.001	39.374	1.104	35.7	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N6-3.000	38.555	0.618	62.4	0.036	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-3.001	1.251	0.200	6.3	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-1.002	18.634	0.246	75.7	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N6-4.000	18.362	0.260	70.6	0.037	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-4.001	1.072	0.200	5.4	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-5.000	15.488	0.292	53.0	0.015	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-5.001	1.112	0.201	5.5	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-1.003	9.869	0.096	102.8	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
N6-1.004	2.069	0.096	21.6	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
N6-6.000	16.591	0.328	50.6	0.014	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-6.001	1.396	0.439	3.2	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-6.002	10.269	0.243	42.3	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N6-7.000	9.897	0.349	28.4	0.028	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-7.001	1.140	0.200	5.7	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-6.003	33.175	0.059	562.3	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N6-8.000	32.465	0.100	324.7	0.033	15.00	0.0		0.045	4 \=/	200	1:4 Swale	

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)
N6-2.001	31.09	17.59	15.256	0.066	0.0	0.0	0.0	1.93	386.0	5.6
N6-1.001	30.72	17.93	14.637	0.066	0.0	0.0	0.0	1.93	76.6	5.6
N6-3.000	32.95	16.01	15.256	0.036	0.0	0.0	0.0	0.64	127.7	3.3
N6-3.001	32.93	16.02	14.638	0.036	0.0	0.0	0.0	2.02	403.5	3.3
N6-1.002	30.47	18.17	13.533	0.103	0.0	0.0	0.0	1.32	52.5	8.5
N6-4.000	33.57	15.51	14.638	0.037	0.0	0.0	0.0	0.60	120.1	3.4
N6-4.001	33.56	15.52	14.378	0.037	0.0	0.0	0.0	2.18	435.8	3.4
N6-5.000	33.75	15.37	14.671	0.015	0.0	0.0	0.0	0.69	138.5	1.3
N6-5.001	33.73	15.38	14.379	0.015	0.0	0.0	0.0	2.14	429.0	1.3
N6-1.003	30.33	18.30	13.287	0.155	0.0	0.0	0.0	1.29	51.3	12.7
N6-1.004	30.32	18.31	13.191	0.155	0.0	0.0	0.0	2.83	112.6	12.7
N6-6.000	33.72	15.39	14.674	0.014	0.0	0.0	0.0	0.71	141.9	1.3
N6-6.001	33.71	15.40	14.346	0.014	0.0	0.0	0.0	2.83	565.8	1.3
N6-6.002	33.59	15.49	12.984	0.014	0.0	0.0	0.0	1.77	70.3	1.3
N6-7.000	34.00	15.17	14.107	0.028	0.0	0.0	0.0	0.95	189.4	2.6
N6-7.001	33.99	15.18	13.758	0.028	0.0	0.0	0.0	2.11	422.7	2.6
N6-6.003	32.17	16.64	12.741	0.042	0.0	0.0	0.0	0.48	19.1	3.7
N6-8.000	31.84	16.93	13.758	0.033	0.0	0.0	0.0	0.28	56.0	2.9

Network Design Table for Network 6-ACA

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
N6-8.001	1.188	0.017	69.9	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-6.004	66.210	0.243	272.5	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N6-9.000	65.086	0.527	123.5	0.063	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-9.001	1.133	0.200	5.7	0.000	0.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-6.005	82.631	0.115	718.5	0.000	0.00	0.0	1.500		o	225	Pipe/Conduit	
N6-10.000	81.387	0.289	281.6	0.062	15.00	0.0		0.045	4 \=/	200	1:4 Swale	
N6-10.001	1.455	0.200	7.3	0.000	0.00	0.0		0.045	3 \=/	200	1:3 Swale	
N6-6.006	4.645	0.044	105.6	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
N6-6.007	0.952	0.043	22.1	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)
N6-8.001	31.80	16.97	13.658	0.033	0.0	0.0	0.0	0.60	120.7	2.9
N6-6.004	30.06	18.56	12.682	0.075	0.0	0.0	0.0	0.69	27.6	6.1
N6-9.000	31.31	17.39	13.891	0.063	0.0	0.0	0.0	0.45	90.8	5.4
N6-9.001	31.30	17.40	13.364	0.063	0.0	0.0	0.0	2.12	423.9	5.4
N6-6.005	27.10	21.80	12.439	0.139	0.0	0.0	0.0	0.43	16.9	10.2
N6-10.000	29.12	19.51	13.364	0.062	0.0	0.0	0.0	0.30	60.1	4.9
N6-10.001	29.10	19.53	13.075	0.062	0.0	0.0	0.0	1.88	301.2	4.9
N6-6.006	27.05	21.86	12.324	0.200	0.0	0.0	0.0	1.27	50.6	14.7
N6-6.007	27.05	21.86	12.280	0.200	0.0	0.0	0.0	2.79	111.0	14.7

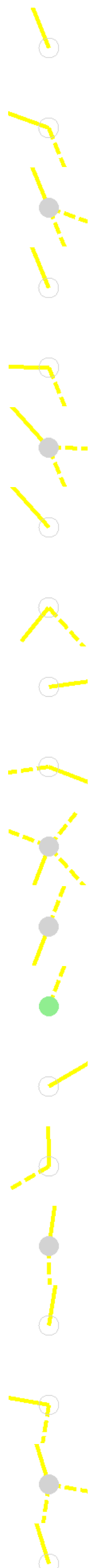
Manhole Schedules for Network 6-ACA

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)
N6-1-0	16.362	1.046	Open Manhole	1050	N6-1.000	15.316	225				
N6-2-0	16.562	0.200	Junction		N6-2.000	16.362	200				
N6-2-1	15.456	0.200	Junction		N6-2.001	15.256	200	N6-2.000	15.256	200	
N6-1-1	15.256	0.619	Open Manhole	1050	N6-1.001	14.637	225	N6-1.000	14.637	225	
								N6-2.001	15.056	200	394
N6-3-0	15.456	0.200	Junction		N6-3.000	15.256	200				
N6-3-1	14.838	0.200	Junction		N6-3.001	14.638	200	N6-3.000	14.638	200	
N6-1-2	14.638	1.105	Open Manhole	1050	N6-1.002	13.533	225	N6-1.001	13.533	225	
								N6-3.001	14.438	200	880
N6-4-0	14.838	0.200	Junction		N6-4.000	14.638	200				
N6-4-1	14.578	0.200	Junction		N6-4.001	14.378	200	N6-4.000	14.378	200	
N6-5-0	14.871	0.200	Junction		N6-5.000	14.671	200				
N6-5-1	14.579	0.200	Junction		N6-5.001	14.379	200	N6-5.000	14.379	200	
N6-1-3	14.378	1.091	Open Manhole	1050	N6-1.003	13.287	225	N6-1.002	13.287	225	
								N6-4.001	14.178	200	866
								N6-5.001	14.178	200	866
N6-1-4	15.470	2.279	Open Manhole	1050	N6-1.004	13.191	225	N6-1.003	13.191	225	
N6-	15.480	2.385	Open Manhole	0		OUTFALL		N6-1.004	13.095	225	
N6-6-0	14.874	0.200	Junction		N6-6.000	14.674	200				
N6-6-1	14.546	0.200	Junction		N6-6.001	14.346	200	N6-6.000	14.346	200	
N6-6-2	14.107	1.123	Open Manhole	1050	N6-6.002	12.984	225	N6-6.001	13.907	200	898
N6-7-0	14.307	0.200	Junction		N6-7.000	14.107	200				
N6-7-1	13.958	0.200	Junction		N6-7.001	13.758	200	N6-7.000	13.758	200	
N6-6-3	13.758	1.017	Open Manhole	1050	N6-6.003	12.741	225	N6-6.002	12.741	225	
								N6-7.001	13.558	200	792
N6-8-0	13.958	0.200	Junction		N6-8.000	13.758	200				
N6-8-1	14.091	0.433	Junction		N6-8.001	13.658	200	N6-8.000	13.658	200	
N6-6-4	13.891	1.209	Open Manhole	1050	N6-6.004	12.682	225	N6-6.003	12.682	225	
								N6-8.001	13.641	200	934
N6-9-0	14.091	0.200	Junction		N6-9.000	13.891	200				
N6-9-1	13.564	0.200	Junction		N6-9.001	13.364	200	N6-9.000	13.364	200	
N6-6-5	13.364	0.925	Open Manhole	1050	N6-6.005	12.439	225	N6-6.004	12.439	225	
								N6-9.001	13.164	200	700
N6-10-0	13.564	0.200	Junction		N6-10.000	13.364	200				
N6-10-1	13.275	0.200	Junction		N6-10.001	13.075	200	N6-10.000	13.075	200	
N6-6-6	13.075	0.751	Open Manhole	1050	N6-6.006	12.324	225	N6-6.005	12.324	225	
								N6-10.001	12.875	200	526
N6-6-7	14.165	1.885	Open Manhole	1050	N6-6.007	12.280	225	N6-6.006	12.280	225	
N6-	14.162	1.925	Open Manhole	0		OUTFALL		N6-6.007	12.237	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N6-1-0	645774.237	262753.027	645774.237	262753.027	Required	

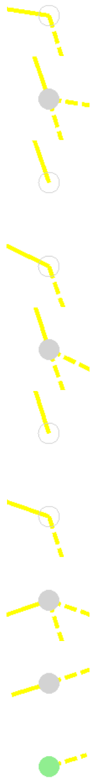
Manhole Schedules for Network 6-ACA

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N6-2-0	645775.250	262753.313			No Entry	
N6-2-1	645742.518	262834.676			No Entry	
N6-1-1	645741.232	262835.138	645741.232	262835.138	Required	
N6-3-0	645742.055	262835.823			No Entry	
N6-3-1	645727.502	262871.526			No Entry	
N6-1-2	645726.251	262871.547	645726.251	262871.547	Required	
N6-4-0	645726.876	262872.444			No Entry	
N6-4-1	645714.888	262885.831			No Entry	
N6-5-0	645697.905	262883.225			No Entry	
N6-5-1	645713.176	262885.384			No Entry	
N6-1-3	645714.217	262884.994	645714.217	262884.994	Required	
N6-1-4	645710.702	262875.772	645710.702	262875.772	Required	
N6-	645709.959	262873.841			No Entry	
N6-6-0	645693.531	262895.176			No Entry	
N6-6-1	645707.744	262903.521			No Entry	
N6-6-2	645707.716	262904.916	645707.716	262904.916	Required	
N6-7-0	645708.708	262904.940			No Entry	
N6-7-1	645710.268	262914.559			No Entry	
N6-6-3	645709.147	262914.765	645709.147	262914.765	Required	
N6-8-0	645710.113	262915.222			No Entry	



Manhole Schedules for Network 6-ACA

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N6-8-1	645700.549	262946.201			No Entry	
N6-6-4	645699.374	262946.375	645699.374	262946.375	Required	
N6-9-0	645700.246	262947.025			No Entry	
N6-9-1	645678.850	263008.467			No Entry	
N6-6-5	645677.836	263008.972	645677.836	263008.972	Required	
N6-10-0	645678.527	263009.583			No Entry	
N6-10-1	645654.000	263087.185			No Entry	
N6-6-6	645652.626	263087.663	645652.626	263087.663	Required	
N6-6-7	645648.228	263086.167	645648.228	263086.167	Required	
N6-	645647.319	263085.883			No Entry	



PIPELINE SCHEDULES for Network 6-ACA

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)
N6-1.000	o	225	N6-1-0	16.362	15.316	0.821	Open Manhole	1050
N6-2.000	4 \=/	200	N6-2-0	16.562	16.362	0.000	Junction	
N6-2.001	4 \=/	200	N6-2-1	15.456	15.256	0.000	Junction	
N6-1.001	o	225	N6-1-1	15.256	14.637	0.394	Open Manhole	1050
N6-3.000	4 \=/	200	N6-3-0	15.456	15.256	0.000	Junction	
N6-3.001	4 \=/	200	N6-3-1	14.838	14.638	0.000	Junction	
N6-1.002	o	225	N6-1-2	14.638	13.533	0.880	Open Manhole	1050
N6-4.000	4 \=/	200	N6-4-0	14.838	14.638	0.000	Junction	
N6-4.001	4 \=/	200	N6-4-1	14.578	14.378	0.000	Junction	
N6-5.000	4 \=/	200	N6-5-0	14.871	14.671	0.000	Junction	
N6-5.001	4 \=/	200	N6-5-1	14.579	14.379	0.000	Junction	
N6-1.003	o	225	N6-1-3	14.378	13.287	0.866	Open Manhole	1050
N6-1.004	o	225	N6-1-4	15.470	13.191	2.054	Open Manhole	1050
N6-6.000	4 \=/	200	N6-6-0	14.874	14.674	0.000	Junction	
N6-6.001	4 \=/	200	N6-6-1	14.546	14.346	0.000	Junction	
N6-6.002	o	225	N6-6-2	14.107	12.984	0.898	Open Manhole	1050
N6-7.000	4 \=/	200	N6-7-0	14.307	14.107	0.000	Junction	
N6-7.001	4 \=/	200	N6-7-1	13.958	13.758	0.000	Junction	

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)
N6-1.000	88.496	130.3	N6-1-1	15.256	14.637	0.394	Open Manhole	1050
N6-2.000	87.701	79.3	N6-2-1	15.456	15.256	0.000	Junction	
N6-2.001	1.366	6.8	N6-1-1	15.256	15.056	0.000	Open Manhole	1050
N6-1.001	39.374	35.7	N6-1-2	14.638	13.533	0.880	Open Manhole	1050
N6-3.000	38.555	62.4	N6-3-1	14.838	14.638	0.000	Junction	
N6-3.001	1.251	6.3	N6-1-2	14.638	14.438	0.000	Open Manhole	1050
N6-1.002	18.634	75.7	N6-1-3	14.378	13.287	0.866	Open Manhole	1050
N6-4.000	18.362	70.6	N6-4-1	14.578	14.378	0.000	Junction	
N6-4.001	1.072	5.4	N6-1-3	14.378	14.178	0.000	Open Manhole	1050
N6-5.000	15.488	53.0	N6-5-1	14.579	14.379	0.000	Junction	
N6-5.001	1.112	5.5	N6-1-3	14.378	14.178	0.000	Open Manhole	1050
N6-1.003	9.869	102.8	N6-1-4	15.470	13.191	2.054	Open Manhole	1050
N6-1.004	2.069	21.6	N6-	15.480	13.095	2.160	Open Manhole	0
N6-6.000	16.591	50.6	N6-6-1	14.546	14.346	0.000	Junction	
N6-6.001	1.396	3.2	N6-6-2	14.107	13.907	0.000	Open Manhole	1050
N6-6.002	10.269	42.3	N6-6-3	13.758	12.741	0.792	Open Manhole	1050
N6-7.000	9.897	28.4	N6-7-1	13.958	13.758	0.000	Junction	
N6-7.001	1.140	5.7	N6-6-3	13.758	13.558	0.000	Open Manhole	1050

PIPELINE SCHEDULES for Network 6-ACA

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)
N6-6.003	o	225	N6-6-3	13.758	12.741	0.792	Open Manhole	1050
N6-8.000	4 \=/	200	N6-8-0	13.958	13.758	0.000	Junction	
N6-8.001	4 \=/	200	N6-8-1	14.091	13.658	0.233	Junction	
N6-6.004	o	225	N6-6-4	13.891	12.682	0.984	Open Manhole	1050
N6-9.000	4 \=/	200	N6-9-0	14.091	13.891	0.000	Junction	
N6-9.001	4 \=/	200	N6-9-1	13.564	13.364	0.000	Junction	
N6-6.005	o	225	N6-6-5	13.364	12.439	0.700	Open Manhole	1050
N6-10.000	4 \=/	200	N6-10-0	13.564	13.364	0.000	Junction	
N6-10.001	3 \=/	200	N6-10-1	13.275	13.075	0.000	Junction	
N6-6.006	o	225	N6-6-6	13.075	12.324	0.526	Open Manhole	1050
N6-6.007	o	225	N6-6-7	14.165	12.280	1.660	Open Manhole	1050

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)
N6-6.003	33.175	562.3	N6-6-4	13.891	12.682	0.984	Open Manhole	1050
N6-8.000	32.465	324.7	N6-8-1	14.091	13.658	0.233	Junction	
N6-8.001	1.188	69.9	N6-6-4	13.891	13.641	0.050	Open Manhole	1050
N6-6.004	66.210	272.5	N6-6-5	13.364	12.439	0.700	Open Manhole	1050
N6-9.000	65.086	123.5	N6-9-1	13.564	13.364	0.000	Junction	
N6-9.001	1.133	5.7	N6-6-5	13.364	13.164	0.000	Open Manhole	1050
N6-6.005	82.631	718.5	N6-6-6	13.075	12.324	0.526	Open Manhole	1050
N6-10.000	81.387	281.6	N6-10-1	13.275	13.075	0.000	Junction	
N6-10.001	1.455	7.3	N6-6-6	13.075	12.875	0.000	Open Manhole	1050
N6-6.006	4.645	105.6	N6-6-7	14.165	12.280	1.660	Open Manhole	1050
N6-6.007	0.952	22.1	N6-	14.162	12.237	1.700	Open Manhole	0

Area Summary for Network 6-ACA

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
2.000	Classification	Carriageway	100	0.043	0.043	0.043
	Classification	Verge	25	0.004	0.001	0.044
	Classification	Swales	100	0.023	0.023	0.066
2.001	-	-	100	0.000	0.000	0.000
1.001	-	-	100	0.000	0.000	0.000
3.000	Classification	Carriageway	100	0.026	0.026	0.026
	Classification	Swales	100	0.010	0.010	0.036
	Classification	Verge	25	0.002	0.000	0.036
3.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
4.000	Classification	Carriageway	100	0.032	0.032	0.032
	Classification	Verge	25	0.001	0.000	0.032
	Classification	Swales	100	0.005	0.005	0.037
4.001	-	-	100	0.000	0.000	0.000
5.000	Classification	Carriageway	100	0.010	0.010	0.010
	Classification	Verge	25	0.001	0.000	0.011
	Classification	Swales	100	0.004	0.004	0.015
5.001	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
6.000	Classification	Carriageway	100	0.009	0.009	0.009
	Classification	Verge	25	0.001	0.000	0.010
	Classification	Swales	100	0.004	0.004	0.014
6.001	-	-	100	0.000	0.000	0.000
6.002	-	-	100	0.000	0.000	0.000
7.000	Classification	Carriageway	100	0.025	0.025	0.025
	Classification	Verge	25	0.001	0.000	0.025
	Classification	Swales	100	0.003	0.003	0.028
7.001	-	-	100	0.000	0.000	0.000
6.003	-	-	100	0.000	0.000	0.000
8.000	Classification	Carriageway	100	0.025	0.025	0.025
	Classification	Verge	25	0.002	0.000	0.025
	Classification	Swales	100	0.008	0.008	0.033
8.001	-	-	100	0.000	0.000	0.000
6.004	-	-	100	0.000	0.000	0.000
9.000	Classification	Carriageway	100	0.046	0.046	0.046
	Classification	Verge	25	0.003	0.001	0.047
	Classification	Swales	100	0.017	0.017	0.063
9.001	-	-	100	0.000	0.000	0.000
6.005	-	-	100	0.000	0.000	0.000
10.000	Classification	Carriageway	100	0.040	0.040	0.040
	Classification	Verge	25	0.004	0.001	0.041
	Classification	Swales	100	0.021	0.021	0.062
10.001	-	-	100	0.000	0.000	0.000
6.006	-	-	100	0.000	0.000	0.000
6.007	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.369	0.355	0.355

Network Classifications for Network 6-ACA

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
N6-1.000	N6-1-0	225	0.394	1.067	Unclassified	1050	0	0.821	Unclassified
N6-2.000	N6-2-0	200	0.000	0.194	Unclassified				Junction
N6-2.001	N6-2-1	200	0.000	0.144	Unclassified				Junction
N6-1.001	N6-1-1	225	0.394	0.951	Unclassified	1050	0	0.394	Unclassified
N6-3.000	N6-3-0	200	0.000	0.042	Unclassified				Junction
N6-3.001	N6-3-1	200	0.000	0.429	Unclassified				Junction
N6-1.002	N6-1-2	225	0.866	1.800	Unclassified	1050	0	0.880	Unclassified
N6-4.000	N6-4-0	200	0.000	0.653	Unclassified				Junction
N6-4.001	N6-4-1	200	0.000	0.133	Unclassified				Junction
N6-5.000	N6-5-0	200	0.000	0.000	Unclassified				Junction
N6-5.001	N6-5-1	200	0.000	0.133	Unclassified				Junction
N6-1.003	N6-1-3	225	0.866	2.054	Unclassified	1050	0	0.866	Unclassified
N6-1.004	N6-1-4	225	2.054	2.160	Unclassified	1050	0	2.054	Unclassified
N6-6.000	N6-6-0	200	0.000	0.006	Unclassified				Junction
N6-6.001	N6-6-1	200	0.000	0.276	Unclassified				Junction
N6-6.002	N6-6-2	225	0.792	1.944	Unclassified	1050	0	0.898	Unclassified
N6-7.000	N6-7-0	200	0.000	0.804	Unclassified				Junction
N6-7.001	N6-7-1	200	0.000	0.869	Unclassified				Junction
N6-6.003	N6-6-3	225	0.523	1.289	Unclassified	1050	0	0.792	Unclassified
N6-8.000	N6-8-0	200	0.000	0.233	Unclassified				Junction
N6-8.001	N6-8-1	200	0.050	0.290	Unclassified				Junction
N6-6.004	N6-6-4	225	0.700	1.175	Unclassified	1050	0	0.984	Unclassified
N6-9.000	N6-9-0	200	0.000	0.164	Unclassified				Junction
N6-9.001	N6-9-1	200	0.000	0.129	Unclassified				Junction
N6-6.005	N6-6-5	225	0.526	0.846	Unclassified	1050	0	0.700	Unclassified
N6-10.000	N6-10-0	200	0.000	0.065	Unclassified				Junction
N6-10.001	N6-10-1	200	0.000	0.139	Unclassified				Junction
N6-6.006	N6-6-6	225	0.526	1.660	Unclassified	1050	0	0.526	Unclassified
N6-6.007	N6-6-7	225	1.660	1.700	Unclassified	1050	0	1.660	Unclassified

Free Flowing Outfall Details for Network 6-ACA

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N6-1.004	N6-	15.480	13.095	0.000	0	0

Free Flowing Outfall Details for Network 6-ACA

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N6-6.007	N6-	14.162	12.237	0.000	0	0

Simulation Criteria for Network 6-ACA

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	18	Number of Real Time Controls	0

Synthetic Rainfall Details

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Online Controls for Network 6-ACA

Weir Manhole: N6-1-4, DS/PN: N6-1.004, Volume (m^3): 2.3

Discharge Coef 0.544 Width (m) 0.300 Invert Level (m) 15.403

Weir Manhole: N6-6-7, DS/PN: N6-6.007, Volume (m^3): 1.8

Discharge Coef 0.544 Width (m) 0.300 Invert Level (m) 14.165

Storage Structures for Network 6-ACA

Swale Manhole: N6-2-1, DS/PN: N6-2.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	87.7
Infiltration Coefficient Side (m/hr)	0.03128	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	79.3
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	15.256	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N6-1-1, DS/PN: N6-1.001

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	130.3
Invert Level (m)	14.637	Cap Volume Depth (m)	0.619
Trench Width (m)	0.5	Cap Infiltration Depth (m)	0.619
Trench Length (m)	88.5		

Swale Manhole: N6-3-1, DS/PN: N6-3.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	38.6
Infiltration Coefficient Side (m/hr)	0.03128	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	62.4
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	14.638	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N6-1-2, DS/PN: N6-1.002

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	35.7
Invert Level (m)	13.533	Cap Volume Depth (m)	1.105
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.105
Trench Length (m)	39.4		

Swale Manhole: N6-4-1, DS/PN: N6-4.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	18.4
Infiltration Coefficient Side (m/hr)	0.03128	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	70.6
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	14.378	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Swale Manhole: N6-5-1, DS/PN: N6-5.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	1.00
Infiltration Coefficient Side (m/hr)	0.03128	Invert Level (m)	14.379
Safety Factor	2.0	Base Width (m)	0.2

Swale Manhole: N6-5-1, DS/PN: N6-5.001

Length (m)	15.4	Cap Volume Depth (m)	0.200
Side Slope (1:X)	4.0	Cap Infiltration Depth (m)	0.200
Slope (1:X)	53.0	Include Swale Volume	No

Filter Drain Manhole: N6-1-3, DS/PN: N6-1.003

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	75.7
Invert Level (m)	13.287	Cap Volume Depth (m)	1.091
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.091
Trench Length (m)	18.7		

Cellular Storage Manhole: N6-1-4, DS/PN: N6-1.004

Invert Level (m)	13.191	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.01328	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.01328		

Depth (m)	**Area (m²)**	**Inf. Area (m²)**	**Depth (m)**	**Area (m²)**	**Inf. Area (m²)**	**Depth (m)**	**Area (m²)**	**Inf. Area (m²)**
0.000	120.0	120.0	1.200	120.0	178.4	1.201	0.0	178.4

Swale Manhole: N6-6-1, DS/PN: N6-6.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	16.6
Infiltration Coefficient Side (m/hr)	0.03128	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	50.6
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	14.346	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Swale Manhole: N6-7-1, DS/PN: N6-7.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	9.9
Infiltration Coefficient Side (m/hr)	0.01328	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	28.4
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	13.758	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N6-6-3, DS/PN: N6-6.003

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	42.3
Invert Level (m)	12.741	Cap Volume Depth (m)	1.017
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.017
Trench Length (m)	10.3		

Swale Manhole: N6-8-1, DS/PN: N6-8.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr) 0.00000 Infiltration Coefficient Side (m/hr) 0.03128

Swale Manhole: N6-8-1, DS/PN: N6-8.001

Safety Factor	2.0	Side Slope (1:X)	4.0
Porosity	1.00	Slope (1:X)	324.7
Invert Level (m)	13.658	Cap Volume Depth (m)	0.200
Base Width (m)	0.2	Cap Infiltration Depth (m)	0.200
Length (m)	32.5	Include Swale Volume	No

Filter Drain Manhole: N6-6-4, DS/PN: N6-6.004

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	562.3
Invert Level (m)	12.682	Cap Volume Depth (m)	1.209
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.209
Trench Length (m)	33.2		

Swale Manhole: N6-9-1, DS/PN: N6-9.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	65.1
Infiltration Coefficient Side (m/hr)	0.01328	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	123.5
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	13.364	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N6-6-5, DS/PN: N6-6.005

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	272.5
Invert Level (m)	12.439	Cap Volume Depth (m)	0.925
Trench Width (m)	0.5	Cap Infiltration Depth (m)	0.925
Trench Length (m)	66.2		

Swale Manhole: N6-10-1, DS/PN: N6-10.001

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	81.4
Infiltration Coefficient Side (m/hr)	0.03128	Side Slope (1:X)	4.0
Safety Factor	2.0	Slope (1:X)	281.6
Porosity	1.00	Cap Volume Depth (m)	0.200
Invert Level (m)	13.075	Cap Infiltration Depth (m)	0.200
Base Width (m)	0.2	Include Swale Volume	No

Filter Drain Manhole: N6-6-6, DS/PN: N6-6.006

Infiltration Coefficient Base (m/hr)	0.01328	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.01328	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	718.5
Invert Level (m)	12.324	Cap Volume Depth (m)	0.751
Trench Width (m)	0.5	Cap Infiltration Depth (m)	0.751
Trench Length (m)	82.6		

Cellular Storage Manhole: N6-6-7, DS/PN: N6-6.007

Invert Level (m) 12.280 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01328 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.01328

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	120.0	120.0	1.200	120.0	178.4	1.201	0.0	178.4

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 6-ACA

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 18 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N6-1.000	N6-1-0	240 Winter	2	+0%					15.316	-0.225	0.000
N6-2.000	N6-2-0	30 Winter	2	+0%					16.412	-0.150	0.000
N6-2.001	N6-2-1	30 Winter	2	+0%					15.282	-0.174	0.000
N6-1.001	N6-1-1	30 Winter	2	+0%					14.676	-0.186	0.000
N6-3.000	N6-3-0	30 Winter	2	+0%					15.291	-0.165	0.000
N6-3.001	N6-3-1	30 Winter	2	+0%					14.657	-0.181	0.000
N6-1.002	N6-1-2	30 Winter	2	+0%	30/600 Winter				13.594	-0.164	0.000
N6-4.000	N6-4-0	30 Winter	2	+0%					14.675	-0.163	0.000
N6-4.001	N6-4-1	30 Winter	2	+0%					14.397	-0.181	0.000
N6-5.000	N6-5-0	30 Winter	2	+0%					14.692	-0.179	0.000
N6-5.001	N6-5-1	30 Winter	2	+0%					14.390	-0.189	0.000
N6-1.003	N6-1-3	720 Winter	2	+0%	5/360 Winter	100/720 Winter			13.479	-0.033	0.000
N6-1.004	N6-1-4	720 Winter	2	+0%	2/240 Winter				13.478	0.062	0.000
N6-6.000	N6-6-0	30 Winter	2	+0%					14.694	-0.180	0.000
N6-6.001	N6-6-1	30 Winter	2	+0%					14.355	-0.191	0.000
N6-6.002	N6-6-2	30 Winter	2	+0%					13.004	-0.205	0.000
N6-7.000	N6-7-0	30 Winter	2	+0%					14.132	-0.175	0.000
N6-7.001	N6-7-1	30 Winter	2	+0%					13.774	-0.184	0.000
N6-6.003	N6-6-3	30 Winter	2	+0%	100/15 Winter				12.806	-0.160	0.000
N6-8.000	N6-8-0	30 Winter	2	+0%					13.809	-0.149	0.000
N6-8.001	N6-8-1	30 Winter	2	+0%					13.693	-0.398	0.000
N6-6.004	N6-6-4	30 Winter	2	+0%	100/15 Summer				12.753	-0.154	0.000
N6-9.000	N6-9-0	30 Winter	2	+0%					13.946	-0.145	0.000
N6-9.001	N6-9-1	30 Winter	2	+0%					13.388	-0.176	0.000
N6-6.005	N6-6-5	720 Winter	2	+0%	30/15 Winter				12.572	-0.092	0.000
N6-10.000	N6-10-0	30 Winter	2	+0%					13.430	-0.134	0.000
N6-10.001	N6-10-1	30 Winter	2	+0%					13.101	-0.174	0.000
N6-6.006	N6-6-6	720 Winter	2	+0%	2/360 Winter	100/180 Winter			12.572	0.023	0.000
N6-6.007	N6-6-7	720 Winter	2	+0%	2/180 Winter				12.571	0.066	0.000

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 6-ACA

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N6-1.000	N6-1-0	0.00		0.0	OK	
N6-2.000	N6-2-0	0.05		5.2	FLOOD RISK*	
N6-2.001	N6-2-1	0.02		5.2	FLOOD RISK*	
N6-1.001	N6-1-1	0.07		5.2	OK	
N6-3.000	N6-3-0	0.02		2.9	FLOOD RISK*	
N6-3.001	N6-3-1	0.01		2.9	FLOOD RISK*	
N6-1.002	N6-1-2	0.17		8.0	OK	
N6-4.000	N6-4-0	0.02		3.0	FLOOD RISK*	
N6-4.001	N6-4-1	0.01		3.0	FLOOD RISK*	
N6-5.000	N6-5-0	0.01		1.2	FLOOD RISK*	
N6-5.001	N6-5-1	0.00		1.2	FLOOD RISK*	
N6-1.003	N6-1-3	0.06		2.4	OK	4
N6-1.004	N6-1-4	0.00		0.0	SURCHARGED	
N6-6.000	N6-6-0	0.01		1.1	FLOOD RISK*	
N6-6.001	N6-6-1	0.00		1.1	FLOOD RISK*	
N6-6.002	N6-6-2	0.02		1.1	OK	
N6-7.000	N6-7-0	0.01		2.3	FLOOD RISK*	
N6-7.001	N6-7-1	0.01		2.3	FLOOD RISK*	
N6-6.003	N6-6-3	0.19		3.4	OK	
N6-8.000	N6-8-0	0.05		2.6	FLOOD RISK*	
N6-8.001	N6-8-1	0.00		2.6	OK	
N6-6.004	N6-6-4	0.21		5.7	OK	
N6-9.000	N6-9-0	0.05		5.0	FLOOD RISK*	
N6-9.001	N6-9-1	0.02		5.0	FLOOD RISK*	
N6-6.005	N6-6-5	0.13		2.1	OK	
N6-10.000	N6-10-0	0.08		4.7	FLOOD RISK*	
N6-10.001	N6-10-1	0.02		4.8	FLOOD RISK*	
N6-6.006	N6-6-6	0.08		2.3	SURCHARGED	20
N6-6.007	N6-6-7	0.00		0.0	SURCHARGED	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 6-ACA

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 18 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N6-1.000	N6-1-0	240 Winter	5	+0%					15.316	-0.225	0.000
N6-2.000	N6-2-0	30 Winter	5	+0%					16.421	-0.141	0.000
N6-2.001	N6-2-1	30 Winter	5	+0%					15.287	-0.169	0.000
N6-1.001	N6-1-1	30 Winter	5	+0%					14.683	-0.179	0.000
N6-3.000	N6-3-0	30 Winter	5	+0%					15.297	-0.159	0.000
N6-3.001	N6-3-1	30 Winter	5	+0%					14.660	-0.178	0.000
N6-1.002	N6-1-2	30 Winter	5	+0%	30/600 Winter				13.605	-0.153	0.000
N6-4.000	N6-4-0	30 Winter	5	+0%					14.681	-0.157	0.000
N6-4.001	N6-4-1	30 Winter	5	+0%					14.400	-0.178	0.000
N6-5.000	N6-5-0	30 Winter	5	+0%					14.695	-0.176	0.000
N6-5.001	N6-5-1	30 Winter	5	+0%					14.392	-0.187	0.000
N6-1.003	N6-1-3	720 Winter	5	+0%	5/360 Winter	100/720 Winter			13.550	0.038	0.000
N6-1.004	N6-1-4	720 Winter	5	+0%	2/240 Winter				13.550	0.134	0.000
N6-6.000	N6-6-0	30 Winter	5	+0%					14.697	-0.177	0.000
N6-6.001	N6-6-1	30 Winter	5	+0%					14.357	-0.189	0.000
N6-6.002	N6-6-2	30 Winter	5	+0%					13.008	-0.201	0.000
N6-7.000	N6-7-0	30 Winter	5	+0%					14.136	-0.171	0.000
N6-7.001	N6-7-1	30 Winter	5	+0%					13.777	-0.181	0.000
N6-6.003	N6-6-3	30 Winter	5	+0%	100/15 Winter				12.817	-0.149	0.000
N6-8.000	N6-8-0	30 Winter	5	+0%					13.817	-0.141	0.000
N6-8.001	N6-8-1	30 Winter	5	+0%					13.698	-0.393	0.000
N6-6.004	N6-6-4	30 Winter	5	+0%	100/15 Summer				12.765	-0.142	0.000
N6-9.000	N6-9-0	30 Winter	5	+0%					13.955	-0.136	0.000
N6-9.001	N6-9-1	30 Winter	5	+0%					13.393	-0.171	0.000
N6-6.005	N6-6-5	720 Winter	5	+0%	30/15 Winter				12.635	-0.029	0.000
N6-10.000	N6-10-0	30 Winter	5	+0%					13.440	-0.124	0.000
N6-10.001	N6-10-1	30 Winter	5	+0%					13.106	-0.169	0.000
N6-6.006	N6-6-6	720 Winter	5	+0%	2/360 Winter	100/180 Winter			12.635	0.086	0.000
N6-6.007	N6-6-7	720 Winter	5	+0%	2/180 Winter				12.635	0.130	0.000

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 6-ACA

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N6-1.000	N6-1-0	0.00		0.0	OK	
N6-2.000	N6-2-0	0.06		7.0	FLOOD RISK*	
N6-2.001	N6-2-1	0.02		7.0	FLOOD RISK*	
N6-1.001	N6-1-1	0.10		7.0	OK	
N6-3.000	N6-3-0	0.03		4.0	FLOOD RISK*	
N6-3.001	N6-3-1	0.01		4.0	FLOOD RISK*	
N6-1.002	N6-1-2	0.23		10.9	OK	
N6-4.000	N6-4-0	0.03		4.0	FLOOD RISK*	
N6-4.001	N6-4-1	0.01		4.0	FLOOD RISK*	
N6-5.000	N6-5-0	0.01		1.6	FLOOD RISK*	
N6-5.001	N6-5-1	0.01		1.6	FLOOD RISK*	
N6-1.003	N6-1-3	0.07		2.9	SURCHARGED	4
N6-1.004	N6-1-4	0.00		0.0	SURCHARGED	
N6-6.000	N6-6-0	0.01		1.5	FLOOD RISK*	
N6-6.001	N6-6-1	0.00		1.5	FLOOD RISK*	
N6-6.002	N6-6-2	0.03		1.5	OK	
N6-7.000	N6-7-0	0.02		3.1	FLOOD RISK*	
N6-7.001	N6-7-1	0.01		3.1	FLOOD RISK*	
N6-6.003	N6-6-3	0.25		4.6	OK	
N6-8.000	N6-8-0	0.06		3.6	FLOOD RISK*	
N6-8.001	N6-8-1	0.00		3.6	OK	
N6-6.004	N6-6-4	0.29		7.8	OK	
N6-9.000	N6-9-0	0.07		6.8	FLOOD RISK*	
N6-9.001	N6-9-1	0.02		6.8	FLOOD RISK*	
N6-6.005	N6-6-5	0.16		2.6	OK	
N6-10.000	N6-10-0	0.11		6.5	FLOOD RISK*	
N6-10.001	N6-10-1	0.03		6.5	FLOOD RISK*	
N6-6.006	N6-6-6	0.09		2.8	SURCHARGED	20
N6-6.007	N6-6-7	0.00		0.0	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 6-ACA

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 18 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N6-1.000	N6-1-0	240 Winter	30	+0%					15.316	-0.225	0.000
N6-2.000	N6-2-0	30 Winter	30	+0%					16.437	-0.125	0.000
N6-2.001	N6-2-1	30 Winter	30	+0%					15.297	-0.159	0.000
N6-1.001	N6-1-1	30 Winter	30	+0%					14.697	-0.165	0.000
N6-3.000	N6-3-0	30 Winter	30	+0%					15.309	-0.147	0.000
N6-3.001	N6-3-1	30 Winter	30	+0%					14.667	-0.171	0.000
N6-1.002	N6-1-2	960 Winter	30	+0%	30/600 Winter				13.788	0.030	0.000
N6-4.000	N6-4-0	30 Winter	30	+0%					14.693	-0.145	0.000
N6-4.001	N6-4-1	30 Winter	30	+0%					14.406	-0.172	0.000
N6-5.000	N6-5-0	30 Winter	30	+0%					14.703	-0.168	0.000
N6-5.001	N6-5-1	30 Winter	30	+0%					14.397	-0.182	0.000
N6-1.003	N6-1-3	960 Winter	30	+0%	5/360 Winter	100/720 Winter			13.787	0.275	0.000
N6-1.004	N6-1-4	960 Winter	30	+0%	2/240 Winter				13.787	0.371	0.000
N6-6.000	N6-6-0	30 Winter	30	+0%					14.705	-0.169	0.000
N6-6.001	N6-6-1	30 Winter	30	+0%					14.361	-0.185	0.000
N6-6.002	N6-6-2	30 Winter	30	+0%					13.013	-0.196	0.000
N6-7.000	N6-7-0	30 Winter	30	+0%					14.146	-0.161	0.000
N6-7.001	N6-7-1	30 Winter	30	+0%					13.783	-0.175	0.000
N6-6.003	N6-6-3	30 Winter	30	+0%	100/15 Winter				12.843	-0.123	0.000
N6-8.000	N6-8-0	30 Winter	30	+0%					13.834	-0.124	0.000
N6-8.001	N6-8-1	30 Winter	30	+0%					13.709	-0.382	0.000
N6-6.004	N6-6-4	960 Winter	30	+0%	100/15 Summer				12.830	-0.077	0.000
N6-9.000	N6-9-0	30 Winter	30	+0%					13.973	-0.118	0.000
N6-9.001	N6-9-1	30 Winter	30	+0%					13.402	-0.162	0.000
N6-6.005	N6-6-5	960 Winter	30	+0%	30/15 Winter				12.830	0.166	0.000
N6-10.000	N6-10-0	30 Winter	30	+0%					13.461	-0.103	0.000
N6-10.001	N6-10-1	30 Winter	30	+0%					13.117	-0.158	0.000
N6-6.006	N6-6-6	960 Winter	30	+0%	2/360 Winter	100/180 Winter			12.831	0.282	0.000
N6-6.007	N6-6-7	960 Winter	30	+0%	2/180 Winter				12.830	0.325	0.000

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 6-ACA

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N6-1.000	N6-1-0	0.00		0.0	OK	
N6-2.000	N6-2-0	0.10		11.8	FLOOD RISK*	
N6-2.001	N6-2-1	0.04		11.8	FLOOD RISK*	
N6-1.001	N6-1-1	0.16		11.8	OK	
N6-3.000	N6-3-0	0.05		6.6	FLOOD RISK*	
N6-3.001	N6-3-1	0.02		6.6	FLOOD RISK*	
N6-1.002	N6-1-2	0.05		2.6	SURCHARGED	
N6-4.000	N6-4-0	0.06		6.8	FLOOD RISK*	
N6-4.001	N6-4-1	0.02		6.8	FLOOD RISK*	
N6-5.000	N6-5-0	0.02		2.7	FLOOD RISK*	
N6-5.001	N6-5-1	0.01		2.7	FLOOD RISK*	
N6-1.003	N6-1-3	0.08		3.6	SURCHARGED	4
N6-1.004	N6-1-4	0.00		0.0	SURCHARGED	
N6-6.000	N6-6-0	0.02		2.6	FLOOD RISK*	
N6-6.001	N6-6-1	0.01		2.6	FLOOD RISK*	
N6-6.002	N6-6-2	0.04		2.6	OK	
N6-7.000	N6-7-0	0.03		5.1	FLOOD RISK*	
N6-7.001	N6-7-1	0.02		5.1	FLOOD RISK*	
N6-6.003	N6-6-3	0.42		7.6	OK	
N6-8.000	N6-8-0	0.11		6.1	FLOOD RISK*	
N6-8.001	N6-8-1	0.01		6.1	OK	
N6-6.004	N6-6-4	0.07		1.8	OK	
N6-9.000	N6-9-0	0.13		11.4	FLOOD RISK*	
N6-9.001	N6-9-1	0.04		11.4	FLOOD RISK*	
N6-6.005	N6-6-5	0.16		2.7	SURCHARGED	
N6-10.000	N6-10-0	0.18		11.0	FLOOD RISK*	
N6-10.001	N6-10-1	0.04		11.0	FLOOD RISK*	
N6-6.006	N6-6-6	0.11		3.4	FLOOD RISK	20
N6-6.007	N6-6-7	0.00		0.0	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 6-ACA

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 18 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
N6-1.000	N6-1-0	240 Winter	100	+40%					15.316	-0.225
N6-2.000	N6-2-0	30 Winter	100	+40%					16.461	-0.101
N6-2.001	N6-2-1	30 Winter	100	+40%					15.311	-0.145
N6-1.001	N6-1-1	30 Winter	100	+40%					14.720	-0.142
N6-3.000	N6-3-0	30 Winter	100	+40%					15.327	-0.129
N6-3.001	N6-3-1	30 Winter	100	+40%					14.679	-0.159
N6-1.002	N6-1-2	1440 Winter	100	+40%	30/600 Winter				14.386	0.628
N6-4.000	N6-4-0	30 Winter	100	+40%					14.712	-0.126
N6-4.001	N6-4-1	30 Winter	100	+40%					14.418	-0.160
N6-5.000	N6-5-0	30 Winter	100	+40%					14.715	-0.156
N6-5.001	N6-5-1	30 Winter	100	+40%					14.403	-0.176
N6-1.003	N6-1-3	1440 Winter	100	+40%	5/360 Winter	100/720 Winter			14.385	0.873
N6-1.004	N6-1-4	1440 Winter	100	+40%	2/240 Winter				14.385	0.969
N6-6.000	N6-6-0	30 Winter	100	+40%					14.716	-0.158
N6-6.001	N6-6-1	30 Winter	100	+40%					14.367	-0.179
N6-6.002	N6-6-2	480 Winter	100	+40%					13.136	-0.073
N6-7.000	N6-7-0	30 Winter	100	+40%					14.159	-0.148
N6-7.001	N6-7-1	30 Winter	100	+40%					13.792	-0.166
N6-6.003	N6-6-3	480 Winter	100	+40%	100/15 Winter				13.135	0.169
N6-8.000	N6-8-0	30 Winter	100	+40%					13.858	-0.100
N6-8.001	N6-8-1	30 Winter	100	+40%					13.725	-0.366
N6-6.004	N6-6-4	960 Winter	100	+40%	100/15 Summer				13.130	0.223
N6-9.000	N6-9-0	30 Winter	100	+40%					13.998	-0.093
N6-9.001	N6-9-1	30 Winter	100	+40%					13.415	-0.149
N6-6.005	N6-6-5	960 Winter	100	+40%	30/15 Winter				13.129	0.465
N6-10.000	N6-10-0	30 Winter	100	+40%					13.491	-0.073
N6-10.001	N6-10-1	30 Winter	100	+40%					13.132	-0.143
N6-6.006	N6-6-6	960 Winter	100	+40%	2/360 Winter	100/180 Winter			13.127	0.578
N6-6.007	N6-6-7	960 Winter	100	+40%	2/180 Winter				13.127	0.622

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 6-ACA

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N6-1.000	N6-1-0	0.000	0.00		0.0	OK	
N6-2.000	N6-2-0	0.000	0.19		21.6	FLOOD RISK*	
N6-2.001	N6-2-1	0.000	0.07		21.6	FLOOD RISK*	
N6-1.001	N6-1-1	0.000	0.29		21.6	OK	
N6-3.000	N6-3-0	0.000	0.09		12.1	FLOOD RISK*	
N6-3.001	N6-3-1	0.000	0.04		12.1	FLOOD RISK*	
N6-1.002	N6-1-2	0.000	0.07		3.4	FLOOD RISK	
N6-4.000	N6-4-0	0.000	0.10		12.3	FLOOD RISK*	
N6-4.001	N6-4-1	0.000	0.04		12.3	FLOOD RISK*	
N6-5.000	N6-5-0	0.000	0.04		4.9	FLOOD RISK*	
N6-5.001	N6-5-1	0.000	0.02		4.9	FLOOD RISK*	
N6-1.003	N6-1-3	7.328	0.12		5.0	FLOOD	4
N6-1.004	N6-1-4	0.000	0.00		0.0	SURCHARGED	
N6-6.000	N6-6-0	0.000	0.03		4.6	FLOOD RISK*	
N6-6.001	N6-6-1	0.000	0.01		4.6	FLOOD RISK*	
N6-6.002	N6-6-2	0.000	0.02		1.1	OK	
N6-7.000	N6-7-0	0.000	0.05		9.4	FLOOD RISK*	
N6-7.001	N6-7-1	0.000	0.03		9.4	FLOOD RISK*	
N6-6.003	N6-6-3	0.000	0.18		3.2	SURCHARGED	
N6-8.000	N6-8-0	0.000	0.20		11.1	FLOOD RISK*	
N6-8.001	N6-8-1	0.000	0.01		11.0	OK	
N6-6.004	N6-6-4	0.000	0.11		3.0	SURCHARGED	
N6-9.000	N6-9-0	0.000	0.23		20.8	FLOOD RISK*	
N6-9.001	N6-9-1	0.000	0.07		20.8	FLOOD RISK*	
N6-6.005	N6-6-5	0.000	0.32		5.3	FLOOD RISK	
N6-10.000	N6-10-0	0.000	0.34		20.1	FLOOD RISK*	
N6-10.001	N6-10-1	0.000	0.08		20.1	FLOOD RISK*	
N6-6.006	N6-6-6	51.942	0.23		7.0	FLOOD	20
N6-6.007	N6-6-7	0.000	0.00		0.0	SURCHARGED	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 7-Bridleway 19

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 7-Bridleway 19

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.017	4-8	0.033	8-12	0.013	12-16	0.002	16-20	0.002	20-24	0.001

Total Area Contributing (ha) = 0.069

Total Pipe Volume (m³) = 24.300

Network Design Table for Network 7-Bridleway 19

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
N7-1.000	50.068	0.396	126.4	0.006	15.00	0.0	1.500	o	225	Pipe/Conduit	
N7-1.001	50.077	0.349	143.5	0.006	0.00	0.0	1.500	o	225	Pipe/Conduit	
N7-1.002	91.699	0.646	141.9	0.010	0.00	0.0	1.500	o	225	Pipe/Conduit	
N7-1.003	88.301	0.963	91.7	0.000	0.00	0.0	1.500	o	225	Pipe/Conduit	
N7-1.004	90.000	1.337	67.3	0.020	0.00	0.0	1.500	o	225	Pipe/Conduit	
N7-1.005	58.685	0.408	143.8	0.007	0.00	0.0	1.500	o	225	Pipe/Conduit	
N7-1.006	37.406	0.273	137.0	0.004	0.00	0.0	1.500	o	225	Pipe/Conduit	
N7-1.007	43.511	0.332	131.1	0.005	0.00	0.0	1.500	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)
N7-1.000	33.18	15.82	15.878	0.006	0.0	0.0	0.0	1.02	40.6	0.6
N7-1.001	32.12	16.69	15.482	0.012	0.0	0.0	0.0	0.96	38.1	1.0
N7-1.002	30.35	18.28	15.133	0.022	0.0	0.0	0.0	0.96	38.3	1.8
N7-1.003	29.12	19.50	14.487	0.022	0.0	0.0	0.0	1.20	47.7	1.8
N7-1.004	28.14	20.58	13.524	0.042	0.0	0.0	0.0	1.40	55.7	3.2
N7-1.005	27.26	21.60	12.187	0.049	0.0	0.0	0.0	0.96	38.0	3.6
N7-1.006	26.75	22.24	11.779	0.053	0.0	0.0	0.0	0.98	39.0	3.8
N7-1.007	26.19	22.96	11.506	0.058	0.0	0.0	0.0	1.00	39.8	4.1

Network Design Table for Network 7-Bridleway 19

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
N7-2.000	13.734	0.197	69.7	0.002	15.00	0.0	1.500	o	225	Pipe/Conduit	
N7-2.001	21.544	0.160	134.7	0.002	0.00	0.0	1.500	o	225	Pipe/Conduit	
N7-2.002	30.400	0.200	152.0	0.003	0.00	0.0	1.500	o	225	Pipe/Conduit	
N7-2.003	24.675	0.186	132.7	0.003	0.00	0.0	1.500	o	225	Pipe/Conduit	
N7-1.008	10.013	0.049	204.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
N7-1.009	1.034	0.019	54.4	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)
N7-2.000	34.01	15.17	11.917	0.002	0.0	0.0	0.0	1.38	54.7	0.2
N7-2.001	33.55	15.53	11.720	0.005	0.0	0.0	0.0	0.99	39.3	0.4
N7-2.002	32.86	16.07	11.560	0.008	0.0	0.0	0.0	0.93	37.0	0.7
N7-2.003	32.36	16.49	11.360	0.011	0.0	0.0	0.0	1.00	39.6	1.0
N7-1.008	26.05	23.14	11.174	0.069	0.0	0.0	0.0	0.91	36.2	4.9
N7-1.009	26.05	23.15	11.125	0.069	0.0	0.0	0.0	1.78	70.7	4.9

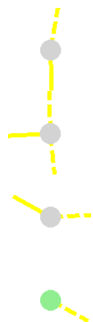
Manhole Schedules for Network 7-Bridleway 19

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)
N7-1-0	17.294	1.416	Open Manhole	1050	N7-1.000	15.878	225				
N7-1-1	17.243	1.761	Open Manhole	1050	N7-1.001	15.482	225	N7-1.000	15.482	225	
N7-1-2	17.042	1.909	Open Manhole	1050	N7-1.002	15.133	225	N7-1.001	15.133	225	
N7-1-3	16.287	1.800	Open Manhole	1050	N7-1.003	14.487	225	N7-1.002	14.487	225	
N7-1-4	14.975	1.451	Open Manhole	1050	N7-1.004	13.524	225	N7-1.003	13.524	225	
N7-1-5	13.637	1.450	Open Manhole	1050	N7-1.005	12.187	225	N7-1.004	12.187	225	
N7-1-6	13.457	1.678	Open Manhole	1050	N7-1.006	11.779	225	N7-1.005	11.779	225	
N7-1-7	13.239	1.733	Open Manhole	1050	N7-1.007	11.506	225	N7-1.006	11.506	225	
N7-2-0	13.482	1.565	Open Manhole	1050	N7-2.000	11.917	225				
N7-2-1	13.516	1.796	Open Manhole	1050	N7-2.001	11.720	225	N7-2.000	11.720	225	
N7-2-2	13.249	1.689	Open Manhole	1050	N7-2.002	11.560	225	N7-2.001	11.560	225	
N7-2-3	12.791	1.431	Open Manhole	1050	N7-2.003	11.360	225	N7-2.002	11.360	225	
N7-1-8	12.602	1.428	Open Manhole	1050	N7-1.008	11.174	225	N7-1.007	11.174	225	
								N7-2.003	11.174	225	
N7-1-9	12.793	1.668	Open Manhole	1500	N7-1.009	11.125	225	N7-1.008	11.125	225	
N7-	12.809	1.703	Open Manhole	0		OUTFALL		N7-1.009	11.106	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N7-1-0	645846.380	262628.365	645846.380	262628.365	Required	
N7-1-1	645832.423	262676.449	645832.423	262676.449	Required	
N7-1-2	645815.370	262723.523	645815.370	262723.523	Required	
N7-1-3	645783.886	262809.648	645783.886	262809.648	Required	
N7-1-4	645753.435	262892.532	645753.435	262892.532	Required	
N7-1-5	645723.136	262977.279	645723.136	262977.279	Required	
N7-1-6	645702.680	263032.279	645702.680	263032.279	Required	
N7-1-7	645694.623	263068.732	645694.623	263068.732	Required	
N7-2-0	645689.812	263200.139	645689.812	263200.139	Required	
N7-2-1	645695.533	263188.035	645695.533	263188.035	Required	
N7-2-2	645694.557	263166.617	645694.557	263166.617	Required	

Manhole Schedules for Network 7-Bridleway 19

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N7-2-3	645689.405	263136.657	645689.405	263136.657	Required	
N7-1-8	645690.123	263112.008	645690.123	263112.008	Required	
N7-1-9	645680.123	263111.490	645680.123	263111.490	Required	
N7-	645679.219	263111.990			No Entry	



PIPELINE SCHEDULES for Network 7-Bridleway 19

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)
N7-1.000	o	225	N7-1-0	17.294	15.878	1.191	Open Manhole	1050
N7-1.001	o	225	N7-1-1	17.243	15.482	1.536	Open Manhole	1050
N7-1.002	o	225	N7-1-2	17.042	15.133	1.684	Open Manhole	1050
N7-1.003	o	225	N7-1-3	16.287	14.487	1.575	Open Manhole	1050
N7-1.004	o	225	N7-1-4	14.975	13.524	1.226	Open Manhole	1050
N7-1.005	o	225	N7-1-5	13.637	12.187	1.225	Open Manhole	1050
N7-1.006	o	225	N7-1-6	13.457	11.779	1.453	Open Manhole	1050
N7-1.007	o	225	N7-1-7	13.239	11.506	1.508	Open Manhole	1050
N7-2.000	o	225	N7-2-0	13.482	11.917	1.340	Open Manhole	1050
N7-2.001	o	225	N7-2-1	13.516	11.720	1.571	Open Manhole	1050
N7-2.002	o	225	N7-2-2	13.249	11.560	1.464	Open Manhole	1050
N7-2.003	o	225	N7-2-3	12.791	11.360	1.206	Open Manhole	1050
N7-1.008	o	225	N7-1-8	12.602	11.174	1.203	Open Manhole	1050
N7-1.009	o	225	N7-1-9	12.793	11.125	1.443	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)
N7-1.000	50.068	126.4	N7-1-1	17.243	15.482	1.536	Open Manhole	1050
N7-1.001	50.077	143.5	N7-1-2	17.042	15.133	1.684	Open Manhole	1050
N7-1.002	91.699	141.9	N7-1-3	16.287	14.487	1.575	Open Manhole	1050
N7-1.003	88.301	91.7	N7-1-4	14.975	13.524	1.226	Open Manhole	1050
N7-1.004	90.000	67.3	N7-1-5	13.637	12.187	1.225	Open Manhole	1050
N7-1.005	58.685	143.8	N7-1-6	13.457	11.779	1.453	Open Manhole	1050
N7-1.006	37.406	137.0	N7-1-7	13.239	11.506	1.508	Open Manhole	1050
N7-1.007	43.511	131.1	N7-1-8	12.602	11.174	1.203	Open Manhole	1050
N7-2.000	13.734	69.7	N7-2-1	13.516	11.720	1.571	Open Manhole	1050
N7-2.001	21.544	134.7	N7-2-2	13.249	11.560	1.464	Open Manhole	1050
N7-2.002	30.400	152.0	N7-2-3	12.791	11.360	1.206	Open Manhole	1050
N7-2.003	24.675	132.7	N7-1-8	12.602	11.174	1.203	Open Manhole	1050
N7-1.008	10.013	204.3	N7-1-9	12.793	11.125	1.443	Open Manhole	1500
N7-1.009	1.034	54.4	N7-	12.809	11.106	1.478	Open Manhole	0

Area Summary for Network 7-Bridleway 19

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	Classification	Verge	25	0.008	0.002	0.002
	Classification	Bridleway	25	0.016	0.004	0.006
1.001	Classification	Verge	25	0.008	0.002	0.002
	Classification	Bridleway	25	0.015	0.004	0.006
1.002	Classification	Bridleway	25	0.027	0.007	0.007
	Classification	Verge	25	0.013	0.003	0.010
1.003	-	-	100	0.000	0.000	0.000
1.004	Classification	Verge	25	0.014	0.003	0.003
	Classification	Bridleway	25	0.027	0.007	0.010
	Classification	Verge	25	0.014	0.003	0.013
	Classification	Bridleway	25	0.027	0.007	0.020
1.005	Classification	Verge	25	0.009	0.002	0.002
	Classification	Bridleway	25	0.018	0.004	0.007
1.006	Classification	Verge	25	0.006	0.001	0.001
	Classification	Bridleway	25	0.011	0.003	0.004
1.007	Classification	Bridleway	25	0.013	0.003	0.003
	Classification	Verge	25	0.007	0.002	0.005
2.000	Classification	Verge	25	0.003	0.001	0.001
	Classification	Bridleway	25	0.006	0.002	0.002
2.001	Classification	Verge	25	0.003	0.001	0.001
	Classification	Bridleway	25	0.007	0.002	0.002
2.002	Classification	Verge	25	0.005	0.001	0.001
	Classification	Bridleway	25	0.009	0.002	0.003
2.003	Classification	Bridleway	25	0.007	0.002	0.002
	Classification	Verge	25	0.004	0.001	0.003
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.275	0.069	0.069

Network Classifications for Network 7-Bridleway 19

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
N7-1.000	N7-1-0	225	1.191	1.536	Unclassified	1050	0	1.191	Unclassified
N7-1.001	N7-1-1	225	1.536	1.684	Unclassified	1050	0	1.536	Unclassified
N7-1.002	N7-1-2	225	1.575	1.814	Unclassified	1050	0	1.684	Unclassified
N7-1.003	N7-1-3	225	1.226	1.575	Unclassified	1050	0	1.575	Unclassified
N7-1.004	N7-1-4	225	1.225	1.226	Unclassified	1050	0	1.226	Unclassified
N7-1.005	N7-1-5	225	1.225	1.453	Unclassified	1050	0	1.225	Unclassified
N7-1.006	N7-1-6	225	1.453	1.576	Unclassified	1050	0	1.453	Unclassified
N7-1.007	N7-1-7	225	1.203	1.508	Unclassified	1050	0	1.508	Unclassified
N7-2.000	N7-2-0	225	1.340	1.571	Unclassified	1050	0	1.340	Unclassified
N7-2.001	N7-2-1	225	1.464	1.571	Unclassified	1050	0	1.571	Unclassified
N7-2.002	N7-2-2	225	1.206	1.464	Unclassified	1050	0	1.464	Unclassified
N7-2.003	N7-2-3	225	1.124	1.206	Unclassified	1050	0	1.206	Unclassified
N7-1.008	N7-1-8	225	1.203	1.443	Unclassified	1050	0	1.203	Unclassified
N7-1.009	N7-1-9	225	1.443	1.478	Unclassified	1500	0	1.443	Unclassified

Free Flowing Outfall Details for Network 7-Bridleway 19

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N7-1.009	N7-	12.809	11.106	0.000	0	0

Simulation Criteria for Network 7-Bridleway 19

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	12	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Online Controls for Network 7-Bridleway 19

Weir Manhole: N7-1-9, DS/PN: N7-1.009, Volume (m^3): 3.3

Discharge Coef 0.544 Width (m) 0.300 Invert Level (m) 12.793

Storage Structures for Network 7-Bridleway 19

Filter Drain Manhole: N7-1-1, DS/PN: N7-1.001

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	126.4
Invert Level (m)	15.482	Cap Volume Depth (m)	1.761
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.761
Trench Length (m)	50.1		

Filter Drain Manhole: N7-1-2, DS/PN: N7-1.002

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	143.5
Invert Level (m)	15.133	Cap Volume Depth (m)	1.909
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.909
Trench Length (m)	50.1		

Filter Drain Manhole: N7-1-3, DS/PN: N7-1.003

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	139.3
Invert Level (m)	14.487	Cap Volume Depth (m)	1.800
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.800
Trench Length (m)	90.0		

Filter Drain Manhole: N7-1-4, DS/PN: N7-1.004

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	93.5
Invert Level (m)	13.524	Cap Volume Depth (m)	1.451
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.451
Trench Length (m)	90.0		

Filter Drain Manhole: N7-1-5, DS/PN: N7-1.005

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	67.3
Invert Level (m)	12.187	Cap Volume Depth (m)	1.450
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.450
Trench Length (m)	90.0		

Filter Drain Manhole: N7-1-6, DS/PN: N7-1.006

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	143.8
Invert Level (m)	11.779	Cap Volume Depth (m)	1.678
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.678
Trench Length (m)	58.7		

Filter Drain Manhole: N7-1-7, DS/PN: N7-1.007

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	137.0
Invert Level (m)	11.506	Cap Volume Depth (m)	1.733
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.733
Trench Length (m)	37.4		

Filter Drain Manhole: N7-2-1, DS/PN: N7-2.001

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	94.0
Invert Level (m)	11.720	Cap Volume Depth (m)	1.796
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.796
Trench Length (m)	18.5		

Filter Drain Manhole: N7-2-2, DS/PN: N7-2.002

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	134.7
Invert Level (m)	11.560	Cap Volume Depth (m)	1.689
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.689
Trench Length (m)	21.5		

Filter Drain Manhole: N7-2-3, DS/PN: N7-2.003

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	152.0
Invert Level (m)	11.360	Cap Volume Depth (m)	1.431
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.431
Trench Length (m)	30.4		

Filter Drain Manhole: N7-1-8, DS/PN: N7-1.008

Infiltration Coefficient Base (m/hr)	0.03128	Pipe Diameter (m)	0.225
Infiltration Coefficient Side (m/hr)	0.03128	Pipe Depth above Invert (m)	0.000
Safety Factor	2.0	Number of Pipes	1
Porosity	0.30	Slope (1:X)	131.1
Invert Level (m)	11.174	Cap Volume Depth (m)	1.428
Trench Width (m)	0.5	Cap Infiltration Depth (m)	1.428
Trench Length (m)	43.6		

Lined Soakaway Manhole: N7-1-9, DS/PN: N7-1.009

Infiltration Coefficient Base (m/hr)	0.03128	Ring Diameter (m)	1.50
Infiltration Coefficient Side (m/hr)	0.03128	Pit Multiplier	1.5
Safety Factor	2.0	Number Required	1
Porosity	0.30	Cap Volume Depth (m)	1.368
Invert Level (m)	11.125	Cap Infiltration Depth (m)	1.368

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 7-Bridleway 19

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	12	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N7-1.000	N7-1-0	30 Winter	2	+0%					15.892	-0.211	0.000
N7-1.001	N7-1-1	15 Winter	2	+0%					15.508	-0.199	0.000
N7-1.002	N7-1-2	15 Winter	2	+0%					15.169	-0.189	0.000
N7-1.003	N7-1-3	15 Winter	2	+0%					14.518	-0.194	0.000
N7-1.004	N7-1-4	15 Winter	2	+0%					13.564	-0.185	0.000
N7-1.005	N7-1-5	15 Winter	2	+0%					12.239	-0.173	0.000
N7-1.006	N7-1-6	15 Winter	2	+0%	100/60 Winter				11.832	-0.172	0.000
N7-1.007	N7-1-7	480 Winter	2	+0%	30/60 Winter				11.627	-0.104	0.000
N7-2.000	N7-2-0	30 Winter	2	+0%	100/180 Winter				11.921	-0.221	0.000
N7-2.001	N7-2-1	15 Winter	2	+0%	100/60 Winter				11.734	-0.211	0.000
N7-2.002	N7-2-2	480 Winter	2	+0%	30/120 Winter				11.625	-0.160	0.000
N7-2.003	N7-2-3	480 Winter	2	+0%	2/180 Winter				11.625	0.040	0.000
N7-1.008	N7-1-8	480 Winter	2	+0%	2/15 Summer				11.626	0.227	0.000
N7-1.009	N7-1-9	480 Winter	2	+0%	2/15 Summer				11.626	0.276	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N7-1.000	N7-1-0	0.01		0.5	OK	
N7-1.001	N7-1-1	0.03		1.1	OK	
N7-1.002	N7-1-2	0.06		2.1	OK	
N7-1.003	N7-1-3	0.04		2.1	OK	
N7-1.004	N7-1-4	0.07		3.9	OK	
N7-1.005	N7-1-5	0.12		4.4	OK	
N7-1.006	N7-1-6	0.13		4.7	OK	
N7-1.007	N7-1-7	0.03		1.2	OK	
N7-2.000	N7-2-0	0.00		0.2	OK	
N7-2.001	N7-2-1	0.01		0.5	OK	
N7-2.002	N7-2-2	0.01		0.2	OK	
N7-2.003	N7-2-3	0.00		0.1	SURCHARGED	
N7-1.008	N7-1-8	0.01		0.2	SURCHARGED	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 7-Bridleway 19

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N7-1.009	N7-1-9	0.00		0.0	SURCHARGED	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 7-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 12 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N7-1.000	N7-1-0	30 Winter	5	+0%					15.896	-0.207	0.000
N7-1.001	N7-1-1	15 Winter	5	+0%					15.511	-0.196	0.000
N7-1.002	N7-1-2	15 Winter	5	+0%					15.176	-0.182	0.000
N7-1.003	N7-1-3	15 Winter	5	+0%					14.523	-0.189	0.000
N7-1.004	N7-1-4	15 Winter	5	+0%					13.571	-0.178	0.000
N7-1.005	N7-1-5	15 Winter	5	+0%					12.248	-0.164	0.000
N7-1.006	N7-1-6	15 Winter	5	+0%	100/60 Winter				11.841	-0.163	0.000
N7-1.007	N7-1-7	480 Winter	5	+0%	30/60 Winter				11.689	-0.042	0.000
N7-2.000	N7-2-0	30 Winter	5	+0%	100/180 Winter				11.923	-0.219	0.000
N7-2.001	N7-2-1	15 Winter	5	+0%	100/60 Winter				11.739	-0.206	0.000
N7-2.002	N7-2-2	480 Winter	5	+0%	30/120 Winter				11.688	-0.097	0.000
N7-2.003	N7-2-3	480 Winter	5	+0%	2/180 Winter				11.688	0.103	0.000
N7-1.008	N7-1-8	480 Winter	5	+0%	2/15 Summer				11.688	0.289	0.000
N7-1.009	N7-1-9	480 Winter	5	+0%	2/15 Summer				11.688	0.338	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N7-1.000	N7-1-0	0.02		0.7	OK	
N7-1.001	N7-1-1	0.04		1.5	OK	
N7-1.002	N7-1-2	0.08		2.9	OK	
N7-1.003	N7-1-3	0.06		2.8	OK	
N7-1.004	N7-1-4	0.10		5.2	OK	
N7-1.005	N7-1-5	0.16		6.0	OK	
N7-1.006	N7-1-6	0.17		6.4	OK	
N7-1.007	N7-1-7	0.04		1.4	OK	
N7-2.000	N7-2-0	0.01		0.3	OK	
N7-2.001	N7-2-1	0.02		0.6	OK	
N7-2.002	N7-2-2	0.01		0.2	OK	
N7-2.003	N7-2-3	0.00		0.1	SURCHARGED	
N7-1.008	N7-1-8	0.01		0.2	SURCHARGED	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 7-Bridleway 19

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N7-1.009	N7-1-9	0.00		0.0	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 7-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 12 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N7-1.000	N7-1-0	30 Winter	30	+0%					15.903	-0.200	0.000
N7-1.001	N7-1-1	15 Winter	30	+0%					15.523	-0.184	0.000
N7-1.002	N7-1-2	15 Winter	30	+0%					15.194	-0.164	0.000
N7-1.003	N7-1-3	15 Winter	30	+0%					14.538	-0.174	0.000
N7-1.004	N7-1-4	15 Winter	30	+0%					13.591	-0.158	0.000
N7-1.005	N7-1-5	15 Winter	30	+0%					12.275	-0.137	0.000
N7-1.006	N7-1-6	15 Winter	30	+0%	100/60 Winter				11.867	-0.137	0.000
N7-1.007	N7-1-7	480 Winter	30	+0%	30/60 Winter				11.859	0.128	0.000
N7-2.000	N7-2-0	30 Winter	30	+0%	100/180 Winter				11.926	-0.216	0.000
N7-2.001	N7-2-1	480 Winter	30	+0%	100/60 Winter				11.857	-0.088	0.000
N7-2.002	N7-2-2	480 Winter	30	+0%	30/120 Winter				11.857	0.072	0.000
N7-2.003	N7-2-3	480 Winter	30	+0%	2/180 Winter				11.857	0.272	0.000
N7-1.008	N7-1-8	480 Winter	30	+0%	2/15 Summer				11.858	0.459	0.000
N7-1.009	N7-1-9	480 Winter	30	+0%	2/15 Summer				11.858	0.508	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N7-1.000	N7-1-0	0.03		1.1	OK	
N7-1.001	N7-1-1	0.07		2.7	OK	
N7-1.002	N7-1-2	0.14		5.4	OK	
N7-1.003	N7-1-3	0.11		5.1	OK	
N7-1.004	N7-1-4	0.18		10.0	OK	
N7-1.005	N7-1-5	0.31		11.3	OK	
N7-1.006	N7-1-6	0.32		12.0	OK	
N7-1.007	N7-1-7	0.05		1.8	SURCHARGED	
N7-2.000	N7-2-0	0.01		0.4	OK	
N7-2.001	N7-2-1	0.01		0.2	OK	
N7-2.002	N7-2-2	0.01		0.3	SURCHARGED	
N7-2.003	N7-2-3	0.00		0.1	SURCHARGED	
N7-1.008	N7-1-8	0.01		0.3	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 7-Bridleway 19

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N7-1.009	N7-1-9	0.00		0.0	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 7- Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 12 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N7-1.000	N7-1-0	30 Winter	100	+40%					15.911	-0.192	0.000
N7-1.001	N7-1-1	15 Winter	100	+40%					15.538	-0.169	0.000
N7-1.002	N7-1-2	15 Winter	100	+40%					15.217	-0.141	0.000
N7-1.003	N7-1-3	15 Winter	100	+40%					14.556	-0.156	0.000
N7-1.004	N7-1-4	15 Winter	100	+40%					13.617	-0.132	0.000
N7-1.005	N7-1-5	15 Winter	100	+40%					12.311	-0.101	0.000
N7-1.006	N7-1-6	600 Winter	100	+40%	100/60 Winter				12.269	0.265	0.000
N7-1.007	N7-1-7	600 Winter	100	+40%	30/60 Winter				12.266	0.535	0.000
N7-2.000	N7-2-0	600 Winter	100	+40%	100/180 Winter				12.262	0.120	0.000
N7-2.001	N7-2-1	600 Winter	100	+40%	100/60 Winter				12.262	0.317	0.000
N7-2.002	N7-2-2	600 Winter	100	+40%	30/120 Winter				12.262	0.477	0.000
N7-2.003	N7-2-3	600 Winter	100	+40%	2/180 Winter				12.262	0.677	0.000
N7-1.008	N7-1-8	600 Winter	100	+40%	2/15 Summer				12.263	0.864	0.000
N7-1.009	N7-1-9	600 Winter	100	+40%	2/15 Summer				12.263	0.913	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N7-1.000	N7-1-0	0.05		2.1	OK	
N7-1.001	N7-1-1	0.13		4.8	OK	
N7-1.002	N7-1-2	0.26		9.8	OK	
N7-1.003	N7-1-3	0.20		9.2	OK	
N7-1.004	N7-1-4	0.33		18.0	OK	
N7-1.005	N7-1-5	0.55		20.4	OK	
N7-1.006	N7-1-6	0.08		3.0	SURCHARGED	
N7-1.007	N7-1-7	0.06		2.2	SURCHARGED	
N7-2.000	N7-2-0	0.00		0.2	SURCHARGED	
N7-2.001	N7-2-1	0.01		0.2	SURCHARGED	
N7-2.002	N7-2-2	0.01		0.2	SURCHARGED	
N7-2.003	N7-2-3	0.00		0.1	SURCHARGED	
N7-1.008	N7-1-8	0.01		0.4	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 7-Bridleway 19

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N7-1.009	N7-1-9	0.00		0.0	SURCHARGED	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 8-Bridleway 19

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 640286 267538 TM 40286 67538
Data Type	Point
Maximum Rainfall (mm/hr)	500
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 8-Bridleway 19

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.017	4-8	0.015	8-12	0.003	12-16	0.003	16-20	0.002

Total Area Contributing (ha) = 0.040

Total Pipe Volume (m³) = 11.861

Network Design Table for Network 8-Bridleway 19

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
N8-1.000	82.323	0.806	102.1	0.011	15.00	0.0	1.500	o	225	Pipe/Conduit	
N8-1.001	36.690	1.025	35.8	0.005	0.00	0.0	1.500	o	225	Pipe/Conduit	
N8-1.002	69.487	2.014	34.5	0.012	0.00	0.0	1.500	o	225	Pipe/Conduit	
N8-1.003	52.380	0.838	62.5	0.006	0.00	0.0	1.500	o	225	Pipe/Conduit	
N8-1.004	39.674	0.298	133.1	0.007	0.00	0.0	1.500	o	225	Pipe/Conduit	
N8-1.005	16.082	0.246	65.4	0.000	0.00	0.0	1.500	o	225	Pipe/Conduit	
N8-1.006	1.665	0.033	50.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

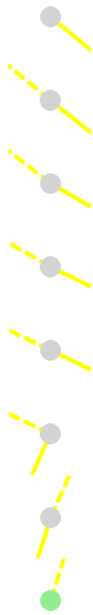
Network Results Table

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)
N8-1.000	32.70	16.21	15.841	0.011	0.0	0.0	0.0	1.14	45.2	0.9
N8-1.001	32.31	16.53	15.035	0.015	0.0	0.0	0.0	1.92	76.4	1.3
N8-1.002	31.62	17.12	14.010	0.027	0.0	0.0	0.0	1.96	77.8	2.3
N8-1.003	30.95	17.72	11.996	0.033	0.0	0.0	0.0	1.45	57.8	2.8
N8-1.004	30.24	18.38	11.158	0.040	0.0	0.0	0.0	0.99	39.5	3.3
N8-1.005	30.05	18.57	10.860	0.040	0.0	0.0	0.0	1.42	56.5	3.3
N8-1.006	30.03	18.59	10.614	0.040	0.0	0.0	0.0	1.85	73.4	3.3

Manhole Schedules for Network 8-Bridleway 19

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)
N8-1-0	17.229	1.388	Open Manhole	1050	N8-1.000	15.841	225				
N8-1-1	16.632	1.597	Open Manhole	1050	N8-1.001	15.035	225	N8-1.000	15.035	225	
N8-1-2	15.428	1.418	Open Manhole	1050	N8-1.002	14.010	225	N8-1.001	14.010	225	
N8-1-3	13.316	1.320	Open Manhole	1050	N8-1.003	11.996	225	N8-1.002	11.996	225	
N8-1-4	12.535	1.377	Open Manhole	1050	N8-1.004	11.158	225	N8-1.003	11.158	225	
N8-1-5	12.310	1.450	Open Manhole	1050	N8-1.005	10.860	225	N8-1.004	10.860	225	
N8-1-6	12.069	1.455	Open Manhole	1500	N8-1.006	10.614	225	N8-1.005	10.614	225	
N8-	12.069	1.488	Open Manhole	0		OUTFALL		N8-1.006	10.581	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N8-1-0	645861.448	262618.321	645861.448	262618.321	Required	
N8-1-1	645924.882	262565.850	645924.882	262565.850	Required	
N8-1-2	645953.658	262543.092	645953.658	262543.092	Required	
N8-1-3	646013.741	262508.204	646013.741	262508.204	Required	
N8-1-4	646060.837	262485.280	646060.837	262485.280	Required	
N8-1-5	646096.560	262468.023	646096.560	262468.023	Required	
N8-1-6	646089.993	262453.343	646089.993	262453.343	Required	
N8-	646089.495	262451.754			No Entry	



PIPELINE SCHEDULES for Network 8-Bridleway 19

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)
N8-1.000	o	225	N8-1-0	17.229	15.841	1.163	Open Manhole	1050
N8-1.001	o	225	N8-1-1	16.632	15.035	1.372	Open Manhole	1050
N8-1.002	o	225	N8-1-2	15.428	14.010	1.193	Open Manhole	1050
N8-1.003	o	225	N8-1-3	13.316	11.996	1.095	Open Manhole	1050
N8-1.004	o	225	N8-1-4	12.535	11.158	1.152	Open Manhole	1050
N8-1.005	o	225	N8-1-5	12.310	10.860	1.225	Open Manhole	1050
N8-1.006	o	225	N8-1-6	12.069	10.614	1.230	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)
N8-1.000	82.323	102.1	N8-1-1	16.632	15.035	1.372	Open Manhole	1050
N8-1.001	36.690	35.8	N8-1-2	15.428	14.010	1.193	Open Manhole	1050
N8-1.002	69.487	34.5	N8-1-3	13.316	11.996	1.095	Open Manhole	1050
N8-1.003	52.380	62.5	N8-1-4	12.535	11.158	1.152	Open Manhole	1050
N8-1.004	39.674	133.1	N8-1-5	12.310	10.860	1.225	Open Manhole	1050
N8-1.005	16.082	65.4	N8-1-6	12.069	10.614	1.230	Open Manhole	1500
N8-1.006	1.665	50.5	N8-	12.069	10.581	1.263	Open Manhole	0

Area Summary for Network 8-Bridleway 19

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	Classification	Verge	25	0.014	0.004	0.004
	Classification	Bridleway	25	0.028	0.007	0.011
1.001	Classification	Bridleway	25	0.012	0.003	0.003
	Classification	Verge	25	0.006	0.002	0.005
1.002	Classification	Bridleway	25	0.032	0.008	0.008
	Classification	Verge	25	0.016	0.004	0.012
1.003	Classification	Verge	25	0.008	0.002	0.002
	Classification	Bridleway	25	0.016	0.004	0.006
1.004	Classification	Bridleway	25	0.018	0.005	0.005
	Classification	Verge	25	0.009	0.002	0.007
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.160	0.040	0.040

Network Classifications for Network 8-Bridleway 19

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
N8-1.000	N8-1-0	225	1.163	1.452	Unclassified	1050	0	1.163	Unclassified
N8-1.001	N8-1-1	225	1.193	1.372	Unclassified	1050	0	1.372	Unclassified
N8-1.002	N8-1-2	225	0.971	1.193	Unclassified	1050	0	1.193	Unclassified
N8-1.003	N8-1-3	225	1.057	1.152	Unclassified	1050	0	1.095	Unclassified
N8-1.004	N8-1-4	225	1.152	1.225	Unclassified	1050	0	1.152	Unclassified
N8-1.005	N8-1-5	225	1.225	1.321	Unclassified	1050	0	1.225	Unclassified
N8-1.006	N8-1-6	225	1.230	1.263	Unclassified	1500	0	1.230	Unclassified

Free Flowing Outfall Details for Network 8-Bridleway 19

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N8-1.006	N8-	12.069	10.581	0.000	0	0

Simulation Criteria for Network 8-Bridleway 19

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	6	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Online Controls for Network 8-Bridleway 19

Weir Manhole: N8-1-6, DS/PN: N8-1.006, Volume (m³): 3.2

Discharge Coef 0.544 Width (m) 0.300 Invert Level (m) 12.069

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 8-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 6 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N8-1.000	N8-1-0	30 Winter	2	+0%					15.862	-0.204	0.000
N8-1.001	N8-1-1	15 Winter	2	+0%					15.053	-0.207	0.000
N8-1.002	N8-1-2	15 Winter	2	+0%					14.037	-0.198	0.000
N8-1.003	N8-1-3	15 Winter	2	+0%					12.032	-0.189	0.000
N8-1.004	N8-1-4	15 Winter	2	+0%	30/120 Winter				11.207	-0.176	0.000
N8-1.005	N8-1-5	480 Winter	2	+0%	2/120 Summer				11.183	0.098	0.000
N8-1.006	N8-1-6	480 Winter	2	+0%	2/15 Summer	100/1440 Summer			11.183	0.344	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N8-1.000	N8-1-0	0.02		0.9	OK	
N8-1.001	N8-1-1	0.02		1.2	OK	
N8-1.002	N8-1-2	0.03		2.7	OK	
N8-1.003	N8-1-3	0.06		3.3	OK	
N8-1.004	N8-1-4	0.11		4.1	OK	
N8-1.005	N8-1-5	0.01		0.3	SURCHARGED	
N8-1.006	N8-1-6	0.00		0.0	SURCHARGED	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 8-Bridleway 19

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	6	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N8-1.000	N8-1-0	30 Winter	5	+0%					15.865	-0.201	0.000
N8-1.001	N8-1-1	15 Winter	5	+0%					15.058	-0.202	0.000
N8-1.002	N8-1-2	15 Winter	5	+0%					14.042	-0.193	0.000
N8-1.003	N8-1-3	15 Winter	5	+0%					12.039	-0.182	0.000
N8-1.004	N8-1-4	480 Winter	5	+0%	30/120 Winter				11.254	-0.129	0.000
N8-1.005	N8-1-5	480 Winter	5	+0%	2/120 Summer				11.253	0.168	0.000
N8-1.006	N8-1-6	480 Winter	5	+0%	2/15 Summer	100/1440 Summer			11.253	0.414	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N8-1.000	N8-1-0	0.03		1.2	OK	
N8-1.001	N8-1-1	0.02		1.7	OK	
N8-1.002	N8-1-2	0.05		3.6	OK	
N8-1.003	N8-1-3	0.08		4.5	OK	
N8-1.004	N8-1-4	0.03		1.1	OK	
N8-1.005	N8-1-5	0.01		0.3	SURCHARGED	
N8-1.006	N8-1-6	0.00		0.0	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 8-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 6 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N8-1.000	N8-1-0	30 Winter	30	+0%					15.871	-0.195	0.000
N8-1.001	N8-1-1	15 Winter	30	+0%					15.064	-0.196	0.000
N8-1.002	N8-1-2	15 Winter	30	+0%					14.057	-0.178	0.000
N8-1.003	N8-1-3	15 Winter	30	+0%					12.057	-0.164	0.000
N8-1.004	N8-1-4	480 Winter	30	+0%	30/120 Winter				11.480	0.097	0.000
N8-1.005	N8-1-5	480 Winter	30	+0%	2/120 Summer				11.479	0.394	0.000
N8-1.006	N8-1-6	480 Winter	30	+0%	2/15 Summer	100/1440 Summer			11.479	0.640	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N8-1.000	N8-1-0	0.04		1.9	OK	
N8-1.001	N8-1-1	0.04		2.9	OK	
N8-1.002	N8-1-2	0.09		7.0	OK	
N8-1.003	N8-1-3	0.16		8.9	OK	
N8-1.004	N8-1-4	0.04		1.5	SURCHARGED	
N8-1.005	N8-1-5	0.01		0.3	SURCHARGED	
N8-1.006	N8-1-6	0.00		0.0	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 8-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 6 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N8-1.000	N8-1-0	30 Winter	100	+40%					15.883	-0.183	0.000
N8-1.001	N8-1-1	15 Winter	100	+40%					15.075	-0.185	0.000
N8-1.002	N8-1-2	15 Winter	100	+40%					14.073	-0.162	0.000
N8-1.003	N8-1-3	15 Winter	100	+40%					12.079	-0.142	0.000
N8-1.004	N8-1-4	600 Winter	100	+40%	30/120 Winter				12.023	0.640	0.000
N8-1.005	N8-1-5	600 Winter	100	+40%	2/120 Summer				12.021	0.936	0.000
N8-1.006	N8-1-6	600 Winter	100	+40%	2/15 Summer	100/1440 Summer			12.021	1.182	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N8-1.000	N8-1-0	0.08		3.5	OK	
N8-1.001	N8-1-1	0.07		5.2	OK	
N8-1.002	N8-1-2	0.16		12.5	OK	
N8-1.003	N8-1-3	0.29		16.0	OK	
N8-1.004	N8-1-4	0.05		1.8	SURCHARGED	
N8-1.005	N8-1-5	0.01		0.5	FLOOD RISK	
N8-1.006	N8-1-6	0.00		0.0	FLOOD RISK	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 9-King's George Avenue

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.700	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	500	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 9-King's George Avenue

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.029	4-8	0.013

Total Area Contributing (ha) = 0.041

Total Pipe Volume (m³) = 1.515

Network Design Table for Network 9-King's George Avenue

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
N9-1.000	27.044	0.310	87.2	0.041	5.00	0.0	0.600	o	225	Pipe/Conduit	
N9-1.001	7.727	0.052	148.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
N9-1.002	3.332	0.007	475.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

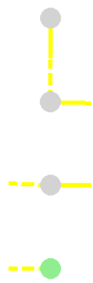
Network Results Table

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)
N9-1.000	63.96	5.32	13.465	0.041	0.0	0.0	0.0	1.40	55.7	7.2
N9-1.001	63.34	5.44	13.155	0.041	0.0	0.0	0.0	1.07	42.6	7.2
N9-1.002	62.86	5.54	13.103	0.041	0.0	0.0	0.0	0.59	23.6	7.2

Manhole Schedules for Network 9-King's George Avenue

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
N9-1-0	14.738	1.273	Open Manhole	1050	N9-1.000	13.465	225				
N9-1-1	14.850	1.695	Open Manhole	1050	N9-1.001	13.155	225	N9-1.000	13.155	225	
N9-1-2	14.914	1.811	Open Manhole	2100	N9-1.002	13.103	225	N9-1.001	13.103	225	
N9-	14.896	1.800	Open Manhole	0		OUTFALL		N9-1.002	13.096	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N9-1-0	645638.877	262550.376	645638.877	262550.376	Required	
N9-1-1	645638.946	262523.332	645638.946	262523.332	Required	
N9-1-2	645646.668	262523.058	645646.668	262523.058	Required	
N9-	645650.000	262523.068			No Entry	



PIPELINE SCHEDULES for Network 9-King's George Avenue

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)
N9-1.000	o	225	N9-1-0	14.738	13.465	1.048	Open Manhole	1050
N9-1.001	o	225	N9-1-1	14.850	13.155	1.470	Open Manhole	1050
N9-1.002	o	225	N9-1-2	14.914	13.103	1.586	Open Manhole	2100

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)
N9-1.000	27.044	87.2	N9-1-1	14.850	13.155	1.470	Open Manhole	1050
N9-1.001	7.727	148.6	N9-1-2	14.914	13.103	1.586	Open Manhole	2100
N9-1.002	3.332	475.9	N9-	14.896	13.096	1.575	Open Manhole	0

Free Flowing Outfall Details for Network 9-King's George Avenue

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N9-1.002	N9-	14.896	13.096	0.000	0	0

Simulation Criteria for Network 9-King's George Avenue

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Online Controls for Network 9-King's George Avenue

Weir Manhole: N9-1-2, DS/PN: N9-1.002, Volume (m³): 6.5

Discharge Coef 0.544 Width (m) 0.300 Invert Level (m) 14.914

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 9-King's George Avenue

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N9-1.000	N9-1-0	480 Winter	2	+0%	30/120 Summer	100/240 Winter			13.532	-0.158	0.000
N9-1.001	N9-1-1	480 Winter	2	+0%	2/120 Summer	100/480 Summer			13.532	0.152	0.000
N9-1.002	N9-1-2	480 Winter	2	+0%	2/60 Summer	100/480 Summer			13.532	0.204	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N9-1.000	N9-1-0	0.02		0.9	OK	16
N9-1.001	N9-1-1	0.02		0.8	SURCHARGED	9
N9-1.002	N9-1-2	0.00		0.0	SURCHARGED	5

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 9-King's George Avenue

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N9-1.000	N9-1-0	480 Winter	5	+0%	30/120 Summer	100/240 Winter			13.646	-0.044	0.000
N9-1.001	N9-1-1	480 Winter	5	+0%	2/120 Summer	100/480 Summer			13.646	0.266	0.000
N9-1.002	N9-1-2	480 Winter	5	+0%	2/60 Summer	100/480 Summer			13.645	0.317	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N9-1.000	N9-1-0	0.02		1.1	OK	16
N9-1.001	N9-1-1	0.03		0.9	SURCHARGED	9
N9-1.002	N9-1-2	0.00		0.0	SURCHARGED	5

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 9-King's George Avenue

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N9-1.000	N9-1-0	720 Winter	30	+0%	30/120 Summer	100/240 Winter			14.027	0.337	0.000
N9-1.001	N9-1-1	720 Winter	30	+0%	2/120 Summer	100/480 Summer			14.027	0.647	0.000
N9-1.002	N9-1-2	720 Winter	30	+0%	2/60 Summer	100/480 Summer			14.027	0.699	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N9-1.000	N9-1-0	0.02		1.1	SURCHARGED	16
N9-1.001	N9-1-1	0.03		1.0	SURCHARGED	9
N9-1.002	N9-1-2	0.00		0.0	SURCHARGED	5

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 9-King's George Avenue

Simulation Criteria

Areal Reduction Factor 1.000   Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0   MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0   Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500   Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0   Number of Offline Controls 0   Number of Time/Area Diagrams 0
Number of Online Controls 1   Number of Storage Structures 1   Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH   Data Type Point
FEH Rainfall Version 2013   Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538   Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N9-1.000	N9-1-0	1440 Winter	100	+40%	30/120 Summer	100/240 Winter			14.748	1.058	10.568
N9-1.001	N9-1-1	1440 Winter	100	+40%	2/120 Summer	100/480 Summer			14.851	1.471	1.116
N9-1.002	N9-1-2	2160 Winter	100	+40%	2/60 Summer	100/480 Summer			14.914	1.586	0.454

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N9-1.000	N9-1-0	0.03		1.3	FLOOD	16
N9-1.001	N9-1-1	0.05		1.5	FLOOD	9
N9-1.002	N9-1-2	0.00		0.0	FLOOD	5

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 10-Main Site Access Roundabout

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.700	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	500	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 10-Main Site Access Roundabout

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.005	4-8	0.005

Total Area Contributing (ha) = 0.010

Total Pipe Volume (m³) = 5.463

Network Design Table for Network 10-Main Site Access Roundabout

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
N10-1.000	72.918	0.682	106.9	0.006	5.00	0.0	1.500	o	225	Pipe/Conduit	
N10-1.001	58.254	0.471	123.7	0.004	0.00	0.0	1.500	o	225	Pipe/Conduit	
N10-1.002	4.929	0.058	85.0	0.000	0.00	0.0	1.500	o	225	Pipe/Conduit	
N10-1.003	1.302	0.022	59.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

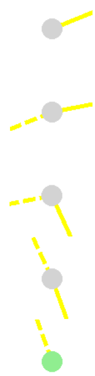
Network Results Table

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)
N10-1.000	60.20	6.09	17.827	0.006	0.0	0.0	0.0	1.11	44.1	0.9
N10-1.001	56.25	7.04	17.145	0.010	0.0	0.0	0.0	1.03	41.0	1.5
N10-1.002	56.00	7.10	16.674	0.010	0.0	0.0	0.0	1.25	49.5	1.5
N10-1.003	55.95	7.11	16.616	0.010	0.0	0.0	0.0	1.70	67.7	1.5

Manhole Schedules for Network 10-Main Site Access Roundabout

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)
N10-1-0	19.252	1.425	Open Manhole	1050	N10-1.000	17.827	225				
N10-1-1	18.570	1.425	Open Manhole	1050	N10-1.001	17.145	225	N10-1.000	17.145	225	
N10-1-2	18.099	1.425	Open Manhole	1050	N10-1.002	16.674	225	N10-1.001	16.674	225	
N10-1-3	18.305	1.689	Open Manhole	1200	N10-1.003	16.616	225	N10-1.002	16.616	225	
N10-	18.305	1.711	Open Manhole	0		OUTFALL		N10-1.003	16.594	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N10-1-0	644880.879	264617.058	644880.879	264617.058	Required	
N10-1-1	644945.589	264643.458	644945.589	264643.458	Required	
N10-1-2	645001.824	264654.456	645001.824	264654.456	Required	
N10-1-3	645003.890	264649.980	645003.890	264649.980	Required	
N10-	645004.322	264648.752			No Entry	



PIPELINE SCHEDULES for Network 10-Main Site Access Roundabout

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)
N10-1.000	o	225	N10-1-0	19.252	17.827	1.200	Open Manhole	1050
N10-1.001	o	225	N10-1-1	18.570	17.145	1.200	Open Manhole	1050
N10-1.002	o	225	N10-1-2	18.099	16.674	1.200	Open Manhole	1050
N10-1.003	o	225	N10-1-3	18.305	16.616	1.464	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
N10-1.000	72.918	106.9	N10-1-1	18.570	17.145	1.200	Open Manhole	1050
N10-1.001	58.254	123.7	N10-1-2	18.099	16.674	1.200	Open Manhole	1050
N10-1.002	4.929	85.0	N10-1-3	18.305	16.616	1.464	Open Manhole	1200
N10-1.003	1.302	59.2	N10-	18.305	16.594	1.486	Open Manhole	0

Free Flowing Outfall Details for Network 10-Main Site Access Roundabout

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N10-1.003	N10-	18.305	16.594	0.000	0	0

Simulation Criteria for Network 10-Main Site Access Roundabout

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	3	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Online Controls for Network 10-Main Site Access Roundabout

Weir Manhole: N10-1-3, DS/PN: N10-1.003, Volume (m^3): 2.1

Discharge Coef 0.544 Width (m) 0.300 Invert Level (m) 18.305

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 10-Main Site Access Roundabout

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N10-1.000	N10-1-0	15 Winter	2	+0%					17.849	-0.203	0.000
N10-1.001	N10-1-1	15 Winter	2	+0%	100/1440 Winter				17.172	-0.198	0.000
N10-1.002	N10-1-2	1440 Winter	2	+0%	5/360 Winter				16.890	-0.009	0.000
N10-1.003	N10-1-3	1440 Winter	2	+0%	2/180 Winter				16.894	0.053	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N10-1.000	N10-1-0	0.02		0.8	OK	
N10-1.001	N10-1-1	0.03		1.3	OK	
N10-1.002	N10-1-2	0.00		0.0	OK	
N10-1.003	N10-1-3	0.00		0.0	SURCHARGED	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 10-Main Site Access Roundabout

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	3	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N10-1.000	N10-1-0	15 Winter	5	+0%					17.852	-0.200	0.000
N10-1.001	N10-1-1	15 Winter	5	+0%	100/1440 Winter				17.176	-0.194	0.000
N10-1.002	N10-1-2	1440 Winter	5	+0%	5/360 Winter				16.945	0.046	0.000
N10-1.003	N10-1-3	1440 Summer	5	+0%	2/180 Winter				17.040	0.199	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N10-1.000	N10-1-0	0.03		1.1	OK	
N10-1.001	N10-1-1	0.05		1.8	OK	
N10-1.002	N10-1-2	0.02		0.6	SURCHARGED	
N10-1.003	N10-1-3	0.00		0.0	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 10-Main Site Access Roundabout

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N10-1.000	N10-1-0	15 Winter	30	+0%					17.858	-0.194	0.000
N10-1.001	N10-1-1	15 Winter	30	+0%	100/1440 Winter				17.188	-0.182	0.000
N10-1.002	N10-1-2	1440 Winter	30	+0%	5/360 Winter				17.067	0.168	0.000
N10-1.003	N10-1-3	1440 Winter	30	+0%	2/180 Winter				17.133	0.292	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N10-1.000	N10-1-0	0.04		1.9	OK	
N10-1.001	N10-1-1	0.08		3.1	OK	
N10-1.002	N10-1-2	0.01		0.2	SURCHARGED	
N10-1.003	N10-1-3	0.00		0.0	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 10-Main Site Access Roundabout

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N10-1.000	N10-1-0	15 Winter	100	+40%					17.870	-0.182	0.000
N10-1.001	N10-1-1	2160 Winter	100	+40%	100/1440 Winter				17.370	0.000	0.000
N10-1.002	N10-1-2	1440 Winter	100	+40%	5/360 Winter				17.382	0.483	0.000
N10-1.003	N10-1-3	1440 Winter	100	+40%	2/180 Winter				17.394	0.553	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N10-1.000	N10-1-0	0.08		3.4	OK	
N10-1.001	N10-1-1	0.01		0.3	SURCHARGED	
N10-1.002	N10-1-2	0.02		0.7	SURCHARGED	
N10-1.003	N10-1-3	0.00		0.0	SURCHARGED	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 11-Bridleway 19

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.700	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	500	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 11-Bridleway 19

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.011	4-8	0.018	8-12	0.011	12-16	0.001

Total Area Contributing (ha) = 0.040

Total Pipe Volume (m³) = 21.536

Network Design Table for Network 11-Bridleway 19

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
N11-1.000	30.878	0.187	165.1	0.002	5.00	0.0	1.500	o	225	Pipe/Conduit	
N11-1.001	89.976	0.430	209.2	0.007	0.00	0.0	1.500	o	225	Pipe/Conduit	
N11-1.002	90.000	0.446	201.8	0.007	0.00	0.0	1.500	o	225	Pipe/Conduit	
N11-1.003	64.623	0.340	190.1	0.005	0.00	0.0	1.500	o	225	Pipe/Conduit	
N11-1.004	64.877	0.330	196.6	0.005	0.00	0.0	1.500	o	225	Pipe/Conduit	
N11-1.005	60.454	0.289	209.2	0.005	0.00	0.0	1.500	o	225	Pipe/Conduit	
N11-2.000	77.463	0.414	187.1	0.006	5.00	0.0	0.600	o	225	Pipe/Conduit	
N11-2.001	56.960	1.230	46.3	0.004	0.00	0.0	0.600	o	225	Pipe/Conduit	
N11-1.006	5.174	0.051	101.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
N11-1.007	1.238	0.014	88.4	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)
N11-1.000	62.66	5.58	16.567	0.002	0.0	0.0	0.0	0.89	35.5	0.4
N11-1.001	54.62	7.47	16.380	0.009	0.0	0.0	0.0	0.79	31.5	1.3
N11-1.002	48.72	9.33	15.950	0.016	0.0	0.0	0.0	0.81	32.1	2.1
N11-1.003	45.42	10.63	15.504	0.021	0.0	0.0	0.0	0.83	33.0	2.5
N11-1.004	42.59	11.95	15.164	0.026	0.0	0.0	0.0	0.82	32.5	2.9
N11-1.005	40.22	13.22	14.834	0.030	0.0	0.0	0.0	0.79	31.5	3.3
N11-2.000	59.04	6.36	16.189	0.006	0.0	0.0	0.0	0.95	37.9	0.9
N11-2.001	56.99	6.85	15.775	0.010	0.0	0.0	0.0	1.93	76.6	1.6
N11-1.006	40.10	13.29	14.545	0.040	0.0	0.0	0.0	1.30	51.6	4.4
N11-1.007	40.08	13.30	14.494	0.040	0.0	0.0	0.0	1.39	55.3	4.4

Manhole Schedules for Network 11-Bridleway 19

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)
N11-1-0	18.084	1.517	Open Manhole	1050	N11-1.000	16.567	225				
N11-1-1	17.855	1.475	Open Manhole	1050	N11-1.001	16.380	225	N11-1.000	16.380	225	
N11-1-2	17.675	1.725	Open Manhole	1050	N11-1.002	15.950	225	N11-1.001	15.950	225	
N11-1-3	17.479	1.975	Open Manhole	1050	N11-1.003	15.504	225	N11-1.002	15.504	225	
N11-1-4	17.288	2.124	Open Manhole	1050	N11-1.004	15.164	225	N11-1.003	15.164	225	
N11-1-5	17.309	2.475	Open Manhole	1050	N11-1.005	14.834	225	N11-1.004	14.834	225	
N11-2-0	17.614	1.425	Open Manhole	1050	N11-2.000	16.189	225				
N11-2-1	17.600	1.825	Open Manhole	1050	N11-2.001	15.775	225	N11-2.000	15.775	225	
N11-1-6	16.370	1.825	Open Manhole	1050	N11-1.006	14.545	225	N11-1.005	14.545	225	
								N11-2.001	14.545	225	
N11-1-7	16.161	1.667	Open Manhole	1200	N11-1.007	14.494	225	N11-1.006	14.494	225	
N11-	16.161	1.681	Open Manhole	0		OUTFALL		N11-1.007	14.480	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N11-1-0	645003.590	264655.324	645003.590	264655.324	Required	
N11-1-1	645027.647	264674.311	645027.647	264674.311	Required	
N11-1-2	645070.267	264753.538	645070.267	264753.538	Required	
N11-1-3	645115.154	264831.544	645115.154	264831.544	Required	
N11-1-4	645143.542	264889.552	645143.542	264889.552	Required	
N11-1-5	645168.045	264949.515	645168.045	264949.515	Required	
N11-2-0	645241.970	265129.508	645241.970	265129.508	Required	
N11-2-1	645212.716	265057.785	645212.716	265057.785	Required	
N11-1-6	645187.463	265006.765	645187.463	265006.765	Required	
N11-1-7	645192.233	265004.761	645192.233	265004.761	Required	
N11-	645193.375	265004.281			No Entry	

PIPELINE SCHEDULES for Network 11-Bridleway 19

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)
N11-1.000	o	225	N11-1-0	18.084	16.567	1.292	Open Manhole	1050
N11-1.001	o	225	N11-1-1	17.855	16.380	1.250	Open Manhole	1050
N11-1.002	o	225	N11-1-2	17.675	15.950	1.500	Open Manhole	1050
N11-1.003	o	225	N11-1-3	17.479	15.504	1.750	Open Manhole	1050
N11-1.004	o	225	N11-1-4	17.288	15.164	1.899	Open Manhole	1050
N11-1.005	o	225	N11-1-5	17.309	14.834	2.250	Open Manhole	1050
N11-2.000	o	225	N11-2-0	17.614	16.189	1.200	Open Manhole	1050
N11-2.001	o	225	N11-2-1	17.600	15.775	1.600	Open Manhole	1050
N11-1.006	o	225	N11-1-6	16.370	14.545	1.600	Open Manhole	1050
N11-1.007	o	225	N11-1-7	16.161	14.494	1.442	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
N11-1.000	30.878	165.1	N11-1-1	17.855	16.380	1.250	Open Manhole	1050
N11-1.001	89.976	209.2	N11-1-2	17.675	15.950	1.500	Open Manhole	1050
N11-1.002	90.000	201.8	N11-1-3	17.479	15.504	1.750	Open Manhole	1050
N11-1.003	64.623	190.1	N11-1-4	17.288	15.164	1.899	Open Manhole	1050
N11-1.004	64.877	196.6	N11-1-5	17.309	14.834	2.250	Open Manhole	1050
N11-1.005	60.454	209.2	N11-1-6	16.370	14.545	1.600	Open Manhole	1050
N11-2.000	77.463	187.1	N11-2-1	17.600	15.775	1.600	Open Manhole	1050
N11-2.001	56.960	46.3	N11-1-6	16.370	14.545	1.600	Open Manhole	1050
N11-1.006	5.174	101.4	N11-1-7	16.161	14.494	1.442	Open Manhole	1200
N11-1.007	1.238	88.4	N11-	16.161	14.480	1.456	Open Manhole	0

Free Flowing Outfall Details for Network 11-Bridleway 19

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N11-1.007	N11-	16.161	14.480	0.000	0	0

Simulation Criteria for Network 11-Bridleway 19

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	8	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
Return Period (years)	100	Summer Storms	Yes
FEH Rainfall Version	2013	Winter Storms	No
Site Location	GB 640286 267538 TM 40286 67538	Cv (Summer)	0.750

Synthetic Rainfall Details

Cv (Winter) 0.840 Storm Duration (mins) 720

Online Controls for Network 11-Bridleway 19

Weir Manhole: N11-1-7, DS/PN: N11-1.007, Volume (m³): 2.0

Discharge Coef 0.544 Width (m) 0.300 Invert Level (m) 16.161

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 11-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 8 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N11-1.000	N11-1-0	15 Winter	2	+0%					16.579	-0.213	0.000
N11-1.001	N11-1-1	15 Winter	2	+0%					16.409	-0.196	0.000
N11-1.002	N11-1-2	15 Winter	2	+0%					15.985	-0.190	0.000
N11-1.003	N11-1-3	15 Winter	2	+0%					15.541	-0.188	0.000
N11-1.004	N11-1-4	15 Winter	2	+0%	100/360 Winter				15.204	-0.185	0.000
N11-1.005	N11-1-5	1440 Winter	2	+0%	5/1440 Winter				15.042	-0.017	0.000
N11-2.000	N11-2-0	15 Winter	2	+0%					16.213	-0.201	0.000
N11-2.001	N11-2-1	15 Winter	2	+0%					15.795	-0.205	0.000
N11-1.006	N11-1-6	1440 Winter	2	+0%	2/60 Winter				15.062	0.292	0.000
N11-1.007	N11-1-7	1440 Winter	2	+0%	2/15 Winter				15.159	0.440	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N11-1.000	N11-1-0	0.01		0.4	OK	
N11-1.001	N11-1-1	0.03		1.1	OK	
N11-1.002	N11-1-2	0.05		1.7	OK	
N11-1.003	N11-1-3	0.06		2.0	OK	
N11-1.004	N11-1-4	0.07		2.3	OK	
N11-1.005	N11-1-5	0.01		0.3	OK	
N11-2.000	N11-2-0	0.02		0.9	OK	
N11-2.001	N11-2-1	0.02		1.4	OK	
N11-1.006	N11-1-6	0.04		1.4	SURCHARGED	
N11-1.007	N11-1-7	0.00		0.0	SURCHARGED	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 11-Bridleway 19

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	8	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N11-1.000	N11-1-0	15 Winter	5	+0%					16.583	-0.209	0.000
N11-1.001	N11-1-1	15 Winter	5	+0%					16.413	-0.192	0.000
N11-1.002	N11-1-2	15 Winter	5	+0%					15.992	-0.183	0.000
N11-1.003	N11-1-3	15 Winter	5	+0%					15.549	-0.180	0.000
N11-1.004	N11-1-4	15 Winter	5	+0%	100/360 Winter				15.212	-0.177	0.000
N11-1.005	N11-1-5	1440 Winter	5	+0%	5/1440 Winter				15.075	0.016	0.000
N11-2.000	N11-2-0	15 Winter	5	+0%					16.216	-0.198	0.000
N11-2.001	N11-2-1	15 Winter	5	+0%					15.799	-0.201	0.000
N11-1.006	N11-1-6	1440 Winter	5	+0%	2/60 Winter				15.100	0.330	0.000
N11-1.007	N11-1-7	1440 Winter	5	+0%	2/15 Winter				15.180	0.461	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N11-1.000	N11-1-0	0.01		0.5	OK	
N11-1.001	N11-1-1	0.05		1.5	OK	
N11-1.002	N11-1-2	0.07		2.3	OK	
N11-1.003	N11-1-3	0.08		2.7	OK	
N11-1.004	N11-1-4	0.10		3.1	OK	
N11-1.005	N11-1-5	0.01		0.3	SURCHARGED	
N11-2.000	N11-2-0	0.03		1.2	OK	
N11-2.001	N11-2-1	0.03		1.9	OK	
N11-1.006	N11-1-6	0.04		1.2	SURCHARGED	
N11-1.007	N11-1-7	0.00		0.0	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 11-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000   Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0   MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0   Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500   Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0   Number of Offline Controls 0   Number of Time/Area Diagrams 0
Number of Online Controls 1   Number of Storage Structures 8   Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH   Data Type Point
FEH Rainfall Version 2013   Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538   Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N11-1.000	N11-1-0	15 Winter	30	+0%					16.591	-0.201	0.000
N11-1.001	N11-1-1	15 Winter	30	+0%					16.428	-0.177	0.000
N11-1.002	N11-1-2	15 Winter	30	+0%					16.008	-0.167	0.000
N11-1.003	N11-1-3	15 Winter	30	+0%					15.564	-0.165	0.000
N11-1.004	N11-1-4	15 Winter	30	+0%	100/360 Winter				15.228	-0.161	0.000
N11-1.005	N11-1-5	1440 Winter	30	+0%	5/1440 Winter				15.223	0.164	0.000
N11-2.000	N11-2-0	15 Winter	30	+0%					16.223	-0.191	0.000
N11-2.001	N11-2-1	15 Winter	30	+0%					15.806	-0.194	0.000
N11-1.006	N11-1-6	1440 Winter	30	+0%	2/60 Winter				15.242	0.472	0.000
N11-1.007	N11-1-7	2160 Winter	30	+0%	2/15 Winter				15.273	0.554	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N11-1.000	N11-1-0	0.02		0.8	OK	
N11-1.001	N11-1-1	0.09		2.7	OK	
N11-1.002	N11-1-2	0.13		4.2	OK	
N11-1.003	N11-1-3	0.15		4.9	OK	
N11-1.004	N11-1-4	0.17		5.5	OK	
N11-1.005	N11-1-5	0.01		0.4	SURCHARGED	
N11-2.000	N11-2-0	0.05		1.9	OK	
N11-2.001	N11-2-1	0.04		3.2	OK	
N11-1.006	N11-1-6	0.03		0.9	SURCHARGED	
N11-1.007	N11-1-7	0.00		0.0	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 11-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 8 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N11-1.000	N11-1-0	15 Winter	100	+40%					16.597	-0.195	0.000
N11-1.001	N11-1-1	15 Winter	100	+40%					16.446	-0.159	0.000
N11-1.002	N11-1-2	15 Winter	100	+40%					16.030	-0.145	0.000
N11-1.003	N11-1-3	15 Winter	100	+40%					15.587	-0.142	0.000
N11-1.004	N11-1-4	960 Winter	100	+40%	100/360 Winter				15.564	0.175	0.000
N11-1.005	N11-1-5	960 Winter	100	+40%	5/1440 Winter				15.564	0.505	0.000
N11-2.000	N11-2-0	15 Winter	100	+40%					16.236	-0.178	0.000
N11-2.001	N11-2-1	15 Winter	100	+40%					15.817	-0.183	0.000
N11-1.006	N11-1-6	960 Winter	100	+40%	2/60 Winter				15.574	0.804	0.000
N11-1.007	N11-1-7	1440 Winter	100	+40%	2/15 Winter				15.599	0.880	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N11-1.000	N11-1-0	0.04		1.4	OK	
N11-1.001	N11-1-1	0.16		4.9	OK	
N11-1.002	N11-1-2	0.24		7.6	OK	
N11-1.003	N11-1-3	0.28		9.0	OK	
N11-1.004	N11-1-4	0.04		1.2	SURCHARGED	
N11-1.005	N11-1-5	0.02		0.7	SURCHARGED	
N11-2.000	N11-2-0	0.09		3.3	OK	
N11-2.001	N11-2-1	0.08		5.8	OK	
N11-1.006	N11-1-6	0.01		0.4	SURCHARGED	
N11-1.007	N11-1-7	0.00		0.0	SURCHARGED	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Network 12-Bridleway 19

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.700	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	500	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Network 12-Bridleway 19

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.009	4-8	0.006

Total Area Contributing (ha) = 0.015

Total Pipe Volume (m³) = 8.135

Network Design Table for Network 12-Bridleway 19

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
N12-1.000	43.385	0.484	89.6	0.003	5.00	0.0	1.500	o	225	Pipe/Conduit	
N12-1.001	39.841	0.453	87.9	0.003	0.00	0.0	1.500	o	225	Pipe/Conduit	
N12-1.002	62.416	0.726	86.0	0.005	0.00	0.0	1.500	o	225	Pipe/Conduit	
N12-1.003	37.647	0.560	67.2	0.003	0.00	0.0	1.500	o	225	Pipe/Conduit	
N12-1.004	12.124	0.331	36.6	0.001	0.00	0.0	1.500	o	225	Pipe/Conduit	
N12-1.005	7.590	0.074	102.6	0.000	0.00	0.0	1.500	o	225	Pipe/Conduit	
N12-1.006	1.592	0.018	88.4	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)
N12-1.000	62.56	5.60	16.159	0.003	0.0	0.0	0.0	1.21	48.2	0.6
N12-1.001	60.00	6.14	15.675	0.006	0.0	0.0	0.0	1.22	48.7	1.0
N12-1.002	56.48	6.98	15.222	0.011	0.0	0.0	0.0	1.24	49.2	1.7
N12-1.003	54.78	7.43	14.496	0.014	0.0	0.0	0.0	1.40	55.7	2.1
N12-1.004	54.40	7.53	13.936	0.015	0.0	0.0	0.0	1.90	75.5	2.2
N12-1.005	54.00	7.64	13.605	0.015	0.0	0.0	0.0	1.13	45.1	2.2
N12-1.006	53.93	7.66	13.531	0.015	0.0	0.0	0.0	1.39	55.3	2.2

Manhole Schedules for Network 12-Bridleway 19

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)
N12-1-0	17.584	1.425	Open Manhole	1050	N12-1.000	16.159	225				
N12-1-1	17.109	1.434	Open Manhole	1050	N12-1.001	15.675	225	N12-1.000	15.675	225	
N12-1-2	16.699	1.477	Open Manhole	1050	N12-1.002	15.222	225	N12-1.001	15.222	225	
N12-1-3	16.050	1.554	Open Manhole	1050	N12-1.003	14.496	225	N12-1.002	14.496	225	
N12-1-4	15.661	1.725	Open Manhole	1050	N12-1.004	13.936	225	N12-1.003	13.936	225	
N12-1-5	15.244	1.639	Open Manhole	1050	N12-1.005	13.605	225	N12-1.004	13.605	225	
N12-1-6	15.756	2.225	Open Manhole	1200	N12-1.006	13.531	225	N12-1.005	13.531	225	
N12-	15.756	2.243	Open Manhole	0		OUTFALL		N12-1.006	13.513	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
N12-1-0	645243.101	265131.985	645243.101	265131.985	Required	
N12-1-1	645256.068	265173.386	645256.068	265173.386	Required	
N12-1-2	645263.096	265212.593	645263.096	265212.593	Required	
N12-1-3	645291.309	265268.021	645291.309	265268.021	Required	
N12-1-4	645314.597	265297.601	645314.597	265297.601	Required	
N12-1-5	645322.764	265306.561	645322.764	265306.561	Required	
N12-1-6	645328.322	265301.393	645328.322	265301.393	Required	
N12-	645329.488	265300.309			No Entry	

PIPELINE SCHEDULES for Network 12-Bridleway 19

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)
N12-1.000	o	225	N12-1-0	17.584	16.159	1.200	Open Manhole	1050
N12-1.001	o	225	N12-1-1	17.109	15.675	1.209	Open Manhole	1050
N12-1.002	o	225	N12-1-2	16.699	15.222	1.252	Open Manhole	1050
N12-1.003	o	225	N12-1-3	16.050	14.496	1.329	Open Manhole	1050
N12-1.004	o	225	N12-1-4	15.661	13.936	1.500	Open Manhole	1050
N12-1.005	o	225	N12-1-5	15.244	13.605	1.414	Open Manhole	1050
N12-1.006	o	225	N12-1-6	15.756	13.531	2.000	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
N12-1.000	43.385	89.6	N12-1-1	17.109	15.675	1.209	Open Manhole	1050
N12-1.001	39.841	87.9	N12-1-2	16.699	15.222	1.252	Open Manhole	1050
N12-1.002	62.416	86.0	N12-1-3	16.050	14.496	1.329	Open Manhole	1050
N12-1.003	37.647	67.2	N12-1-4	15.661	13.936	1.500	Open Manhole	1050
N12-1.004	12.124	36.6	N12-1-5	15.244	13.605	1.414	Open Manhole	1050
N12-1.005	7.590	102.6	N12-1-6	15.756	13.531	2.000	Open Manhole	1200
N12-1.006	1.592	88.4	N12-	15.756	13.513	2.018	Open Manhole	0

Free Flowing Outfall Details for Network 12-Bridleway 19

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
N12-1.006	N12-	15.756	13.513	0.000	0	0

Simulation Criteria for Network 12-Bridleway 19

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	5.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	1440
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	12

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	6	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	720

Online Controls for Network 12-Bridleway 19

Weir Manhole: N12-1-6, DS/PN: N12-1.006, Volume (m³): 2.8

Discharge Coef 0.544 Width (m) 0.300 Invert Level (m) 15.756

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 12-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 6 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N12-1.000	N12-1-0	15 Winter	2	+0%					16.171	-0.213	0.000
N12-1.001	N12-1-1	15 Winter	2	+0%					15.695	-0.205	0.000
N12-1.002	N12-1-2	15 Winter	2	+0%					15.248	-0.199	0.000
N12-1.003	N12-1-3	15 Winter	2	+0%	100/960 Winter				14.522	-0.199	0.000
N12-1.004	N12-1-4	1440 Winter	2	+0%	30/180 Winter				14.076	-0.085	0.000
N12-1.005	N12-1-5	1440 Winter	2	+0%	2/120 Summer				14.076	0.246	0.000
N12-1.006	N12-1-6	1440 Winter	2	+0%	2/30 Summer				14.076	0.320	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N12-1.000	N12-1-0	0.01		0.5	OK	
N12-1.001	N12-1-1	0.02		0.9	OK	
N12-1.002	N12-1-2	0.03		1.4	OK	
N12-1.003	N12-1-3	0.03		1.7	OK	
N12-1.004	N12-1-4	0.00		0.1	OK	
N12-1.005	N12-1-5	0.00		0.1	SURCHARGED	
N12-1.006	N12-1-6	0.00		0.0	SURCHARGED	

5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 12-Bridleway 19

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	5.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	6	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Point
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 640286 267538 TM 40286 67538	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 5, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N12-1.000	N12-1-0	15 Winter	5	+0%					16.175	-0.209	0.000
N12-1.001	N12-1-1	15 Winter	5	+0%					15.699	-0.201	0.000
N12-1.002	N12-1-2	15 Winter	5	+0%					15.251	-0.196	0.000
N12-1.003	N12-1-3	15 Winter	5	+0%	100/960 Winter				14.526	-0.195	0.000
N12-1.004	N12-1-4	1440 Winter	5	+0%	30/180 Winter				14.143	-0.018	0.000
N12-1.005	N12-1-5	1440 Winter	5	+0%	2/120 Summer				14.143	0.313	0.000
N12-1.006	N12-1-6	1440 Winter	5	+0%	2/30 Summer				14.143	0.387	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N12-1.000	N12-1-0	0.01		0.7	OK	
N12-1.001	N12-1-1	0.03		1.2	OK	
N12-1.002	N12-1-2	0.04		1.9	OK	
N12-1.003	N12-1-3	0.04		2.3	OK	
N12-1.004	N12-1-4	0.00		0.2	OK	
N12-1.005	N12-1-5	0.00		0.1	SURCHARGED	
N12-1.006	N12-1-6	0.00		0.0	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 12-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 6 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N12-1.000	N12-1-0	15 Winter	30	+0%					16.183	-0.201	0.000
N12-1.001	N12-1-1	15 Winter	30	+0%					15.706	-0.194	0.000
N12-1.002	N12-1-2	15 Winter	30	+0%					15.264	-0.183	0.000
N12-1.003	N12-1-3	15 Winter	30	+0%	100/960 Winter				14.540	-0.181	0.000
N12-1.004	N12-1-4	1440 Winter	30	+0%	30/180 Winter				14.336	0.175	0.000
N12-1.005	N12-1-5	1440 Winter	30	+0%	2/120 Summer				14.337	0.507	0.000
N12-1.006	N12-1-6	1440 Winter	30	+0%	2/30 Summer				14.337	0.581	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N12-1.000	N12-1-0	0.02		1.1	OK	
N12-1.001	N12-1-1	0.05		2.1	OK	
N12-1.002	N12-1-2	0.08		3.6	OK	
N12-1.003	N12-1-3	0.08		4.4	OK	
N12-1.004	N12-1-4	0.00		0.2	SURCHARGED	
N12-1.005	N12-1-5	0.00		0.1	SURCHARGED	
N12-1.006	N12-1-6	0.00		0.0	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Network 12-Bridleway 19

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 5.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 6 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 640286 267538 TM 40286 67538 Cv (Winter) 0.840

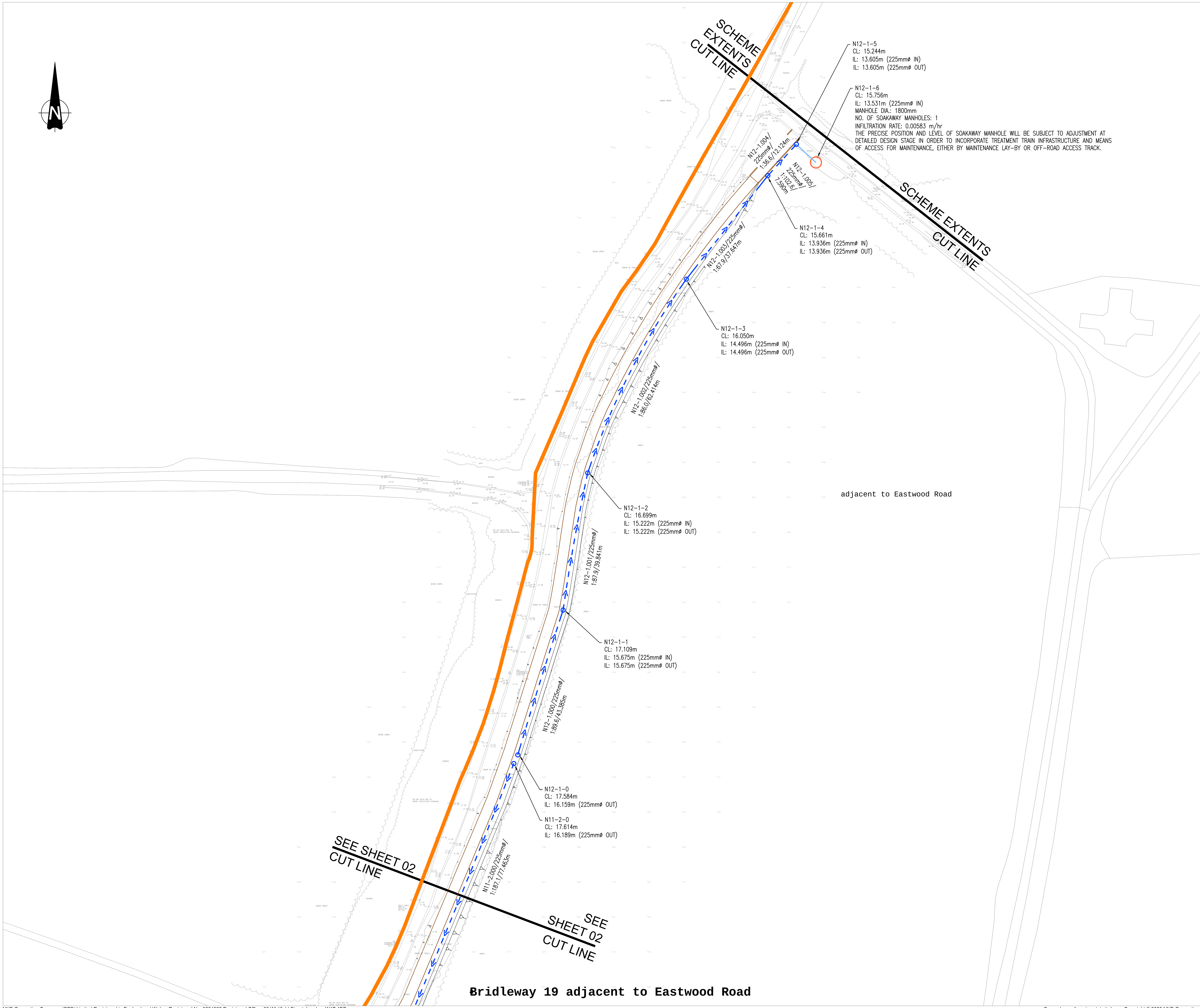
Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep Fine Inertia Status ON
DTS Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years) 2, 5, 30, 100
Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
N12-1.000	N12-1-0	15 Winter	100	+40%					16.189	-0.195	0.000
N12-1.001	N12-1-1	15 Winter	100	+40%					15.719	-0.181	0.000
N12-1.002	N12-1-2	15 Winter	100	+40%					15.279	-0.168	0.000
N12-1.003	N12-1-3	1440 Winter	100	+40%	100/960 Winter				14.736	0.015	0.000
N12-1.004	N12-1-4	1440 Winter	100	+40%	30/180 Winter				14.736	0.575	0.000
N12-1.005	N12-1-5	1440 Winter	100	+40%	2/120 Summer				14.736	0.906	0.000
N12-1.006	N12-1-6	1440 Winter	100	+40%	2/30 Summer				14.737	0.981	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
N12-1.000	N12-1-0	0.04		2.0	OK	
N12-1.001	N12-1-1	0.08		3.8	OK	
N12-1.002	N12-1-2	0.14		6.5	OK	
N12-1.003	N12-1-3	0.01		0.5	SURCHARGED	
N12-1.004	N12-1-4	0.00		0.2	SURCHARGED	
N12-1.005	N12-1-5	0.00		0.1	SURCHARGED	
N12-1.006	N12-1-6	0.00		0.0	SURCHARGED	

APPENDIX D: DRAINAGE NETWORK LAYOUT



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.

1st partner	2nd partner
NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-MSEHDG-ZZ0000-DRW-HCD-305001

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX
SZC (doc: SZ)

0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 1

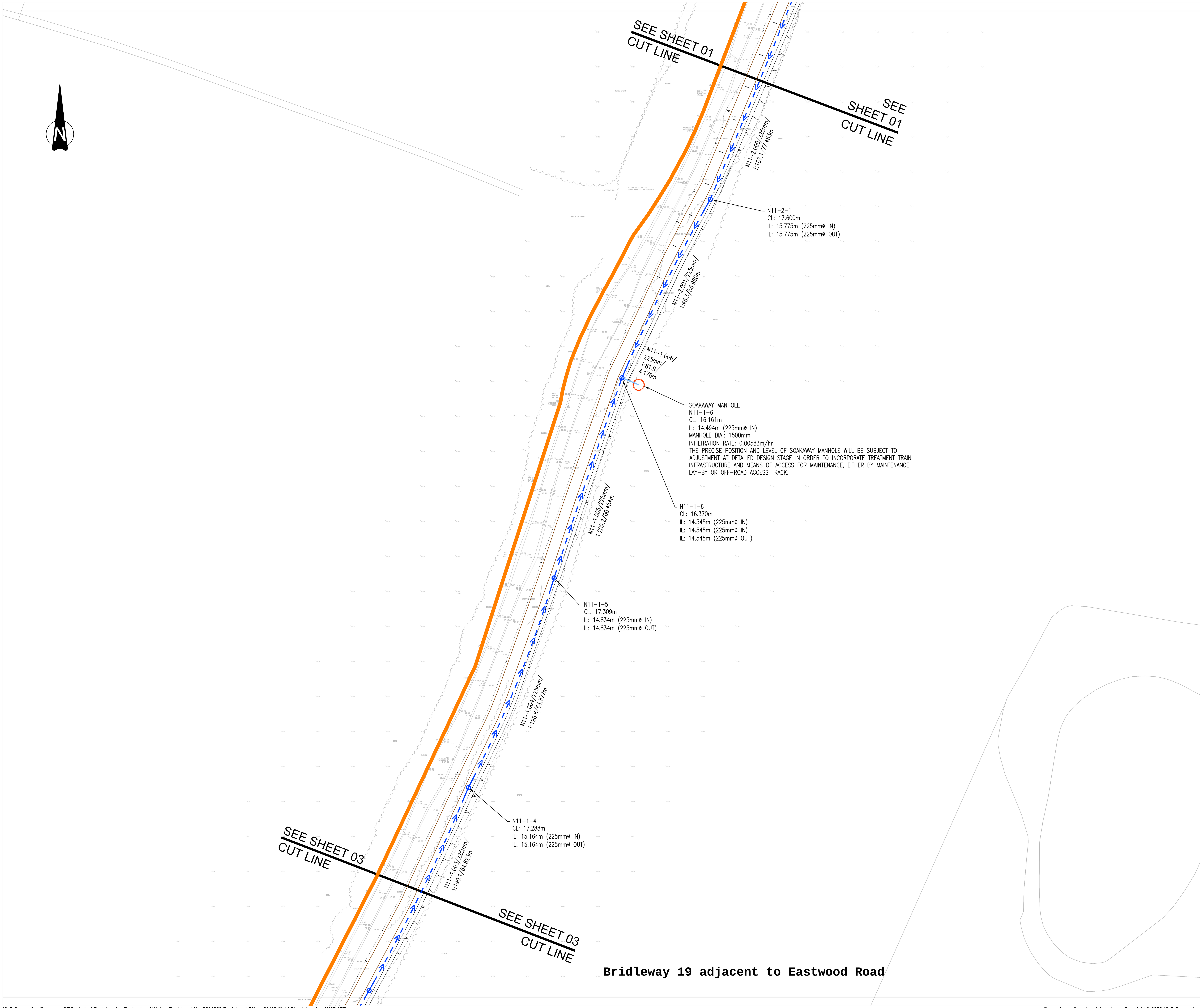
TEAMCENTER DOCUMENT REFERENCE No.
TBC — P01

DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOOCGQUVWMNSZXKY
zsaeocmuvmwxrlfkhbdpqgyjlt 71423855690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.

1st partner	2nd partner
NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-MSEHDG-ZZ0000-DRW-HCD-305002

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A

QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING 000

SYSTEM N/A

SCALE 1:500

SIZE A1

PAGE

DESCRIPTION

PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 2

TEAMCENTER DOCUMENT REFERENCE No.

TBC P01

DOCUMENT SUB -TYPE TEMPLATE

EDF CLASSIFICATION CODE N/A

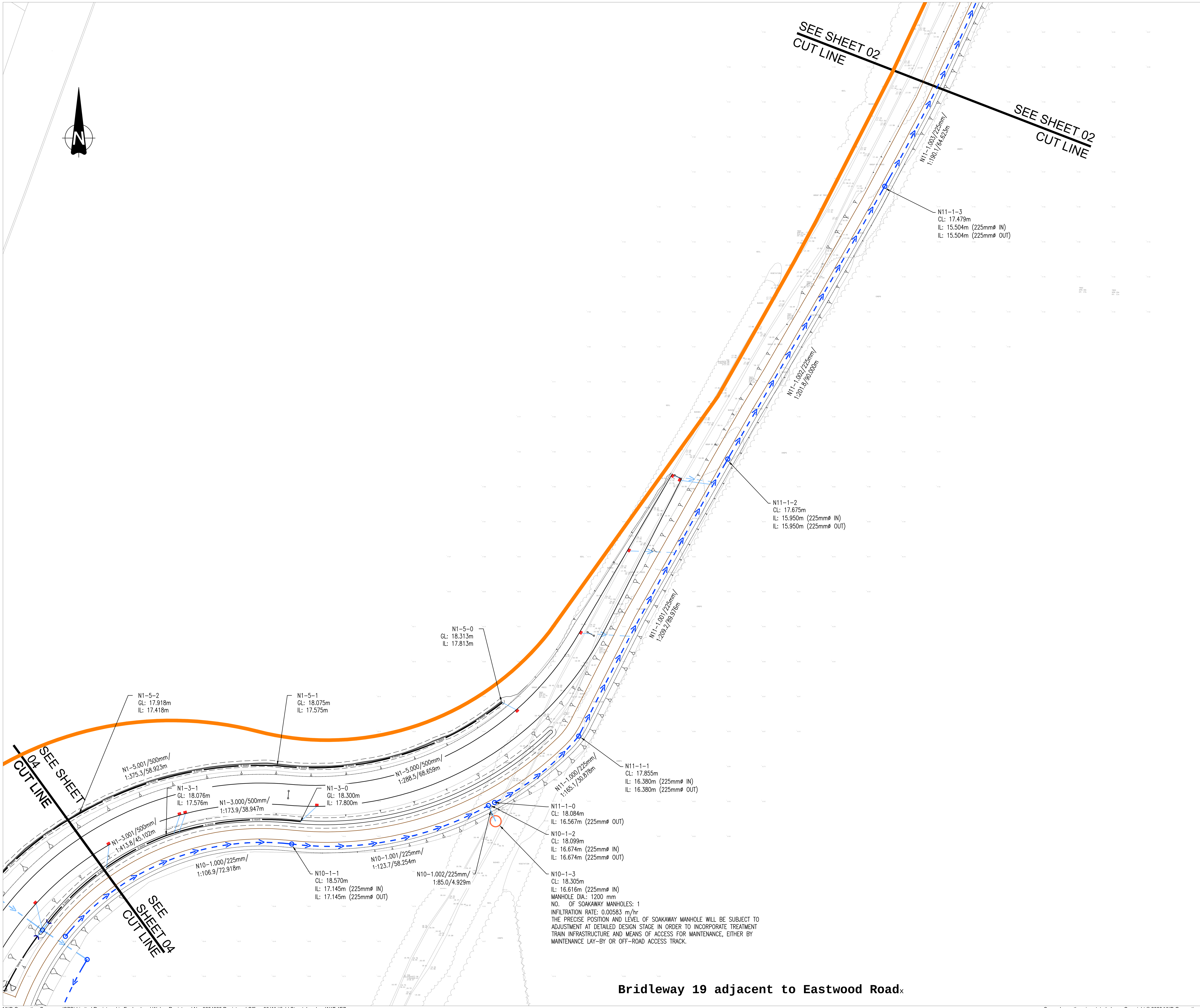
SUBCONTRACTOR COMPANY TRADE NAME N/A

SUBCONTRACTOR DOCUMENT REF. No N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIUOOCGQUVWMNSZXKY
zsaeocmuvnwxirfklhbdpqgyjtt 71423655690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner NNBGEN	2nd partner EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-MSEHDG-ZZ0000-DRW-HCD-305003

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A | QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX
SZC (doc: SZ)

0	1	2	9
X			

BUILDING: 000

SYSTEM: N/A

SCALE: 1:500

SIZE: A1

PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 3

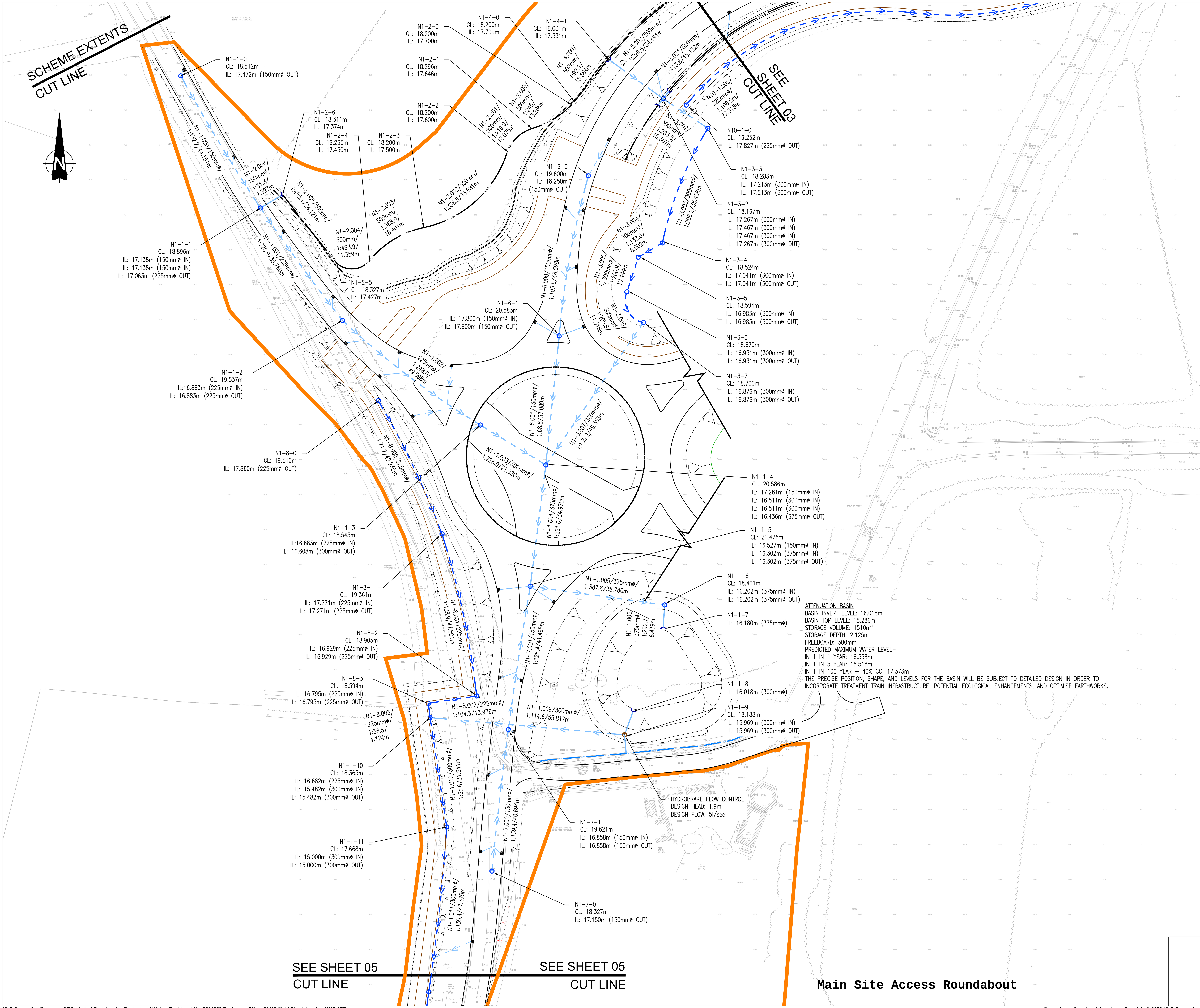
TEAMCENTER DOCUMENT REFERENCE No.
TBC P01

DOCUMENT SUB -TYPE TEMPLATE	EDF CLASSIFICATION CODE N/A
SUBCONTRACTOR COMPANY TRADE NAME N/A	SUBCONTRACTOR DOCUMENT REF. No N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJUOOCGQUVWMNSZXKY
zsaeocmuvmexirfkhbdpqgyjlt 71423855690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner: NNBGEN	2nd partner: EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-MSEHDG-ZZ0000-DRW-HCD-305004

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX
SZC (doc: SZ)

0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 4

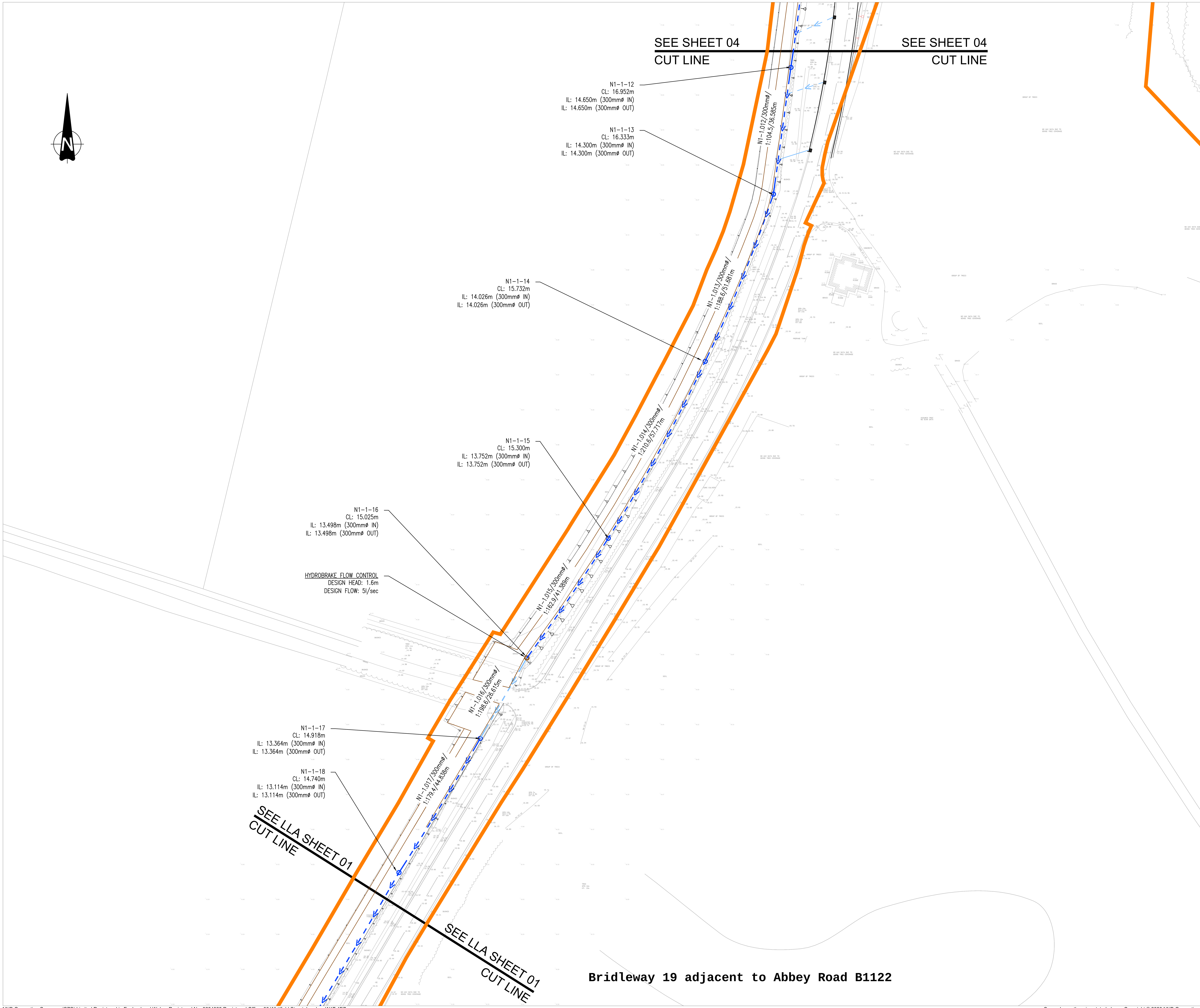
TEAMCENTER DOCUMENT REFERENCE No.
TBC — P01

DOCUMENT SUB -TYPE: TEMPLATE	EDF CLASSIFICATION CODE: N/A
SUBCONTRACTOR COMPANY TRADE NAME: N/A	SUBCONTRACTOR DOCUMENT REF. No: N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLUOOCGQUVWMNSZXKY
zsaeocmuvnwxirfkhbdpqgyjlt 714236859O
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.

1st partner	2nd partner
NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-MSEHDG-ZZ0000-DRW-HCD-305005

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A | QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX
SZC (doc: SZ)

0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 5

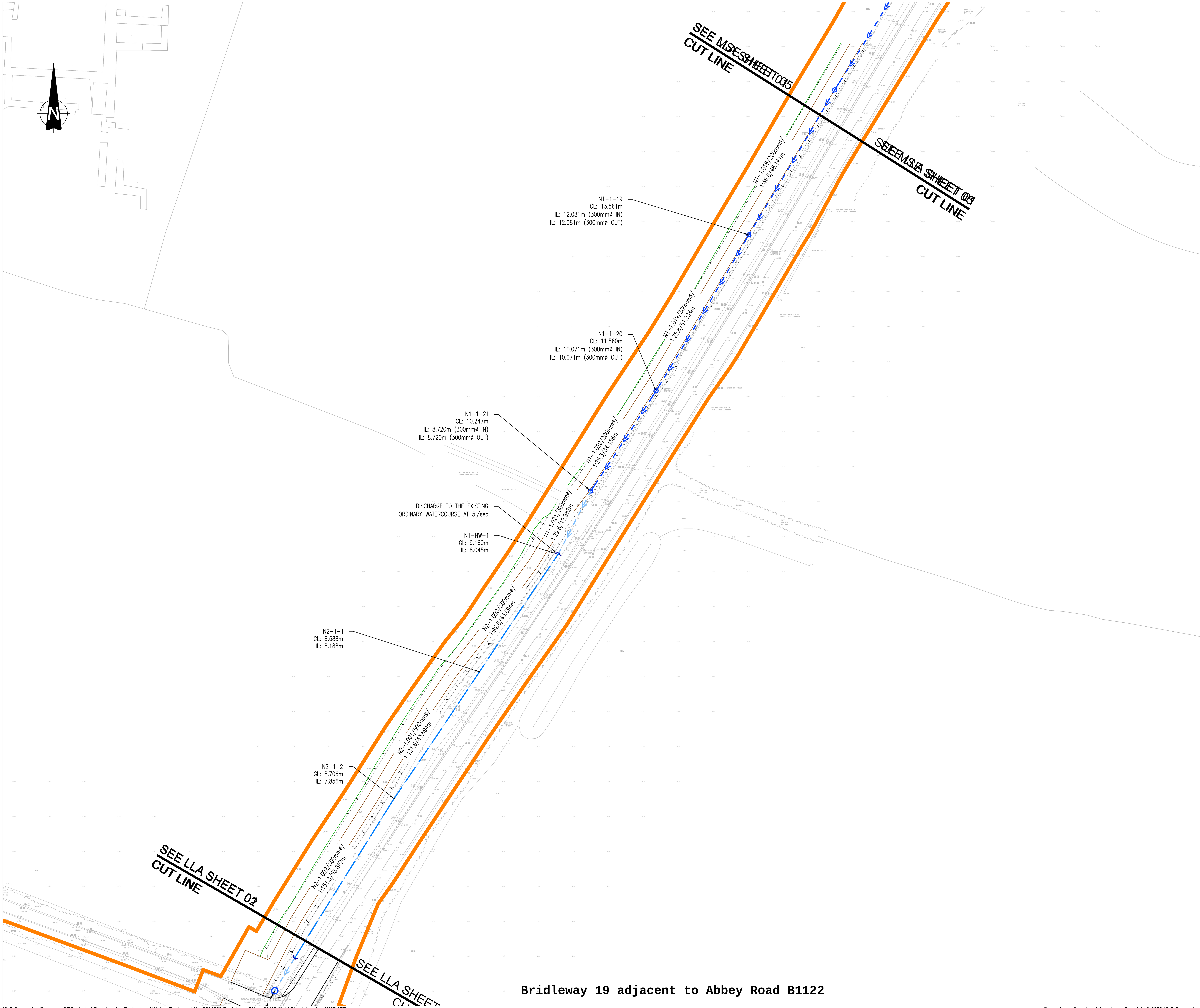
TEAMCENTER DOCUMENT REFERENCE No.
TBC P01

DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHIJUOCGQUVWMNSZXKY
zsaeocmuvnwxirfkhbdpqgyjlt 71423655690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner NNBGEN	2nd partner EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-LLAHDG-ZZ0000-DRW-HCD-305001

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 1

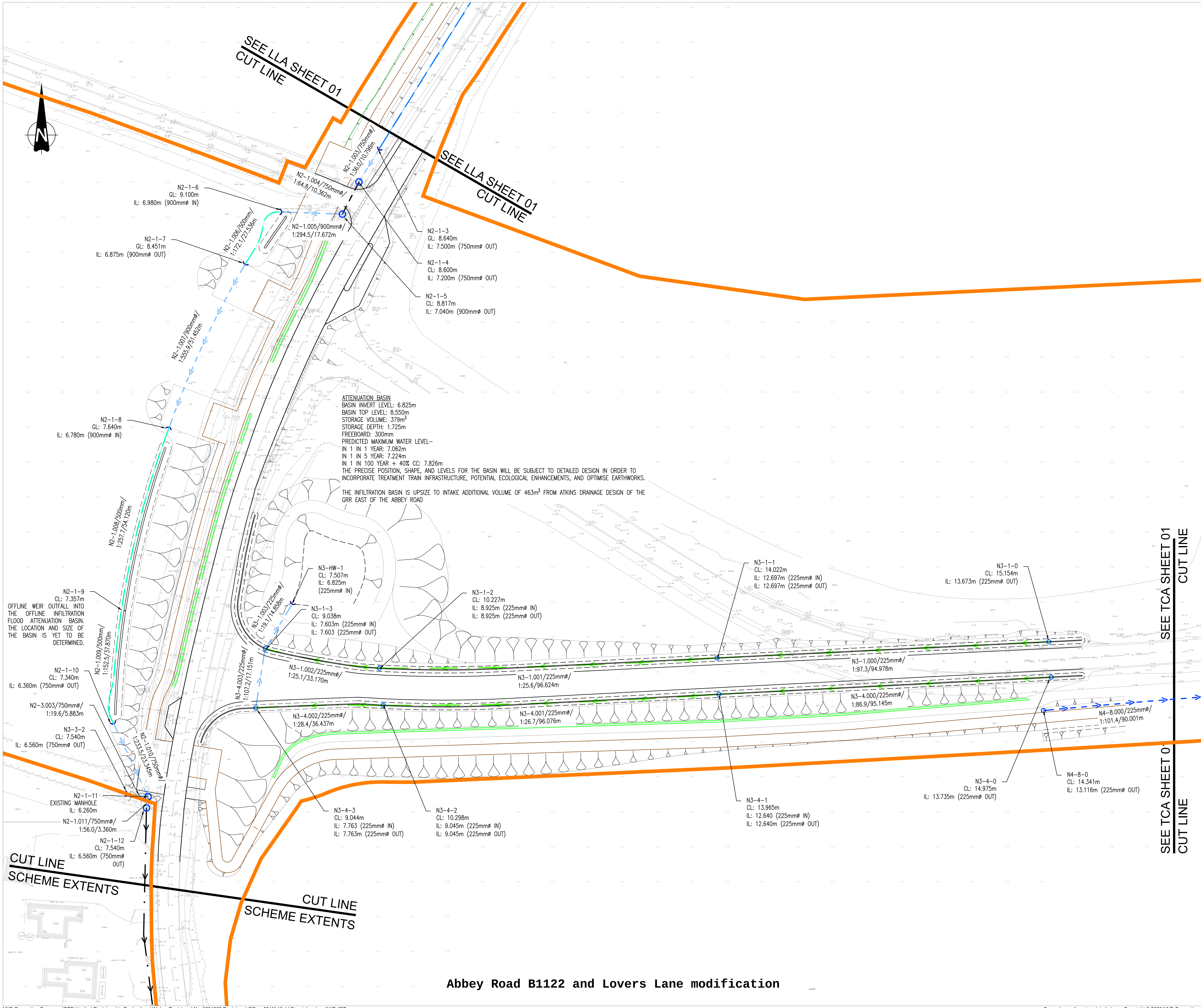
TEAMCENTER DOCUMENT REFERENCE No.
TBC P01

DOCUMENT SUB -TYPE TEMPLATE	EDF CLASSIFICATION CODE N/A
SUBCONTRACTOR COMPANY TRADE NAME N/A	SUBCONTRACTOR DOCUMENT REF. No N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOOCGQUVWMNSZXKY
zsaeocmuvnwxirfkhbdpqgyjlt 71423855690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



Abbey Road B1122 and Lovers Lane modification

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.

1st partner	2nd partner
NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-LLAHDG-ZZ0000-DRW-HCD-305002

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX
SZC (doc: SZ)

0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 2

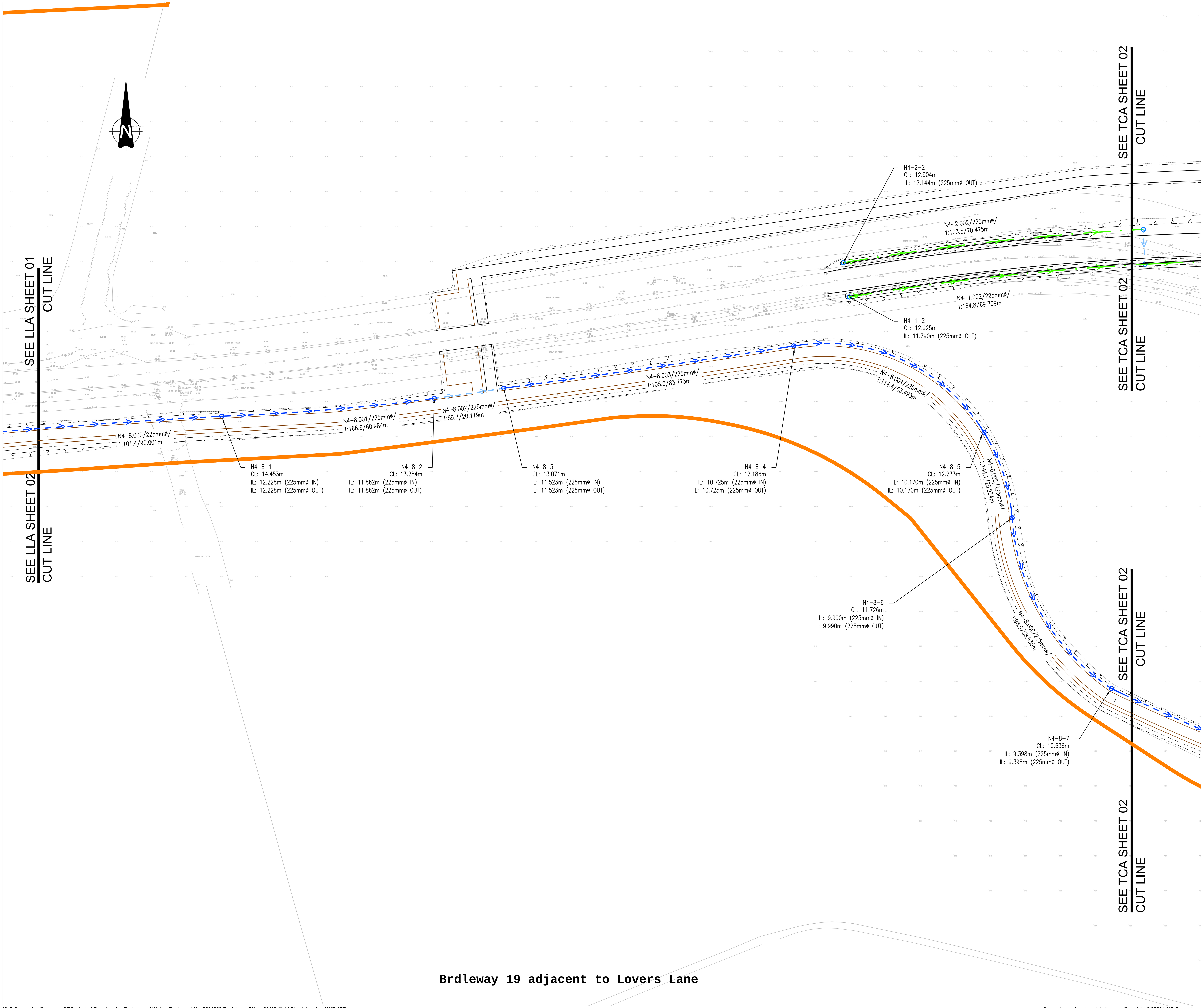
TEAMCENTER DOCUMENT REFERENCE No.
TBC — P01

DOCUMENT SUB -TYPE: TEMPLATE	EDF CLASSIFICATION CODE: N/A
SUBCONTRACTOR COMPANY TRADE NAME: N/A	SUBCONTRACTOR DOCUMENT REF. No: N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIUOOCGQUVWMNSZXKY
zsaeocnuvmwxirfkhbdpqgyjtl 71423655690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown copyright (2019). All Rights reserved. NNB GenCo Licence: 0100060408

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID ☐	NATIONAL GRID OSGB36 X
OTHER GRID ☐	(To be defined in the contract project plan)

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner NNBGEN	2nd partner EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-TCAHDG-ZZ0000-DRW-HCD-305001

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 1

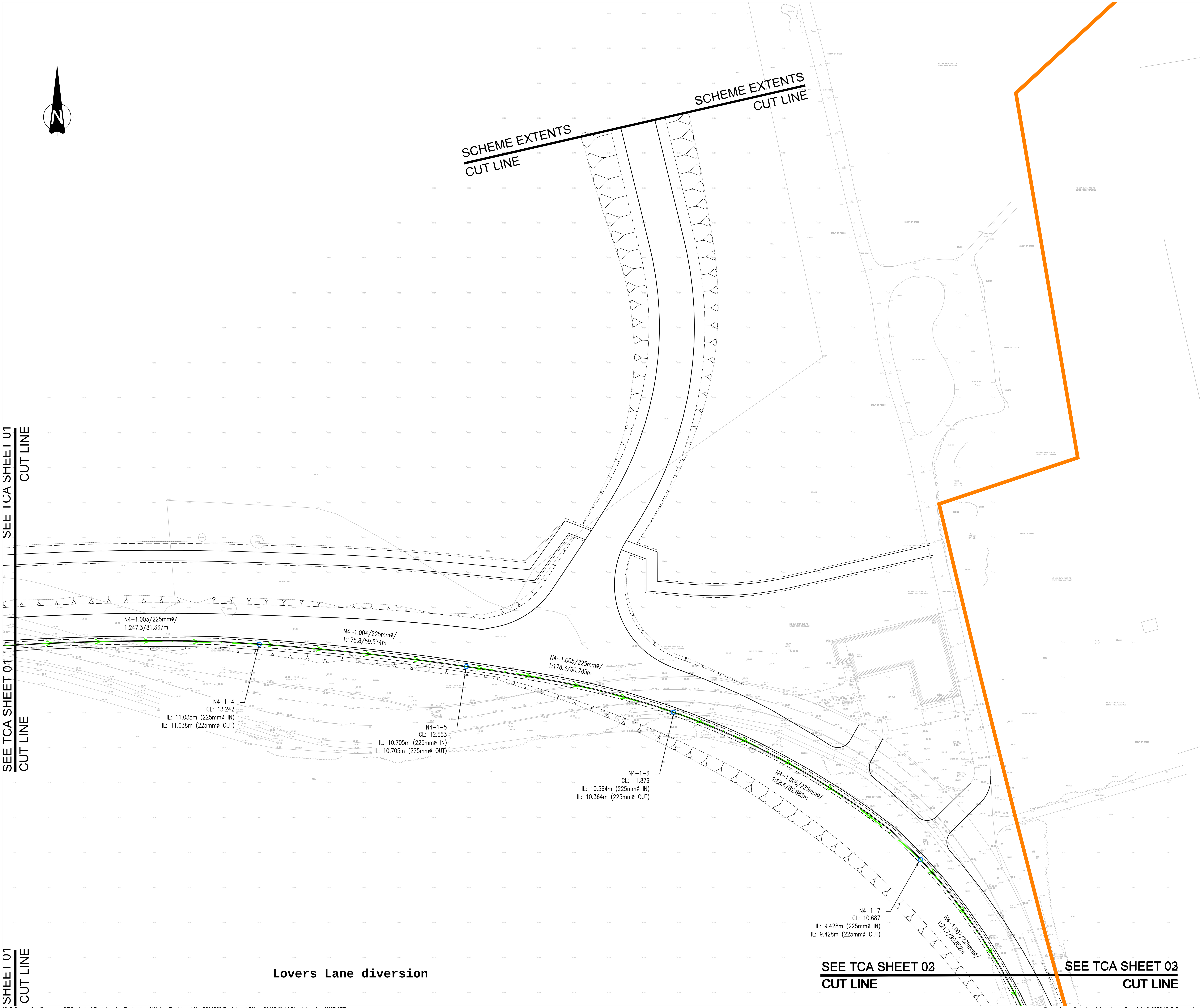
TEAMCENTER DOCUMENT REFERENCE No.
TBC — P01

DOCUMENT SUB -TYPE TEMPLATE	EDF CLASSIFICATION CODE N/A
SUBCONTRACTOR COMPANY TRADE NAME N/A	SUBCONTRACTOR DOCUMENT REF. No N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOQCGQUVWMNSZXKY
zsaeocmuvmwxrfkhbdpqgyjlt 71423655690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID ☐	NATIONAL GRID OSGB36 X
OTHER GRID ☐	(To be defined in the contract project plan)
CONTRACT PROJECT PLAN DOC. REF. No:	N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

	1st partner	2nd partner
NNB GenCo (SZC) LTD.	NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-TCAHDG-ZZ0000-DRW-HCD-305002

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING: 000

SYSTEM: N/A

SCALE: 1:500

SIZE: A1

PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 2

TEAMCENTER DOCUMENT REFERENCE No.
TBC — P01

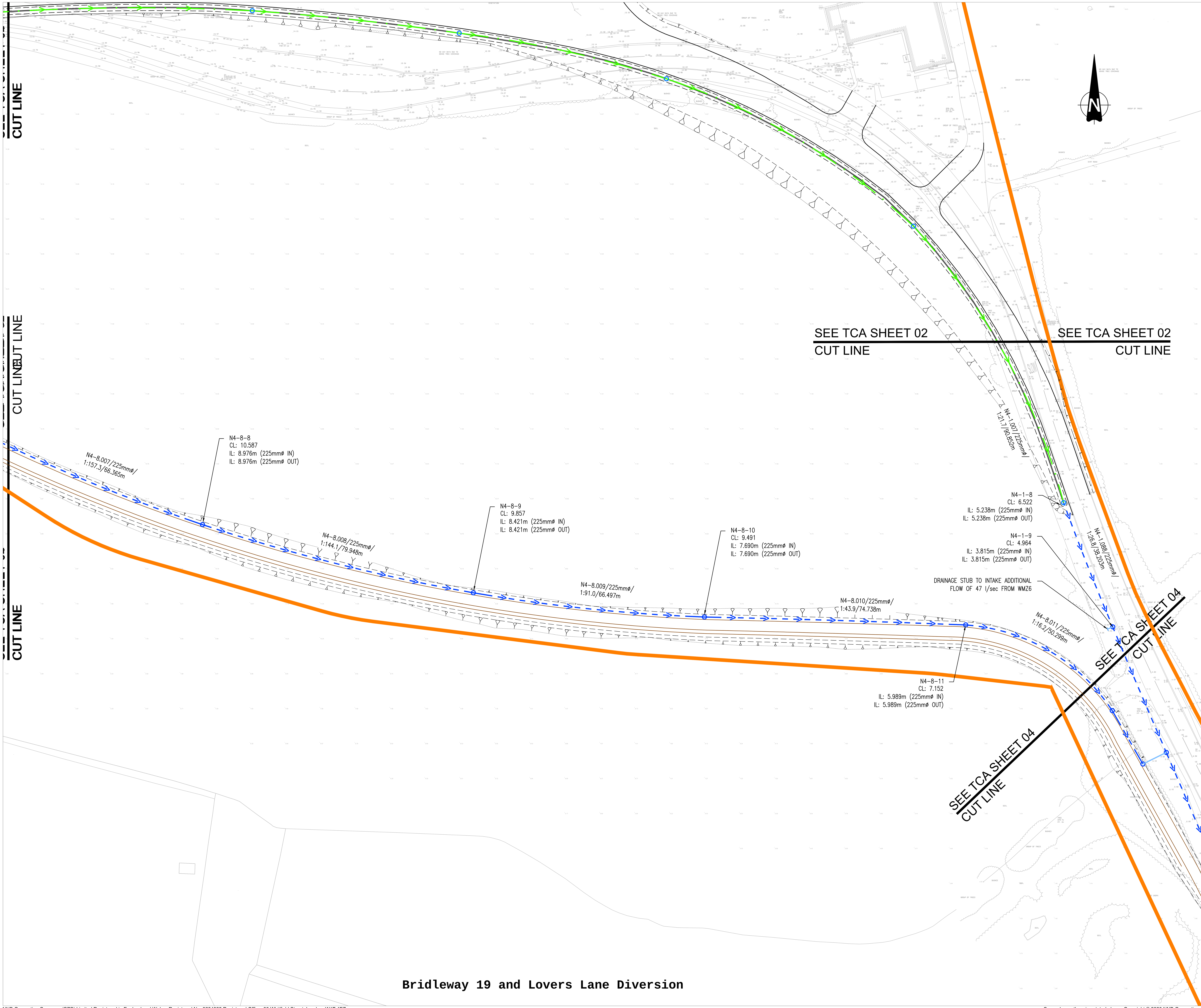
DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOOCGQUVWMNSZXKY
zsaeocnuvmwxirftkhbdpqgyjlt 71423855690

0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

Reproduced from Ordnance Survey map with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown copyright (2019). All Rights reserved. NNB GenCo Licence: 0100060408

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID ☐	NATIONAL GRID OSGB36 X
OTHER GRID ☐	(To be defined in the contract project plan)

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

	1st partner	2nd partner
NNB GenCo (SZC) LTD.	NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-TCAHDG-ZZ0000-DRW-HCD-305003

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A | QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 3

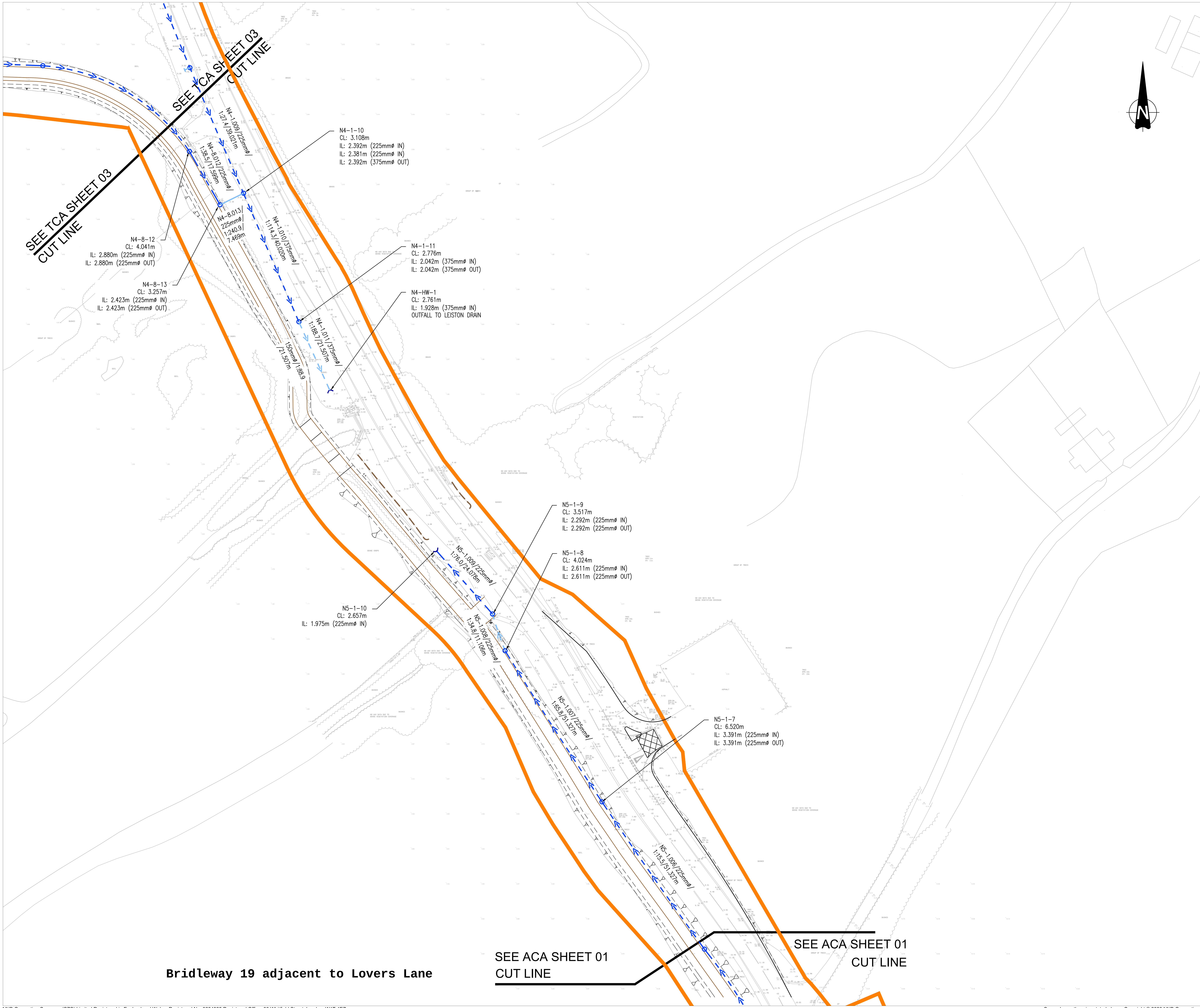
TEAMCENTER DOCUMENT REFERENCE No.
TBC | P01

DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIUOOCGQUVWMNSZXKY
zsaeocmuvnwxirfkhbdpqgyjlt 71423855690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner	2nd partner
	NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-TCAHDG-ZZ0000-DRW-HCD-305004

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING: 000

SYSTEM: N/A

SCALE: 1:500

SIZE: A1

PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 4

TEAMCENTER DOCUMENT REFERENCE No.

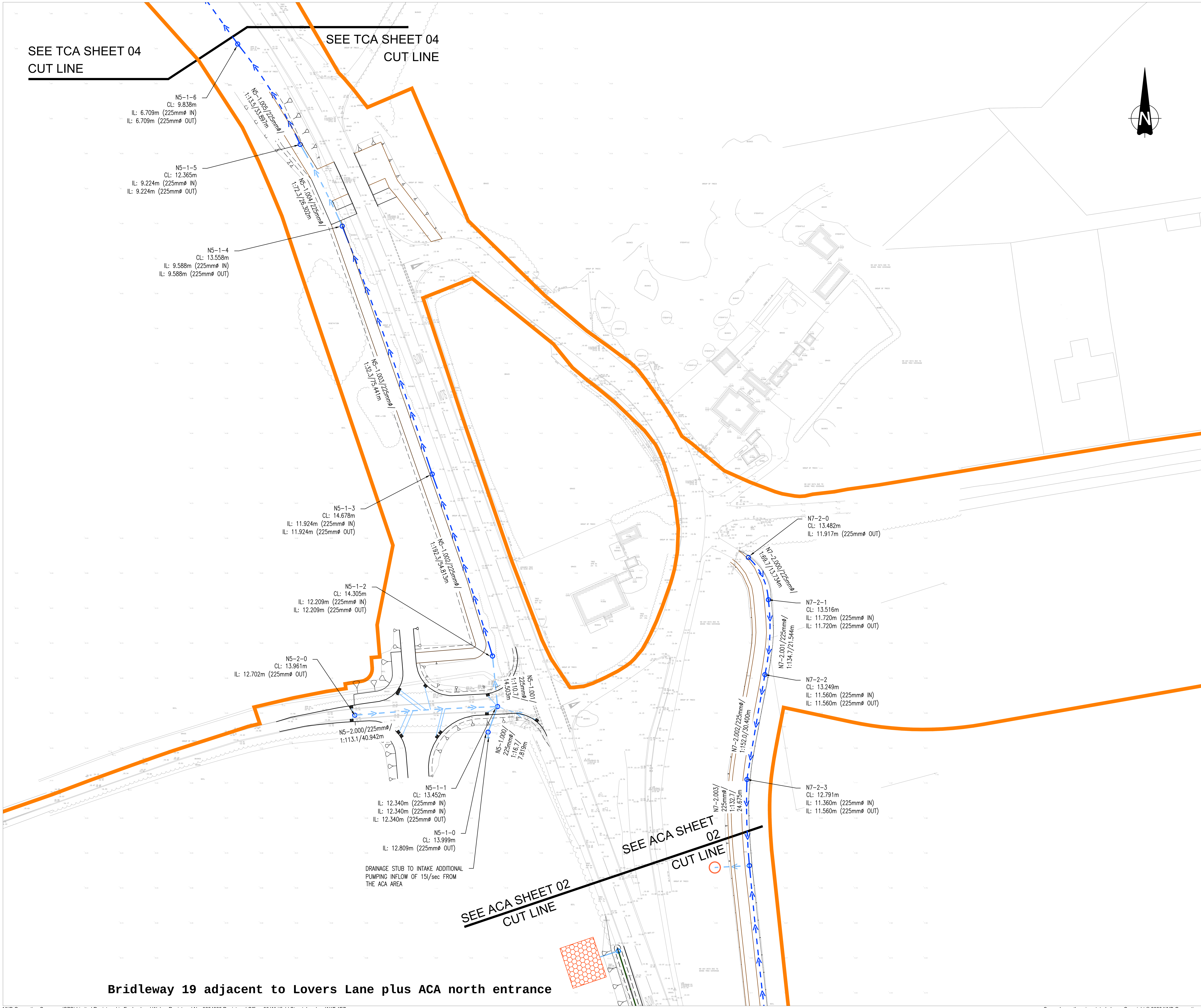
TBC P01

DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOOCGQUVWMNSZXKY
zsaeocmuvnwxirfkhbdpqgyjlt 71423855690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB:	EDF:	CONTRACTOR:
	OWNERSHIP	N/A	N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID ☐	NATIONAL GRID OSGB36 X
OTHER GRID ☐	(To be defined in the contract project plan)

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.

1st partner	2nd partner
NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-ACAHDG-ZZ0000-DRW-HCD-305001

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A

QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING 000

SYSTEM N/A

SCALE 1:500

SIZE A1

PAGE

DESCRIPTION

PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 1

TEAMCENTER DOCUMENT REFERENCE No.

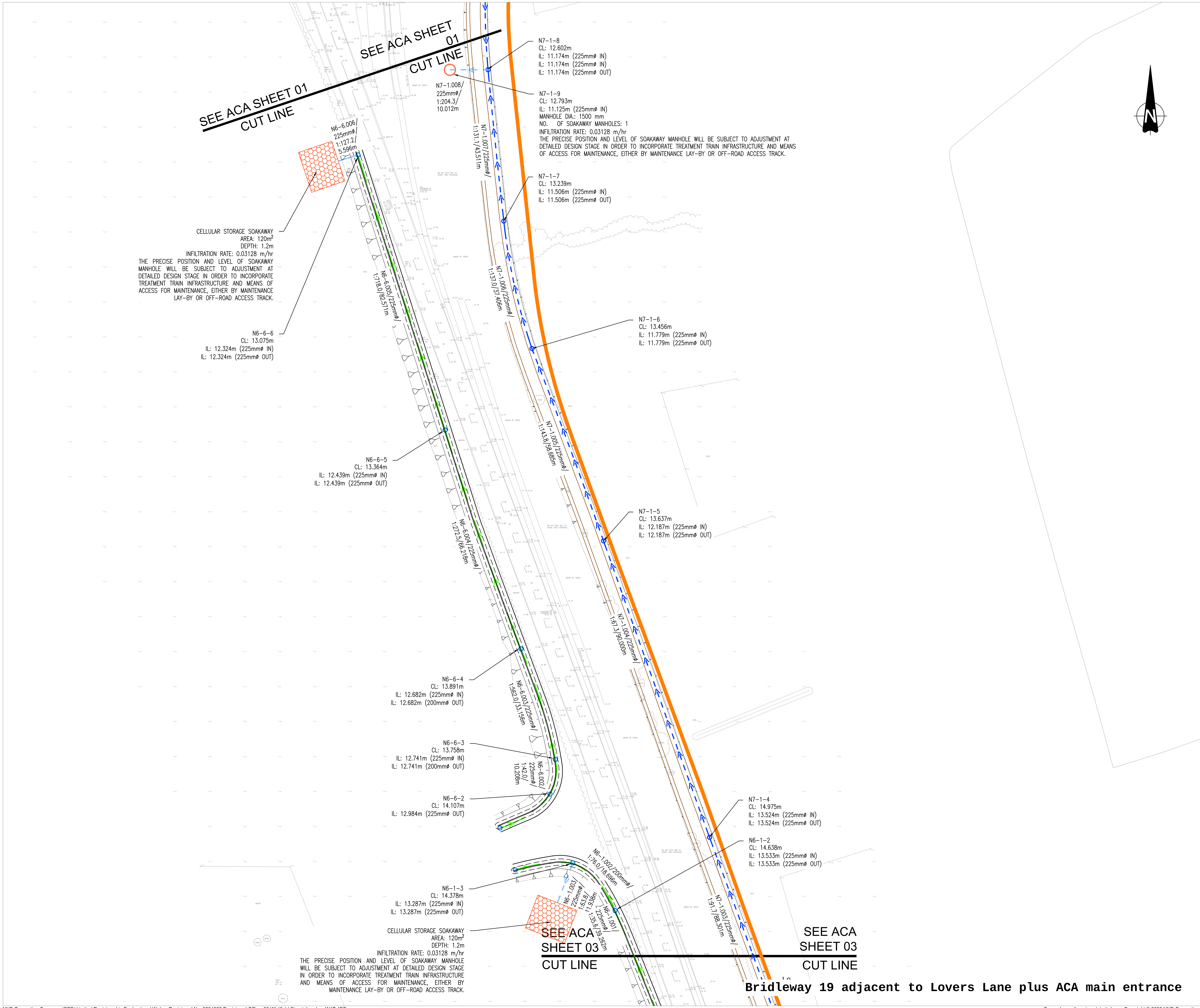
TBC P01

DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOOCGQUVWMNSZXKY
zsaeocnuvmwxirfkhbdpqgyjlt 71423855690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



Bridleway 19 adjacent to Lovers Lane plus ACA main entrance

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner NNBGEN	2nd partner EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-ACAHDG-ZZ0000-DRW-HCD-305002

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A — QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX
SZC (doc: SZ)

0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 2

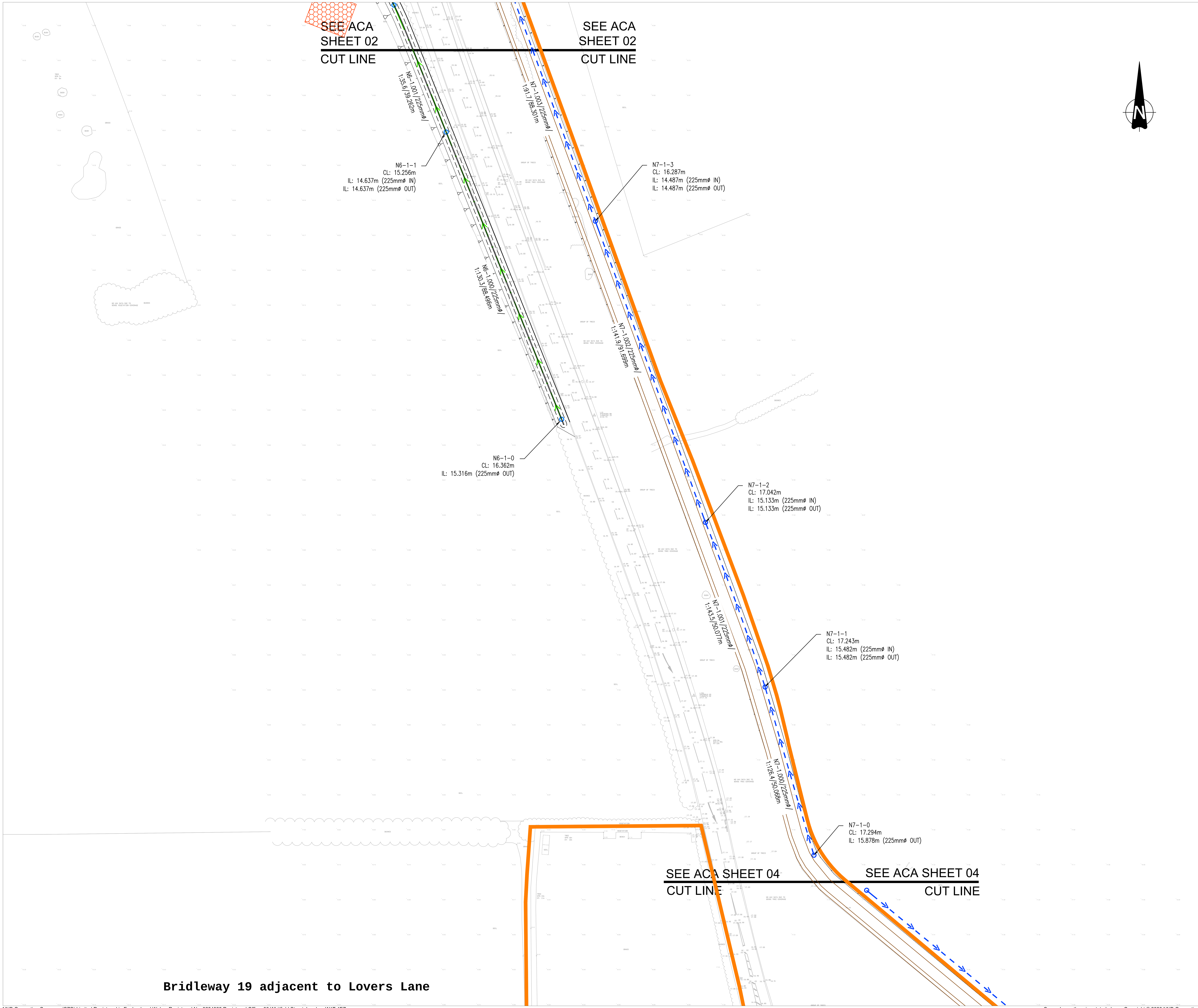
TEAMCENTER DOCUMENT REFERENCE No.
TBC — P01

DOCUMENT SUB -TYPE TEMPLATE	EDF CLASSIFICATION CODE N/A
SUBCONTRACTOR COMPANY TRADE NAME N/A	SUBCONTRACTOR DOCUMENT REF. No N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOOCGQUVWMNSZXKY
zsaeocmuvwxkrfkhbdpqgyjlt 71423655690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID ☐	NATIONAL GRID OSGB36 ☒
OTHER GRID ☐	(To be defined in the contract project plan)

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner	2nd partner
	NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-ACAHDG-ZZ0000-DRW-HCD-305003

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A | QRA RELATED Yes ☐ No ☒

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING: 000

SYSTEM: N/A

SCALE: 1:500

SIZE: A1

PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 3

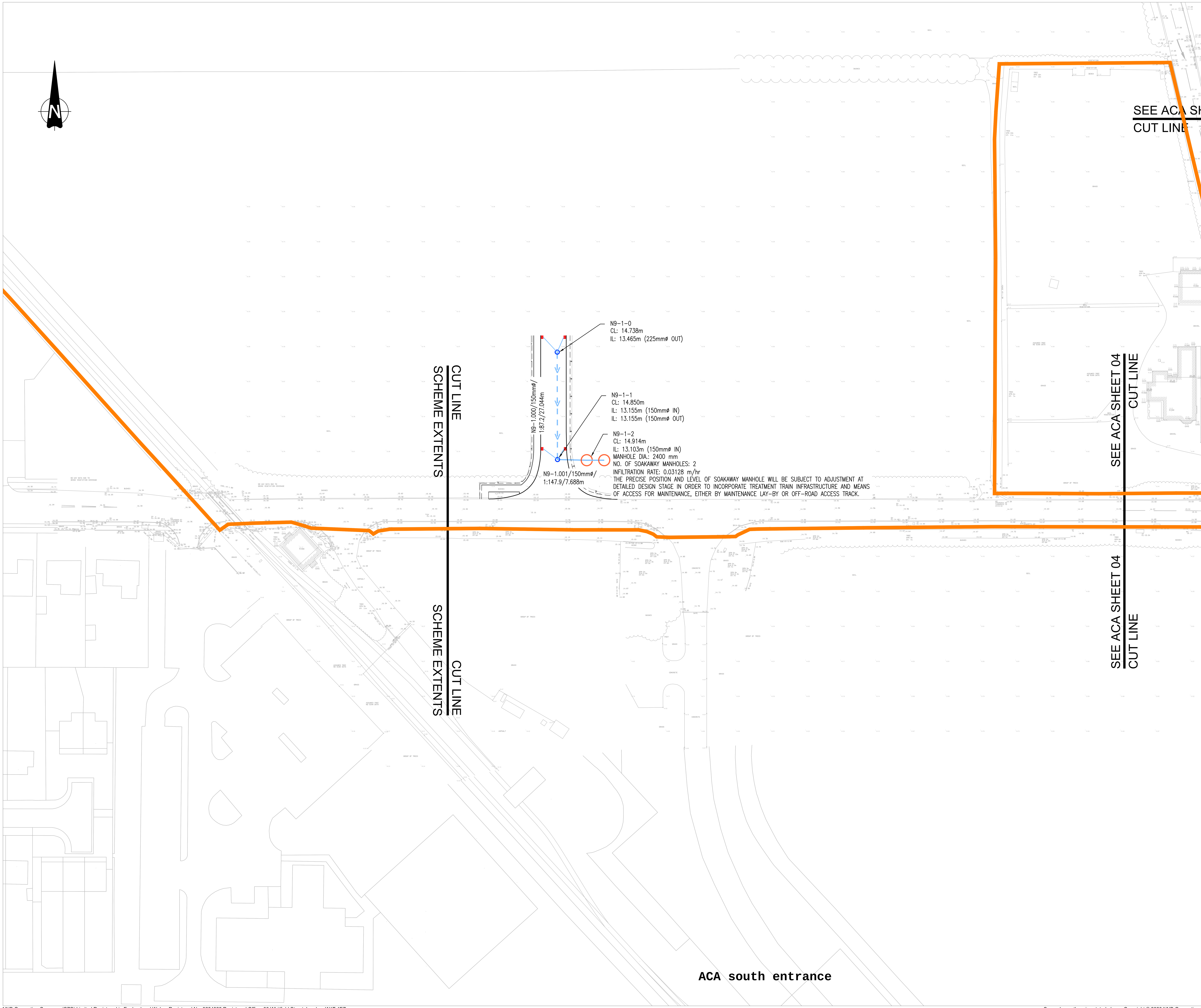
TEAMCENTER DOCUMENT REFERENCE No.
TBC P01

DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOOCGQUVWMNSZXKY
zsaeocmuvnwxirfkhbdpqgyjlt 71423855690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB:	EDF:	CONTRACTOR:
	OWNERSHIP	N/A	N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS
- DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

NNB GenCo (SZC) LTD.	1st partner NNBGEN	2nd partner EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-ACAHDG-ZZ0000-DRW-HCD-305004

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A

QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX			
SZC (doc: SZ)			
0	1	2	9
X			

BUILDING 000

SYSTEM N/A

SCALE 1:500

SIZE A1

PAGE

DESCRIPTION

PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 4

TEAMCENTER DOCUMENT REFERENCE No.

TBC P01

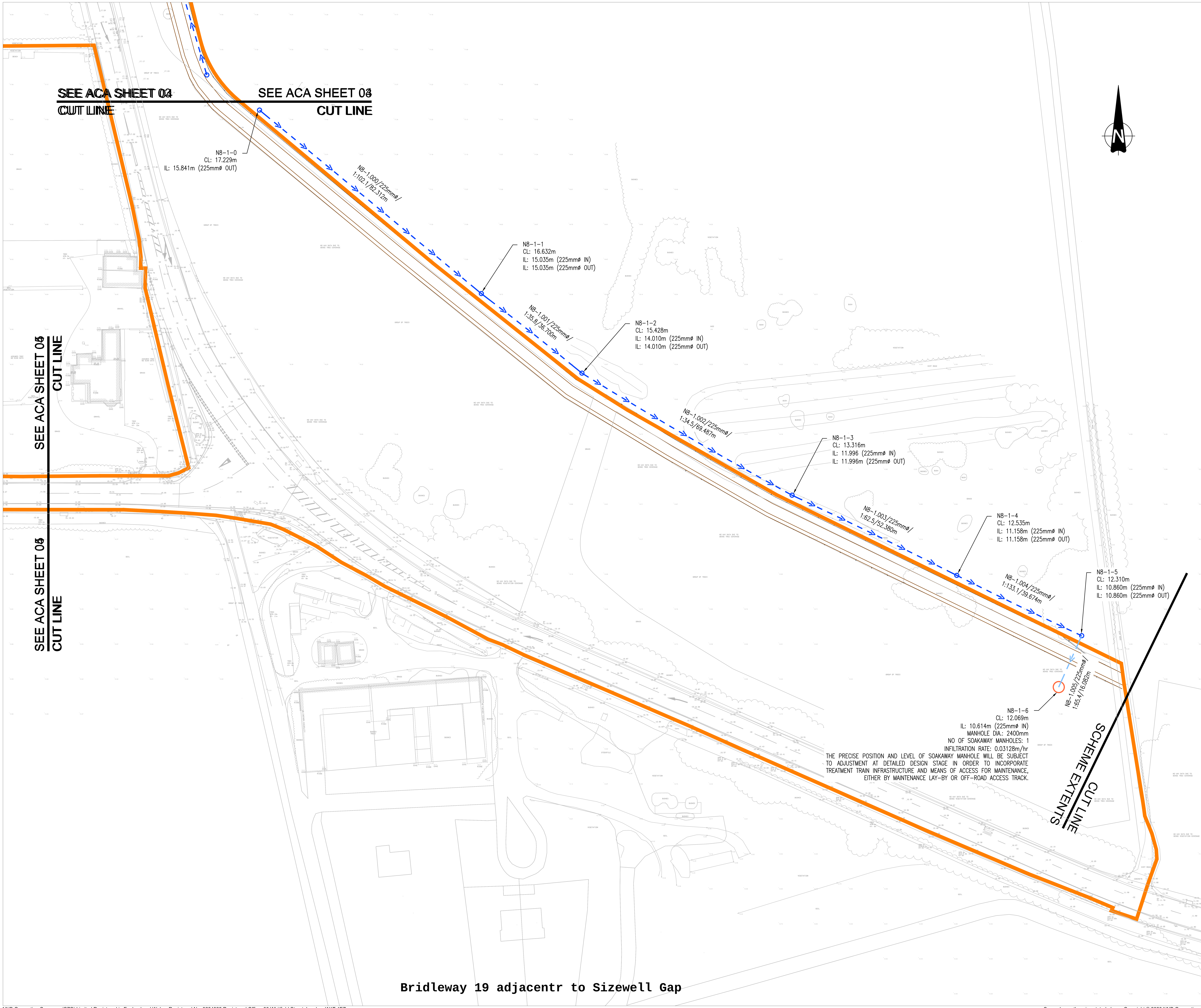
DOCUMENT SUB -TYPE TEMPLATE	EDF CLASSIFICATION CODE N/A
SUBCONTRACTOR COMPANY TRADE NAME N/A	SUBCONTRACTOR DOCUMENT REF. No N/A

This pattern must be entirely readable

0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED



UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

DRAWING GRID / COORDINATE SYSTEM:

SITE LOCAL GRID	☐	NATIONAL GRID OSGB36	X
OTHER GRID	☐	(To be defined in the contract project plan)	

CONTRACT PROJECT PLAN DOC. REF. No: N/A

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE SHOWN IN METRES UNLESS OTHERWISE STATED.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE STATED.
4. THE WORKS SHALL BE CARRIED OUR IN ACCORDANCE WITH DESIGN MANUAL FOR ROADS AND BRIDGES, MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS, CIRIA C753 THE SuDS MANUAL AND SUFFOLK COUNTY COUNCIL SPECIFIC STANDARD DETAILS AND SPECIFICATIONS AS APPROPRIATE.
5. POSITION OF PROPOSED HIGHWAY GULLIES IS APPROXIMATE AND TO BE FIXED AT THE DETAILED DESIGN STAGE.
6. ALL MANHOLES SHALL BE CATCHPIT MANHOLES UNLESS OTHERWISE STATED. REFER TO MANHOLE SCHEDULES FOR MANHOLE DETAILS.
7. THE PROPOSED ROADSIDE SWALES IS TO BE 200 mm DEEP, 200 mm BASE WIDTH WITH 1:4 SIDE SLOPES. THE FILTER PIPES OF ATLEAST 225 mm DIA. SHALL BE PROPOSED AT THE DEPTH OF AT LEAST 1 m DEPTH UNDER THE ROADSIDE SWALES
8. THE PROPOSED EARTHWORKS DITCHES IS TO BE 500 mm DEEP, 500 mm BASE WIDTH WITH 1:3 SIDE SLOPES.
9. POLLUTION CONTROL MEASURES TO BE ADDED AT THE DETAILED DESIGN STAGE FOLLOWING RECOMMENDATIONS OF HEWRAT ASSESSMENT.
10. DRAINAGE PIPE AND MANHOLE REFERENCE RELATE TO THOSE CONTAINED IN HYDRAULIC MODEL.
11. CUTTING CUT OFF DRAINS ARE NOT SHOWN AT PRELIMINARY DESIGN STAGE AND WILL BE ADDED AT DETAILED DESIGN STAGE, IF REQUIRED.

KEY:

- PROPOSED CARRIER DRAIN
- PROPOSED FILTER DRAIN
- PROPOSED EARTHWORKS DITCH
- EXISTING UNCHANGED WATERCOURSE
- EXISTING DIVERTED WATERCOURSE
- PROPOSED UNDERDRAIN PIPE OF ROADSIDE SWALES
- EXISTING CULVERT
- EXISTING SW NETWORK
- PROPOSED CATCHPIT/MANHOLES
- PROPOSED TYPE 10 GRATING CHAMBERS
- PROPOSED HYDROBRAKE
- PROPOSED SOAKAWAY MANHOLE
- PROPOSED COMBINED KERB DRAINAGE
- PROPOSED MAMMAL CHANNELS
- PROPOSED GULLY
- PROPOSED HEADWALL
- PROPOSED CELLULAR STORAGE
- PROPOSED INFILTRATION/ATTENUATION BASIN

REV.	DATE	PREPARED BY	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
P01	16/03/21	JS	DL	S2	First Revision	BS

	1st partner	2nd partner
NNB GenCo (SZC) LTD.	NNBGEN	EDF ENERGY

CONTRACTOR COMPANY TRADE NAME: WSP

CONTRACTOR REF. No: SZC-AD0600-WSP-ACAHDG-ZZ0000-DRW-HCD-305005

CONTRACT NUMBER: SZC-AD0600

CONTRACTOR WBS CODE: N/A | QRA RELATED Yes ☐ No X

APPLICABILITY:
1: Document related to Unit 1
2: Document related to Unit 2
9: Document that applies to buildings/systems common to Unit 1 & 2
0: Documents that relate exclusively to buildings or systems that are common to the whole site (e.g. parking, ancillary buildings...)

NUCL/REP/EPR/UKX
SZC (doc: SZ)

0	1	2	9
X			

BUILDING: 000
SYSTEM: N/A

SCALE: 1:500
SIZE: A1
PAGE

DESCRIPTION:
PRELIMINARY DESIGN
DRAINAGE WORKS
GENERAL ARRANGEMENT SHEET 5

TEAMCENTER DOCUMENT REFERENCE No.
TBC P01

DOCUMENT SUB -TYPE	EDF CLASSIFICATION CODE
TEMPLATE	N/A
SUBCONTRACTOR COMPANY TRADE NAME	SUBCONTRACTOR DOCUMENT REF. No
N/A	N/A

This pattern must be entirely readable
For A0 and A1 : ABERPFTHLIJOOCGQUVWMNSZXKY
zsaeocmuvnwxirfklhbdpqgyjt 71423655690
0 1 2 3 4 5 6 7 8 9 10

INTELLECTUAL PROPERTY OWNERSHIP:	NNB: OWNERSHIP	EDF: N/A	CONTRACTOR: N/A

UK PROTECTIVE MARKING:
NOT PROTECTIVELY MARKED

APPENDIX E: RECORD OF SCC COMMENTS AND SZC ACTIONS

SCC comments on draft report issued on 16/12/2021	
Table 1 Where have these figures come from and how were they calculated? I assume these figures are m3/s, but this isn't stated. Section 5.1.8 This doesn't match up with Table 1 Section 6.1,3 Reference and provide relevant testing results. Table 2 is noted, but you should provide raw testing results to support this Table 2 TH301 – Not compliant with BRE365 Section 8.1.2 Underground storage stated. Aren't these areas hoped to be adopted by SCC Highways, who are unlikely to adopt below ground drainage? Section 8.1.9 Proposed discharge rate? Yet to be agreed. If 5l/s, what impact could this have on existing downstream surface water flood risk depths, extents, likelihood and subsequent consequences? Answered in part by 8.1.9 Plate 10 – Total depths and water depths exceed CIRIA SuDS Manual guidance – justify. Depth of water during 1:1+CC exceeds recommended maximum for surface water treatment, has any treatment assessment been undertaken? Suggest CIRIA Simple Index for this location – Will need to agree suitable pollution hazard level but given use, my initial	Draft report was modified at rev01 to address all comments. Given that most comments have not been repeated in SCC comments on rev01 below, SZC believe that they have been addressed to the satisfaction of SCC

thought would be high, highly frequented lorry approach Section 8.1.21 Queries previously raised RE the referenced infiltration basin, has this been sized to accommodate this area as well? Plate 11 – I've raised this query previously, but I'm not entirely sure exactly what area this basin serves and the infiltration rate is yet to be agreed Section 8.1.25 Basin volume increased by 463m3 but storage volume in Plate 12 is stated as 379m3? Need to understand the basin function in both SZC construction and post-construction scenarios Assume access and road have no flow controls if draining straight into carrier drain? "I'm not sure on the extent of local widening at the HWRC, I know at Foxhall we've had to look at the drainage due to local widening at the HWRC. Will leave you to comment on whether you think the extent of widening here requires a look at the drainage or whether you're content Section 8.1.42 Again, draining highway surface water to crated systems. Not sure on acceptability from a highways perspective. Even if not proposed for adoption (8.1.43), is this then public highway draining to a privately maintainable system? Section 9.1.1 Are these Figure references part of the DCO submission? If so, please provide full references to the submission documents Section 9.1.2 1:100 + 35% is fluvial, we request 1:100 + 40% for pluvial (see attached) – the pluvial level is not referenced in this document Section 9.1.5 FYI – boardwalk deck	

Section 10.1.2 Established how? Likewise for 10.1.3 Section 10.1.5 Again uses 35% for pluvial, not 40% for fluvial Section 10.1.6 OK, but you need to demonstrate that your development will not increase this existing flood risk in terms of extent, depth or likelihood. The following paragraphs in terms of potential betterment are noted, but there are a few unknowns around this so we need to work on the worst case scenario at this stage"	
SCC Comments at Rev01	
2.1.3 appears to have been taken straight from Freight Management Facility Technical Note without any changes Table 1 – Where have these numbers come from and how have they been calculated. I'm not expecting to see a full set of supporting calculations, but some context is needed Table 2 – TH301 is a fail. Supporting logs show 25% was not reached on Test 1 or 2 and therefore Test 3 was not undertaken. Note BRE365 compliant 7.1.3 – Note that generally SCC would expect to see 10mm/hr for infiltration only to be a suitable means of surface water disposal, as previously stated and as implemented on SPR DCO 8.1.1 – Formatting error 8.1.2 – Reference to underground storage discouraged	Agreed its standard across all reports. Flow rates calculated based on assessment of catchment extent using FEH data Agreed not full BRE365 compliant but does indicate some infiltration capacity Noted clarification of SCC position Agreed Clarification this is not a reference to underground storage in tanks but storage in underground filter drains, their trenches and manholes pending infiltration.

Table 3 – Provide supporting calculations Table 4 – Provide supporting calculations. Note comments on Green Rail Route above and lack of consistency for this basin.	Calculations are available for both basins

ANNEX 2A.25: POST EXAMINATION DRAINAGE STRATEGY CONSULTATION WITH SCC/IDB

Sizewell C – Drainage Strategy – Action Plan
Version: 07 (Updated Plan 16th February 2022)
Date: 11/02/2022 – Final 16th February 2022
Parties: SZC Co., ESC, SCC, ESIDB, EA

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	**Post Examination**					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
1	Control Document	Drainage Strategy needs to be tied legally together with Technical Notes.	Reach agreement between SZC Co. and SCC on the degree of reliance on and relationship between the Drainage Strategy and series of supplementary technical notes, including the information to be provided through the subsequent Actions in this document.	Technical notes appended to D10 Drainage Strategy. Requirement 5 redrafted to enable final drainage strategy to be agreed post Examination.	Overarching Final Drainage Strategy to be release as Pre-commencement Condition aligned to requirement 5.		SZC Co	March for BEIS submission Draft 11th March		
2a	Infiltration Figures - MDS	2021 Results need to have a location plan so they can be reviewed.	SZC Co. to: 1. Provide Table of 2021 Results and 2021 Plan. 2. Show reason for chosen infiltration value from all results available (all sites). 3. Additional item: provide overlay plan of infiltration values and WMZs.	1. 2021 results and location plan provided informally to SCC and ESIDB. 2. Justification for choice of infiltration rate provided within D10 **Drainage Strategy Annex 2A.5: Explanatory Technical Note**. 3. Infiltration / WMZ overlay provided in different formats within D10 **Drainage Strategy** as **Annex 2A.2: Location of Geotechnical Investigations on MDS and Infiltration Testing Confidence** and within **Annex 2A.3: Main Development Site Water Management Zone Summary**.	No further action required. Volume of infiltration data, query if PINS would want this information and hence in public domain. - SZC CO	Discuss with PINS the submission of the route infiltration data Confirmed, only submission into SoS Determination Period available	SZC Co (SM)	10/12/2021	06/01/2022 CV confirmed	PINS may not accept further data or be able to Confirmation, PINS will not accept further data, only additional submissions to be made are into SoS Determination

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	**Post Examination**					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
2b	Infiltration Figures – AD sites	Includes additional test results for TVBP and Yoxford. Includes existing geotechnical reports for FMF, NP&R, GRR and SP&R.	SZC Co. to: 1. Supply existing reports with available values for 2VB, Yoxford, FMF, NPR, SPR and GRR. 2. Supply any new infiltration data for FMF, NPR, GRR and SPR.	1. Infiltration test results provided informally for 2VB and Yoxford. Existing infiltration summaries for FMF, NPR and SPR provided in D10 **Drainage Strategy** within **Annexes 2A.8, 2A.6 and 2A.7**. 2. Not progressed.	Formal provision of reports in column E, as Annexes to final Drainage Strategy. Provide infiltration test results for GRR as Annex to final Drainage Strategy. Provide any new, quality assured infiltration test results for all AD sites as Annex to final Drainage Strategy.	Provide GI data where this has been used to inform an updated design note. Source investigation data to be incorporated. Overall Drainage Strategy to include references and annex's to incorporate	WSP (DL)	16/02/2022	16/02/2022 with last report issue	Data will be included in updated design notes and GI reports provided in full
3a	Choice of treatment Indices for pollution control - MDS.	Index for Pond used rather than Basin in ACA. Other Zones can have simplified approach.	SZC Co. to: 1. Review ACA result and revise, as necessary. 2. Complete WMZ1 as further example. 3. Complete other zones using simplified approach – worst pollution source with least treatment route.	1. ACA analysis revised within D10 **Drainage Strategy Annex 2A.5: Explanatory Technical Note**. 2. WMZ1 assessment provided in D10 **Drainage Strategy** as **Annex 2A.15: WMZ1 Surface Water Treatment Assessment**. 3. Simplified assessment provided in D10 **Drainage Strategy** as **Annex 2A.5: Explanatory Technical Note**.	Integration with filter strips and whole system	Review of actions items 3a, 4 and 5 in combination to attain the treatment indices for the system	Atkins (MS)	14/01/2022	14/01/2022 SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000010 rev 1, SZC-EW0320-ATK-XX-000-XXXXXX-DRW-CCD-000010 rev 1, SZC-EW0320-ATK-XX-000-XXXXXX-DRW-CCD-000038 rev 2	SCC comments received, IDB no comments, With SZC Co to update

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	**Post Examination**					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
3b	Choice of treatment Indices for pollution control – AD sites.	Excludes roads which have HEWRAT assessments.	1. Undertake pollution assessment for FMF. 2. Undertake pollution assessments for NPR, SPR, GRR.	1. Assessment provided informally to SCC for FMF. 2. Assessment provided informally to SCC for NPR. Not progressed for SPR and GRR.	Include pollution assessments for NPR, SPR, FMF and GRR within updated Annexes 2A.6, 2A.7, 2A.8 and 2A.12 to final Drainage Strategy.	Part 1 – Pollution assessments to be released prior to deadline 1 – Picked up in individual sites Part 2 – cancelled, all in part 1 reports	WSP (DL)	Part 1 11/02/2022 Part 2 N/A	16/02/2022 with last report	Pollution assessments to be added as part of updated design notes.
4	Perimeter Swale space availability - MDS.	Swales may need to be large on MDS. Reassurance that space is available.	SZC Co. to: 1. Set out overview of space available on plan. 2. Provide indicative dimensions and sections. 3. Compare to SCC design standards	1. Plan provided in D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note**. 2. Outline dimensions provided in D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note**. Design sections not progressed. 3. Not progressed.	Indicative swale design sections presented in Explanatory Technical Note. Comparison to SCC design standard (CIRIA SuDS Manual), within updated Annex 2A.5 to final Drainage Strategy. Inclusion of Hierarchy	Make comparison of swale space allocation to that most likely required by the CIRIA SuDS Manual after Detailed Design. Including an update to doc Annex 2A.5 to final Drainage Strategy.	Atkins (MS)	14/01/2022	14/01/2022 SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000010 rev 1, SZC-EW0320-ATK-XX-000-XXXXXX-DRW-CCD-000010 rev 1, SZC-EW0320-ATK-XX-000-XXXXXX-DRW-CCD-000038 rev 2	SCC comments received, IDB no comments, With SZC Co to update

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	Post Examination					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
5	Confirmation of treatment in the MDS WMZ Basins.	Confirm that the proposed basins can give the required treatment as part of the overall discharge requirement.	SZC Co. to confirm basin treatment design criteria and reference Hinkley C design for comparison.	Explanation provided within D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note** and **Annex 2A.15: WMZ1 Surface Water Treatment Assessment**.	Update to technical note and treatment assessment for system	As per item 3a	Atkins (MS)	14/01/2022	14/01/2022 SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000010 rev 1, SZC-EW0320-ATK-XX-000-XXXXXX-DRW-CCD-000010 rev 1, SZC-EW0320-ATK-XX-000-XXXXXX-DRW-CCD-000038 rev 2	SCC comments received, IDB no comments, With SZC Co to update
6	Calculation of impermeable / permeable areas on MDS.	Clarification of the derivation of Catchment Area percentage runoffs	SZC Co. / SCC to hold Technical Meeting to resolve methodology. Meeting held 21st September between Technical experts and clarifications presented. SZC Co to provide: plan/table showing breakdown of PIMP, PR calculations in each WMZ area.	Explanation provided within D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note**.	Provide updated Annex 2A.5 within final Drainage Strategy including justification for PIMP values.	Updated Annex 2A.5 within final Drainage Strategy to include justifications for PIMP values.	Atkins (MS)	21/01/2022	Released in each area note.	SCC Comments received
7	Review of original hydrological catchments.	Need to understand original topography to be clear on approach.	SZC Co. to provide baseline (e.g. topographical plan) for natural drainage routes and WMZ catchments / outfalls. Simple overlay and comparison of existing catchments (LiDAR) to proposed WMZs.	Provided within D10 **Drainage Strategy** as **Annex 2A.13: Comparison of MDS Baseline Topography and WMZ Catchments**.	Soft explanatory note to explain determine catchment to support Annex 2A.13 Label to WMZ5 for flood to be removed.	Use current catchment description, update narrative and inc in catchment narrative note	Atkins (MS)	17/12/2021 Revised issue 21/01/2022	Hydrological info issued 17/12/2021 SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000009 rev 1	SCC Comment received 06/01/2022

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	**Post Examination**					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
8	Basin Sizes. Half Drain Times are long. West ACA risk	Are basins capable of accepting a follow on 1:10 storm within 24 hours. Urban risk present in West ACA.	SZC Co. to: 1. Provide data table of basin sizes demonstrating: available basin volumes, 1:100 volume +CC, drain times, spare volumes, 1:10 storm volumes, depths (water and total), discharge rate, side slope, base area, freeboard area, factors of safety (where applicable). 2. Demonstrate that West ACA could comply with 24-hour half drain rule. 3. Pump failure for 24-hour for West ACA demonstrated (i.e. zero pump rate for 24-hours). 4. Produce plan to show all outfalls from each WMZ and table of how/where basins empty. 5. Provide explanatory note on WMZ7, 8 and 9 discharges.	1. Assessment within D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note**. 2. Partial assessment within D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note**. 3. Partial assessment within D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note**. 4. Plans included within D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note**. 5. Partial explanation within D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note**.	Provide updated Annex 2A.5 within final Drainage Strategy including: (i) revised assessment / sizing of West ACA basin for both 24-hour half drain and pump failure; and (ii) enhanced description on WMZ7, 8 and 9 discharges (refer to ESIDB SoCG and liaise with ESIDB).	Remodel West ACA basin and provide drawings. Develop diagrams prior to workshop Hold workshop with ESIDB regarding WMZ 7, 8 and 9, and update Annex 2A.5 within final Drainage Strategy with outcome. Clarity on flows and schematic of scenarios.. Technical Note on WMZ7, 8 and 9	Atkins (MS)	Part i ACA – 21/01/2022 Part ii 28/01/2021	Sketches issued 17/12/2021 SZC-EW0300-ATK-XX-000-XXXXXX-PRE-CCD-000001 rev 1	SCC Comment received 06/01/2022

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	**Post Examination**					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
9	Further information for Campus, Sports Pitches, non-nuclear island operational drainage.	Demonstration of drainage strategy.	SZC Co. to provide explanatory drainage design notes on: 1. Campus; 2. Sports pitches; and 3. Non-nuclear island operational drainage (e.g. Goose Hill car park).	1. Partial explanation within D10 **Drainage Strategy** within **Annex 2A.5: Explanatory Technical Note**. 2. Partial explanation within D10 **Drainage Strategy** at section 5.1(a). 3. Not progressed.	Develop operational drainage strategy technical note for Campus. Description of approach for Goose Hill car park described in Explanatory Technical Note.	Develop a concept design for the Campus Area (AD5), Initial Source Control to enable intent, then the development of a hydraulic model. Develop a Technical Note of Design and Strategy. Short statement on the Leiston Sports Pitch impact on the current situation against baseline Statement around all areas outside of the NSL drainage requirement. Mark up of Perm Plot Plan extent of drainage outside of Nuclear Site License (NSL) to be provided.	Campus - Atkins (MS) Sports Pitches – SZC Eng Operational – SZC Eng	Break Deliverable in 2 Part 1 – 21/01/2022 Campus intent Part 2 – Statements (inc sports pitch and ops) 28/01/2022 Part 3 – End Mar 2022 Campus hydraulic modelling 3 months from tasking. Campus Input layout to be agreed at tasking. (Excluding 2 weeks at Christmas)	Part 1 Campus issued 17/12/2021 SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000007 rev 1 Leiston statement update sent 11/02/2022	Further work to sports pitches and operational drainage requested. Review of available info and narrative to be created. SCC Comment on campus note of 17/12/2021 received 06/01/2022

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	**Post Examination**					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
10	Northern Park & Ride	Lack of evidence for the proposed outfall to two ditches e.g. levels, connection within or outfall beyond Order Limits. Calculations required for the entire site for the proposed surface water drainage strategy. Methodology used to determine Qbar runoff rate is not agreed by SCC, as stated in SCC's response to REP6-024 [REP7-157].	1. SZC to provide evidence and confirm availability of Outfall under A12. (5 l/s if no Inf.) located within the red line boundary. 2. SZC to provide existing topographic survey showing fall in ground level from basin locations to watercourses at the boundary 3. SZC/SCC to hold technical meeting to discuss issues with a view to reaching agreement, informed by supporting information.	1. Email correspondence providing evidence. 2. Email correspondence providing evidence. 3. Meeting held.	Update Annex 2A.6: Northern Park and Ride Drainage Design Note as part of final Drainage Strategy.	Incorporate data sent informally in report, and update the source control volume requirements to be split between basins in designated areas.	WSP (DL)	21/01/2022	31/01/2022	Source control modelling validation requirements agreed in meeting 7th Dec 2021 and incorp in report
11	Southern Park & Ride	Below ground attenuation is not compliant with Local Plan Policy SCLP9.6, Only FSR rainfall (least conservative) has been applied to calculations. No climate change allowance has been modelled.	1. SZC Co. provide explanation why temporary underground storage is reasonable. 2. Pump fail storage capacity 3. SZC/SCC to hold technical meeting to discuss issues with a view to reaching agreement, informed by supporting information.	1. Note provided informally to SCC on basis for underground storage approach. 2. Not progressed. 3. Meeting held.	Update Annex 2A.7: Southern Park and Ride Drainage Design Note as part of final Drainage Strategy.	Obtain 2021 infiltration data, review current drainage strategy based on new data, and update. Part 1 Drawing and hi level modelling and cut back report Part 2 Calc and report	WSP (DL)	Part 1 11/02/2022 Part 2 N/A	11/02/2022	Updated modelling to be incorp in updated drainage note SCC Comments as follows

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	**Post Examination**					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
12	Freight Management Facility	Below ground attenuation is not compliant with Local Plan Policy SCLP9.6, Only FSR rainfall (least conservative) has been applied to calculations. No climate change allowance has been modelled.	1. SZC Co. provide explanation why temporary underground storage is reasonable. 2. SZC/SCC to hold technical meeting to discuss issues with a view to reaching agreement, informed by supporting information. 3. Open discussions with adjacent landowner (Home Farms) as to potential receipt of excess surface water.	1. Note provided informally to SCC on basis for underground storage approach. 2. Meeting held. 3. Not progressed.	Update Annex 2A.8: Freight Management Facility Drainage Design Note as part of final Drainage Strategy. Use output above as basis to open discussion with landowner.		WSP (DL)	21/01/2022	21/01/2022	SCC have indicated likely acceptance of underground storage providing some surface level SuDS pollution measures are incorporated. Landowner opportunity discussion to be held at design stage if SCC reject underground storage. Comments received Review of space for rain garden
13	Sizewell link road.	SCC concern with swales at the base of embankments rather than at the top.	1. SZC Co. to hold discussion with SCC to resolve this issue or design to be modified to move swales to top of embankment at future stage. 2. Informed by cross sections. 3. Additional item: Provide updated calculations.	1. Email correspondence provided. 2. Shown on preliminary design drawings and in technical note provided. 3. Not provided.	SZC Co. to update Annex 2A.9: Sizewell Link Road Preliminary Drainage Design Note, including cross sections and calculations note, as part of final Drainage Strategy.	SCC to review and respond to information provided. Agree design criteria governing location of swale.	WSP (DL)	09/02/2022	11/02/2022	No SZC action pending SCC response on swale location

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	**Post Examination**					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
14	Two Village Bypass infiltration Basin 2 East of River Alde Embankment	Positioning of basin further from the highway to be adopted and separated by the farm access track. High infiltration rate could indicate a direct connectivity to the aquifer which could cause water quality issues.	SZC Co. to: 1. Hold meeting with SCC to understand nature of concerns. 2. Review proposed position of basin and demonstrate that it works hydraulically and that there is no alternative to the alignment of the farm access track. 3. Provide data / evidence relating to basin and aquifer. 4. Additional item: Resolve potential discrepancy between GI infiltration data and input data to modelling.	1. Meeting held. 2. Email correspondence and information provided to SCC, including proposed embankment materials. 3. Email correspondence and information provided to SCC. 4. Not provided.	Update Annex 2A.11: Two Village Bypass Preliminary Drainage Design Note as part of final Drainage Strategy. To include clarification on infiltration input data.	Hold technical meeting to resolve basin location disagreement. Updated hydraulic modelling using updated infiltration rates Engagement with EA on Borehole soakaway	WSP (DL)	11/02/2022	16/02/2022	Hydraulic Update
15	Yoxford roundabout (new item)	Deep infiltration – SCC will not consider design solution until EA has approved a 'deep infiltration' approach.	SZC Co. to: 1. Provide additional information on basin and berm design, including potential for tree planting. 2. Describe alternative solution to avoid 'deep infiltration' design.	1. Email correspondence and information provided to SCC. 2. Provided in email correspondence.	Update Annex 2A.10: Yoxford Roundabout Updated Drainage Strategy as part of final Drainage Strategy.	Liaise with EA over potential design constraints to basin depth. Subject to above outcome, develop alternative option (e.g. pumping or gravity). EA Meeting held on 12/01/2022	WSP (DL)	11/02/2022	11/02/2022	EA Engagement agreed

A	B	C	D	E	F	G	H	I	J	K
				At Examination end	Post Examination					
No.	**Area**	**Issue identified**	**Actions**	**Deliverable**	**Deliverable / Ref. No.**	**Delivery Plan**	**Deliverable owner**	**Date**	**Date issued**	**RAG / Comment**
16	Green rail route (new item)	No drainage technical note provided to support the Drainage Strategy.	SZC Co. to: 1. Provide drainage technical note to support the Drainage Strategy.	1. **Annex 2A.12: Green Rail Route Drainage Design Note** provided within D10 **Drainage Strategy**.	Update Annex 2A.12: Green Rail Route Drainage Design Note as part of final Drainage Strategy.	Resolve residual issues on storage volumes in respect to 1 in 100 +CC storm. Part 1 Preliminary Design, initial modelling, PIMP note for rail Part 2 Detailed modelling and update	WSP (DL) / Atkins (MS)	Part 1 11/02/2022 Part N/A	11/02/2022	Hydraulic modelling is required for demonstrate a viable solution.
17	AD6 – MDS Highways	SCC commentary on Examination submission to be confirmed	SCC to: 1. Provide review comments on items REP10-030, REP10-031 and REP10-032submitted	1. **Submissions made into PINS and to SCC of information that was not reviewed due to timescales**	SCC comments on submissions REP10-030, REP10-031 and REP10-032 Update of Technical Report	Receive comments Update report	DCC (MW) WSP(DL)	17/12/21 11/02/2022	Issued email 16/12/2021 SCC (MW) Comments received 04/01/2022 Reissued 11/02/2022	SCC undertaking review of info submitted. SCC clarification of 13th Jan 2022 to be discussed at next progress meeting

Sizewell C Site Establishment Active Surveillance comments

WBS EW0320 Document 2022

WBS	Action Nos	Action Plan Ref.	Document Number	Item Description/ reference	Comment	Raised by	Date Raised	Actionee	Model update require	Open/ Closed	Cat	Comment Response	Action	Other Notes/Comment
EW0320	1	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P01	Technical Note - Campus Outline Drainage Strategy	As previously discussed, you need to include the results of relevant infiltration testing. This should include raw test results and not just a summary. Any testing not compliant with BRE365 should be identified	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	No	Closed	1	Infiltration testing results to be provided	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000007
EW0320	2	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P01	Technical Note - Campus Outline Drainage Strategy	The modelled structure uses an infiltration basin with a porosity of 40%. It's not clear why a permeable pavement structure hasn't been modelled. Permeable pavement structures have a standard porosity of 30%. Therefore, you either need to model at 30%, or justify your use of 40%. I can't see this would cause you many problems given the plan area and depths you have to play with, but you still need to demonstrate this	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	Yes	Closed	1	Porosity to be changed to 30%.	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000007
EW0320	3	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P01	Technical Note - Campus Outline Drainage Strategy	Calculations show circa 80% of your water discharging through infiltration and 20% discharging through positive discharge. Given the numbers you state of your storage footprint (58000m2) vs your total paved area (97004m2), I think it's fair to say that so long as you achieve acceptable infiltration rates across the site, you won't have a problem infiltrating all of your surface water, through an increase in storage footprint. The potential problem will arise if infiltration were to fail. From the notes I have, you don't have any infiltration testing to full BRE365 methodology for the Campus site, with most testing undertaken in boreholes. I don't know if you have any more recent testing? If not, given you're so close to the infiltration threshold, with non-compliant testing, I would say there's a reasonable chance that at least part of your site is unable to infiltrate. The absolute worst-case scenario would be no acceptable infiltration rate being achieved across the site. As this is the worst case, I'll need to see how you would manage this, at least at a high level with source control calcs, an identified method of storage and demonstration that you have sufficient space for such storage	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	Yes	Closed	1	No infiltration across the site will be assumed at this stage until infiltration testing proves otherwise, and management/storage of source control volumes to be provided.	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000007
EW0320	4	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P01	Technical Note - Campus Outline Drainage Strategy	I'm not keen on accepting a hybrid approach for this site. Either infiltration only with a high level overflow to CDO for events >1:100+CC, or attenuation and discharge only. The reason for this is the site is slightly more removed from the watercourse it is proposed to discharge to. WMZ's that utilise the hybrid approach are generally located directly adjacent to the ordinary watercourse they discharge to. For the attenuation and discharge only option, I would be content for you to keep this vague at the moment, subject to future modelling, it could with go to WMZ6, CDO or another location based on modelling results	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	Yes	Closed	1	No infiltration across the site will be assumed at this stage until infiltration testing proves otherwise, and management/storage of source control volumes to be provided.	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000007
EW0320	5	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P01	Technical Note - Campus Outline Drainage Strategy	I recall the car park being multi-storey. Is this still the case? If so, I'm not entirely sure how permeable paving would work, either for interception, treatment or storage of surface water	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	No	Closed	1	Comment noted - car partk is double storey - roofed. Permeable paving for the multi-storey car park removed and taken as a roof area instead. Flows from the car park roof attenuated in sub-surface attenuation storage.	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000007
EW0320	6	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P01	Technical Note - Campus Outline Drainage Strategy	As per comment on previous sites, need to justify PIMP values proposed, particularly 90% for roads	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	Yes	Closed	1	Roads PIMP taken as 100%, and total PIMP updated across the site.	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000007
EW0320	7	7	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000009 P01	Technical Note - Topographical Catchment Narrative	The appended drawings are more or less ineligible due to the PDF quality. I've read through the document text and this makes sense and ties up with other information I already have, but it would be appreciated if you could reissue with the drawing problems resolved	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	No	Closed	1	Drawings were reprovided as individual files.	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000009
EW0320	8	7	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000009 P01	Technical Note - Topographical Catchment Narrative - 1.2.4	WMZ 4 is stated as draining to E04 but the area of WMZ 4 looks to mainly be covered by Early Catchment 3a & 3b, with Early Catchment 4 (which discharges to EO4) looking to comprise part of WMZ 6. Please clarify. The text on the drawing isn't clear (as above), so I may have interpreted incorrectly	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	No	Closed	1	Comments noted and wording changed to clarify.	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000009
EW0320	9	7	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000009 P01	Technical Note - Topographical Catchment Narrative - 1.2.6	See point 4 in response to Campus above. Yes, this is part of the same catchment, but it's quite far away and naturally there would be a great deal of interception/detention in localised depressions before discharging into the Leiston Drain	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	No	Closed	1	Comments noted and wording changed to clarify.	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000009
EW0320	10	7	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000009 P01	Technical Note - Topographical Catchment Narrative	I think it would be worth noting, potentially as part of the summary that outfall locations and rates are subject to change based on future hydraulic modelling. All discharges will need to be modelled as part of the wider catchment to ensure they are not increasing flood risk. The most critical element of this would be the environmental impact so future engagement with environmental stakeholders to determine discharge rates and locations will also be key and should be acknowledged here.	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	No	Closed	1	Comments noted and wording changed to clarify.	Updated and submitted in Rev 2 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000009
EW0320	11	8b	SZC-EW0320-ATK-XX-000-XXXXXX-PRE-CCD-000001 P01	MCA Surface Water Drainage Phasing - Meeting Slides	It's useful to understand the principles you intend to apply at this location throughout construction. However, unlike the rest of the MDS, I am less concerned by the drainage strategy in this area given the availability of the TMO and CDO. I also appreciate that construction will need to be flexible in these areas, hence the indicative attenuation basins shown rather than more detailed information. The only aspect that requires more information in this area is the discharges to the Sizewell Drain, what these are, when they will be used, how they're calculated, associated areas for surface water storage prior to these discharges etc. I know Yvonne at the IDB has been pushing for greater understanding of this.	Matt Williams - SCC	06/01/2022	Michael Sheridan - ATK	No	Closed	1	Further detail to be provided on future technical note: WMZs 7, 8, 9 Suface Water Discharges SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000016	No changes to meeting slides. Comments reflected in technical note SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000016. Submitted in Rev 1 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000016
EW0320	12	8b	SZC-EW0320-ATK-XX-000-XXXXXX-PRE-CCD-000001 P01	MCA Surface Water Drainage Phasing - Meeting Slides	6m minimum maintenance strip with additional space needed for turning if access is not provided at both the northern and southern boundaries	Yvonne Smith - IDB	21/01/2022	Michael Sheridan - ATK	Yes	Closed	2	Comment noted - Maintenance strip will be coordinated with the permanent works team.	Maintenance strip requirement to be coordinated with the permanent works team.	
EW0320	13	8b	SZC-EW0320-ATK-XX-000-XXXXXX-PRE-CCD-000001 P01	MCA Surface Water Drainage Phasing - Meeting Slides	Max discharges expected through outfalls O4 and O7. – More information on exactly what is draining through outfall 07. What size impermeable, rough plan would be useful. You currently indicate that both "overland flows" and "SZB transferred drainage area" will go through here, but have no reference to what either of those entails.	Yvonne Smith - IDB	21/01/2022	Michael Sheridan - ATK	Yes	Closed	2	WMZ 8 in a slightly reduced form is to discharge through O14. O17 is to drain the SZB overland flows up until the SZC sea tunnels are operational.	Discussion with permanent works team required to determine areas contributing from SZB.	
EW0320	14	8b	SZC-EW0320-ATK-XX-000-XXXXXX-PRE-CCD-000001 P01	MCA Surface Water Drainage Phasing - Meeting Slides	Likely storage volumes required and indicative space for these/where these might be accommodated (specifically I do not want them anywhere within the above mentioned maintenance strip).	Yvonne Smith - IDB	21/01/2022	Michael Sheridan - ATK	Yes	Closed	2	Comment noted - No storage to be provided within maintenance strip but rather within the WMZ 8 area. Agreement with an increased Greenfield Runoff rate could assist in reducing the required volume.	Final storage position to be identified.	
EW0320	15	3	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000010 P01	Technical Note - Surface Water Drainage Treatment Narrative	Our agreement would come with a slight caveat as you state, 'provisional hydraulic modelling carried out indicates that the flows generated will be controlled within the swale sizes proposed'. This hydraulic modelling has not been provided to SCC, we would therefore highlight that we have not seen any evidence to support this, however, if at detailed design the swales were not large enough, the size would simply need to be increased, which is ultimately a project risk. Of course, if you have the hydraulic modelling readily available (even if only preliminary), it could address this minor concern.	Matt Williams - SCC	24/01/2022	Michael Sheridan - ATK	Yes	Closed	1	Comment noted. No further action required at this stage.	No further action required.	
EW0320	16	8b	SZC-EW0300-XX-000-XXXXXX-PRE-CCD-000001 P01	Presentation - MCA Surface Water Drainage Phasing - Meeting Slides	other to point out that you are currently indicating multiple discharges into the sizewell drain from WMZ 8 however my understanding from other discussions was that there are only 2 proposed outfalls from WMZ 8 (and SZB).	Yvonne smith - SCC	25/01/2022	Michael Sheridan - ATK	No	Closed	1	Comment noted - Only 2 outfalls proposed to Sizewell Drian. Updated to reflect only two proposed outfalls.	Updated and submitted in Rev 1 (link adjacent)	SZC-EW0320-ATK-XX-000-XXXXXX-NOT-CCD-000016
EW0320	17	12	-	Report - Freight Management Facility Drainage Design Note	I don't entirely support the methodologies used for calculating adequate storage. The use of average infiltration rates in particular will not draw support from SCC. However, I also note the additional infiltration testing that was undertaken in 2021 which demonstrates good infiltration across the site, often in exceedance of the design rate you have used based on the results of 2019 testing. Whilst the 2021 testing is slightly deeper than we would like, it is not of a depth to cause significant concern	Matt Williams - SCC	31/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 21/01/2022 Comment noted but no update required	No further action required.	
EW0320	18	12	-	Report - Freight Management Facility Drainage Design Note	The main outstanding concern SCC have for FMF is in relation to treatment. The document makes multiple references to the use of bioremediation areas in order to supplement proposed treatment and to provide a natural form of treatment, as opposed to the 'mechanical heavy' treatment train previously proposed. Appendix B does not make any acknowledgement of the space requirements of bioretention features and Appendix E does not include these features in a pollution assessment. This approach does not have SCC support. The current pollution assessment in Appendix E uses indices for 3 pieces of infrastructure without supporting evidence of the values used. The indices for the underground storage tank are particularly questionable as I have never seen anyone claim that such a feature delivers any form of treatment. There is a brief reference to bioretention in the conclusion, but again, this is insufficient.	Matt Williams - SCC	31/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 21/01/2022 Comment noted	Show location of bioremediation infrastucture on layout plans Confirm sizes and demonstrate available space Add bioremediation to Appendix E calculations Provide manufacturers certification of indices values	
EW0320	19	12	-	Report - Freight Management Facility Drainage Design Note - 7.1.12	document acknowledges SCC's position, subject to the inclusion of bioretention in the treatment train, this position remains unchanged	Matt Williams - SCC	31/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 21/01/2022 Comment noted but no update required	No further action required.	
EW0320	20	12	-	Report - Freight Management Facility Drainage Design Note	Calculations for Option 2 have a water depth of 1.142m but the crates are only 0.6m	Matt Williams - SCC	31/01/2022	Derek Lord - WSP	Yes	Closed	2	Report issued 21/01/2022 Comment noted	Recheck calculation and amend as necessary	
EW0320	21	12	-	Report - Freight Management Facility Drainage Design Note	Water depths stated on drawing in Appendix B do not match calculations in Appendix C	Matt Williams - SCC	31/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 21/01/2022 Comment noted	Recheck calculation and ammend as necessary	
EW0320	22	12	-	Report - Freight Management Facility Drainage Design Note	Section 10 and 11.1.2 refer to Lowestoft Road, I assume this should be Felixstowe Road	Matt Williams - SCC	31/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 21/01/2022 Comment noted	Correct location name in text	
EW0320	23	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P02	Technical Note - Campus Outline Drainage Strategy	Generally, the principles are agreed if infiltration isn't possible. However, I'd like a greater emphasis in the conclusion that infiltration potential will be explored further at detailed design. Only 5 infiltration tests have been completed across a 20+ha site, with most of those tests not being compliant with BRE365 methodology. As such, there's a lot more testing that needs to be done before infiltration is ruled out on this site. I'm content that you have the space available for an infiltration solution if it's proven possible and this should still be considered the primary means of surface water disposal, until categorically ruled out through more extensive testing.	Matt Williams - SCC	31/01/2022	Michael Sheridan - ATK	Yes	Closed	2	It is recognised that further infiltration testing is necessary to conclude if infiltration alone should be considered as the primary means of surface water disposal.	No further action on the document.	
EW0320	24	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P02	Technical Note - Campus Outline Drainage Strategy	If infiltration isn't possible, or is only partly possible, I'm content that you have demonstrated there is a feasible alternative means of surface water disposal, although we'll need to discuss discharge rates, locations and how this works with other discharges as part of detailed design. Given the catchment is fairly removed from any ordinary watercourses, I'd be slightly more wary of just giving you another discharge from this catchment, I'd rather see it pass through a WMZ at the already agreed rate, but we can discuss this at detailed design	Matt Williams - SCC	31/01/2022	Michael Sheridan - ATK	Yes	Closed	5	Comment noted. Discharge rates and outfall locations are to be developed in agreement with SCC as part of detailed design. No further action on document	No further action on document. Actions to be carried into Detailed Design	

EW0320	25	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P02	Technical Note - Campus Outline Drainage Strategy	Half drain times should be applied to both infiltration and attenuation systems. The principle is relevant, regardless of discharge method. I'm content you have the space to account for this if needed at detailed design	Matt Williams - SCC	31/01/2022	Michael Sheridan - ATK	Yes	Closed	2	Comment noted. To be developed in Detailed Design.	No further action on document. Action to be carried into Detailed Design.
EW0320	26	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P02	Technical Note - Campus Outline Drainage Strategy	I think page 41 of the report has been included in error	Matt Williams - SCC	31/01/2022	Michael Sheridan - ATK	No	Closed	2	Comment noted - Page 41 was included as error	Content on Page 41 to be removed.
EW0320	27	9a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000007 P02	Technical Note - Campus Outline Drainage Strategy	I am currently waiting to hear back from Leigh Parratt RE Cv values. I will update you on this aspect when I hear back from her.	Matt Williams - SCC	31/01/2022	Matt Williams - SCC	No	Closed	1	No further action required following email from Matt Williams - SCC received on 04/02/2022. "To confirm, Leigh was happy with this so no further comments to previous email issued 31/01/22."	None
EW0320	28	6	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000012 P01	Technical Note - PIMP Values - Section 2	states 'there is a variety of finishes across the proposed construction site and the PIMP values assigned have been those commonly accepted within the industry'. For roads and roof areas I certainly agree that 100% is widely accepted. Could you provide any justification or evidence to support the PIMP values used for unpaved and soft areas please? As I'm sure you can appreciate, we don't have many developments like this in Suffolk so it may just be that this is something we haven't come across that you regularly encounter.	Matt Williams - SCC	31/01/2022	Michael Sheridan - ATK	No	Closed	2	The PIMP values that were accepted at Hinkley C planning were: Roads 100%, Compounds 90%, Stockpiles 50% and Sloping areas 26%. Our assessment broadly matches these values. The Stockpiles at SZC are part sloping and part flat topped, with the material being stored being more permeable than the Hinkley clay based material. In our assessment the 30% figure for the SZC stockpiles reflects these differences.	None
EW0320	29	6	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000012 P01	Technical Note - PIMP Values - Section 2	Later it is stated 'the calculated PIMP values in this assessment will be adopted unless significant changes in the catchment area definition are identified through design development'. I assume this relates only to this stage of design and upon detailed design, when more is understood about the catchment, more detailed analysis will be undertaken? We wouldn't be content using these PIMP values for detailed design.	Matt Williams - SCC	31/01/2022	Michael Sheridan - ATK	No	Closed	2	Comment noted - more detailed analysis of catchments and their areas will be undertaken during Detailed Design.	No further action on document. Action to be carried into Detailed Design.
EW0320	30	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	The current Annex contains a description of the strategy with no supporting information such as suitably scaled plans, sections and supporting calculations.	Matt Williams - SCC	16/12/2021	Derek Lord - WSP	No	Closed	2	Drainage Statement issued 11/02/22 Comment addressed	Plans are provided in Drainage Statement
EW0320	31	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	You essentially put forward two options. Option 1 being discharge to intercepting watercourses (O9 & O10) and the Abbey Road infiltration basin. You need to demonstrate you have suitable land at each attenuation location, with supporting plans and calculations	Matt Williams - SCC	16/12/2021	Derek Lord - WSP	No	Closed	2	Drainage Statement issued 11/02/22 Comment addressed	Location of attenuation basin at Abbey Road is shown on drawing Storage volume calculation provided on the basis of Option 2 representing worst case Possible use of Option 1 with attenuated discharge to watercourse 09 and 10 to be considered at detailed design
EW0320	32	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	Option 2 is required if levels do not allow you to discharge to the intercepting watercourses. Is there a risk that by the time the furthest point reaches the Abbey Road infiltration basin (as a worst case scenario) that it could be lower than the basin invert? If so, would pumping be required? If so, the appropriate assessment will need to be undertaken and it may be more suitable to keep the catchments separate and pump into the intercepting watercourses. Will need to discuss further if this is the case	Matt Williams - SCC	16/12/2021	Derek Lord - WSP	No	Closed	2	Drainage Statement issued 11/02/22 Comment addressed	Based on new infitration data Option 2 assumes no infiltration and discharge to Leiston Drain/Abbey Road is not permitted. Intention to pump up to TCA and discharge to Outfall 6 to be developed at detailed design
EW0320	33	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	A discharge rate of 5l/s is proposed to discharge into the adjacent watercourse at Abbey Road as a worst-case scenario. Given the existing surface water flood risk here we need to be a bit careful. What is the greenfield runoff rate from your area of works (not entire red line boundary) into this watercourse at the moment? If it's less than 5l/s, then you'd technically be proposing an increase in SW flood risk in an area of high risk – which we wouldn't support. The need for this discharge is stated to be due to a lack of space, as previously stated by SCC, this is not an approach we would support	Matt Williams - SCC	16/12/2021	Derek Lord - WSP	No	Closed	2	Drainage Statement issued 11/02/22 Comment addressed	As above no discharge into Leiston Drain at Abbey Road is proposed
EW0320	34	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	Is the basin now proposed on the east side of Abbey Road rather than west, or is this in addition to the west basin?	Matt Williams - SCC	16/12/2021	Derek Lord - WSP	No	Closed	2	Drainage Statement issued 11/02/22 Comment addressed	This is an infiltration basin for AD6 Lovers Lane highway runoff upsized to accept GRR runoff from section between Abbey Road and Secondary Site Access Road level crossing
EW0320	35	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	Flows east of Abbey Road are said to be dealt with by WMZs. I don't recall seeing additional areas being allowed for in the relevant WMZ designs? Again, do levels support this approach or will any pumping be required?	Matt Williams - SCC	16/12/2021	Derek Lord - WSP	No	Closed	2	Drainage Statement issued 11/02/22 Comment addressed	As above section to the west of the SSAR level crossing drains by gravity to AD6 infiltration basin GRR to east is included in TCA drainage and not covered in this Drainage Statement
EW0320	36	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	You state that infiltration is likely at the NR junction. I wouldn't agree with this statement. There has been a recent development by Persimmon just east of the junction you refer to. This development struggled to infiltrate their surface water, and with no other available alternative, had to resort to deep infiltration through boreholes. At the moment you've not set out any firm proposals to manage and dispose of this surface water. With the above in mind RE likelihood of infiltration, you'll need to identify your options and demonstrate deliverability within your order limits.	Matt Williams - SCC	16/12/2021	Derek Lord - WSP	No	Closed	2	Drainage Statement issued 11/02/22 Comment addressed	As above swale/filter drain will collect runoff between junction with existing branch line and Abbey Road with assumption of zero infiltrationand all flow discharging into ther Abbey Road west attenuation basin
EW0320	37	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	There's a mention of needing to divert a watercourse that the green rail route will intersect whilst in cutting. Connecting this to the Abbey Road watercourse has the potential to increase surface water flood risk. You'll need to have a think about this. It will certainly require detailed hydraulic modelling at detailed design. But ahead of that, you'll need to have a think about what mitigation could be implemented to ensure there is no increase in offsite flood risk and ensure you have the available land to deliver this	Matt Williams - SCC	16/12/2021	Derek Lord - WSP	No	Closed	2	Drainage Statement issued 11/02/22 Comment addressed	Base on updated data diversion of the existing watercourse Outfall 09 location will not be required. Watercourse to be culverted beneath railway.
EW0320	38	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	There's a mention of the Abbey Road basin being adapted by SZC and adopted by Suffolk Highways post-development.	Matt Williams - SCC	16/12/2021	Steve Merry - SCC	No	Closed	1	Comment noted.	
EW0320	39	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	Other points which you would be expecting are the need to justify the PIMP you're using and to provide your GI to justify the infiltration rate used (I know this has been included in the MDS assessment, but it needs to be included here, along with any other GI for green rail route). Have you undertaken any groundwater monitoring at Abbey Road? This area is fairly critical to your drainage strategy, whichever option you choose, so it would be good to get an idea of any GW concerns at an early stage. Other design criteria such as which FoS you're using also need to be agreed given the infiltration basin location and adjacent residential properties	Matt Williams - SCC	16/12/2021	Derek Lord - WSP	No	Closed	2	Drainage Statement issued 11/02/22 Comment addressed	The calculations assume a PIMP of 100% in order to provide a conservative assessment. GI report for GRR is now available. Extracts for infiltration testing and strata provided
EW0320	40	17	-	Drainage strategy - AD6 - Table 1	Where have these figures come from and how were they calculated? I assume these figures are m3/s, but this isn't stated.	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed		Report issued 11/02/2022 Comment noted	Catchment runoff calcuations using FEH Units m3/s added to table
EW0320	41	17	-	Drainage strategy - AD6 - Section 5.1.8	This doesn't match up with Table 1	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Now aligned
EW0320	42	17	-	Drainage strategy - AD6 - Section 6.1.3	Reference and provide relevant testing results. Table 2 is noted, but you should provide raw testing results to support this	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Full data provided in Appendix A
EW0320	43	17	-	Drainage strategy - AD6 - Section Table 2	TH301 – Not compliant with BRE365	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Accepted that only 2 tests were done and BRE365 requires 3 but does confirm viability of infiltration
EW0320	44	17	-	Drainage strategy - AD6 - Section 8.1.2	Underground storage stated. Aren't these areas hoped to be adopted by SCC Highways, who are unlikely to adopt below ground drainage?	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Clarification Underground storage is the filter drains and back up soakaway manholes, not storage tanks
EW0320	45	17	-	Drainage strategy - AD6 - Section 8.1.6	Proposed discharge rate? Yet to be agreed. If 5l/s, what impact could this have on existing downstream surface water flood risk depths, extents, likelihood and subsequent consequences? Answered in part by 8.1.9	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Set as minimum practical rate and will be a reduction on current situation
EW0320	46	17	-	Drainage strategy - AD6	Plate 10 – Total depths and water depths exceed CIRIA SuDS Manual guidance – justify. Depth of water during 1:1+CC exceeds recommended maximum for surface water treatment, has any treatment assessment been undertaken? Suggest CIRIA Simple Index for this location – Will need to agree suitable pollution hazard level but given use, my initial thought would be high, highly frequented lorry approach	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Basin subject to HEWRAT assessment and passed
EW0320	47	17	-	Drainage strategy - AD6 - Section 8.1.21	Queries previously raised RE the referenced infiltration basin, has this been sized to accommodate this area as well?	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	The section of Abbey Road which is modified to accommodate the level crossing and Lovers Lane diversion will discharge to Leiston Drain as it currently does. Thre will be a net reduction since the current Lovers Lane also discharges to Leiston Drain and will be removed.
EW0320	48	17	-	Drainage strategy- AD6	Plate 11 – I've raised this query previously, but I'm not entirely sure exactly what area this basin serves and the infiltration rate is yet to be agreed	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	5	Report issued 11/02/2022 Comment noted,	Assume you mean Plate 10 The infiltration basin drains the new length of Lovers Lane and adjacent BW19 plus GRR between Abbey Road and SSARoad Infiltration test data included in Appendix A
EW0320	49	17	-	Drainage strategy - AD6 - Section 8.1.25	Basin volume increased by 463m3 but storage volume in Plate 12 is stated as 379m3? Need to understand the basin function in both SZC construction and post-construction scenarios	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	As stated either the basin can be reduced in size after removal of GRR or retained at full volume giving greater flood prtection for exceedence rainfall
EW0320	50	17	-	Drainage strategy AD6 - Section 8.1.38	Assume access and road have no flow controls if draining straight into carrier drain?	Matt Williams - SCC	04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	This is the existing and unalterd length of Lovers Lane which basically drains by overland flow down the hill and over the edge at Leiston Drain

EW0320	51	17	-	Drainage strategy- AD6	I'm not sure on the extent of local widening at the HWRC, I know at Foxhall we've had to look at the drainage due to local widening at the HWRC. Will leave you to comment on whether you think the extent of widening here requires a look at the drainage or whether you're content	Matt Williams - SCC 04/01/2022	Steve Merry - SCC	No	Closed	2	Comment noted.	
EW0320	52	17	-	Drainage strategy - AD6 - Section 8.1.42	Again, draining highway surface water to crated systems. Not sure on acceptability from a highways perspective. Even if not proposed for adoption (8.1.43), is this then public highway draining to a privately maintainable system?	Matt Williams - SCC 04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Now 8.1.47. Entrance drains to swale and then into the ACA. None of this is adopted by SCC.
EW0320	53	17	-	Drainage strategy - AD6 - Section 9.1.1	Are these Figure references part of the DCO submission? If so, please provide full references to the submission documents	Matt Williams - SCC 04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Will need to check references
EW0320	54	17	-	Drainage strategy - AD6 - Section 9.1.2	1:100 + 35% is fluvial, we request 1:100 + 40% for pluvial (see attached) – the pluvial level is not referenced in this document	Matt Williams - SCC 04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Since the level is set at the lowest level of Lovers Lane and this acts as an embankment crest flood levels can't exceed the low point level
EW0320	55	17	-	Drainage strategy - AD6 - Section 9.1.5	FYI – boardwalk deck	Matt Williams - SCC 04/01/2022	Steve Merry - SCC	No	Closed	1		
EW0320	56	17	-	Drainage strategy - AD6 - Section 10.1.2	Established how? Likewise for 10.1.3	Matt Williams - SCC 04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	Catchment runoff calcuations using FEH The low spot with pond noted during site visit and matches SWFM
EW0320	57	17	-	Drainage strategy - AD6 - Section 10.1.5	Again uses 35% for pluvial, not 40% for fluvial	Matt Williams - SCC 04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	FRA modelling for DCO gives a lower water level for fluvial than the SWMP pluvial
EW0320	58	17	-	Drainage strategy - AD6 - Section 10.1.6	OK, but you need to demonstrate that your development will not increase this existing flood risk in terms of extent, depth or likelihood. The following paragraphs in terms of potential betterment are noted, but there are a few unknowns around this so we need to work on the worst case scenario at this stage	Matt Williams - SCC 04/01/2022	Derek Lord - WSP	No	Closed	2	Report issued 11/02/2022 Comment noted,	More detailed modelling will be undertaken at detailed design stage but parts of the upstream catchment will be attenuated down to 5 l/s and the existing Lovers Lane will be removed so it is apparent that there will not be an increase in flood risk.
EW0320	59	8a	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000013 P01	Technical Note - ACA West Explanatory Note	SCC LLFA fully support the information contained in this document. As the document alludes to, what you've presented should be considered a worst-case scenario and hopefully we can work to refine this at detailed design, but my thanks for demonstrating that you can accommodate the worst-case scenario	Matt Williams - SCC 03/02/2022	Michael Sheridan - ATK	No	Closed	1	Comment noted, no further action required.	None
EW0320	60	8b	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000016 P01	Technical Note - WMZs 7, 8, 9 Surface Water Discharges	Section 1.2 refers to O14 discharging flows from WMZ7. I think this is a typo as 1.2.1 refers to a 5l/s discharge through O14 from WMZ 8 at 1l/s/ha. However, the paragraph beneath Table 1-2 then refers to WMZ8 discharging through O17, again, I assume this is a typo and should be O14?	Matt Williams - SCC 03/02/2022	Michael Sheridan - ATK	No	Closed	2	Comment noted. Two typo's identified. Section 1.2, paragraph 3, should state 'O14 is proposed to discharge the flows from WMZ8'. Paragraph below Table 1-2 should state 'discharge from WMZ8 into the Sizewell Drain through O14...'	Document to be updated as per below: Section 1.2, paragraph 3, should state 'O14 is proposed to discharge the flows from WMZ8'. Paragraph below Table 1-2 should state 'discharge from WMZ8 into the Sizewell Drain through O14...'
EW0320	61	8b	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000016 P01	Technical Note - WMZs 7, 8, 9 Surface Water Discharges	Assuming the above are typos, the most confusing aspect is the following 5 stages which all detail all 3 WMZs discharging to sea, with no mention at any point of any discharge to O14 (or O17 for that matter). Which leaves me questioning what the earlier reference to a discharge through O14 is referring to and how this will be facilitated.	Matt Williams - SCC 03/02/2022	Michael Sheridan - ATK	No	Closed	2	Discharges to O14 and O17 are outlined to show the maximum flows that may be discharged to Sizewell Drain. Given the flow rates are small, the document stresses that discharge to the sea is justified and presents a better solution for water management.	None.
EW0320	62	8b	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000016 P01	Technical Note - WMZs 7, 8, 9 Surface Water Discharges	From an LLFA perspective, my main focus is surface water flood risk and associated pollution. In that sense, I have no concerns as your proposals seek to treat surface water and discharge to sea. However, I must flag that other stakeholders may raise concerns RE the removal of flows from Sizewell Drain and the potential environmental impacts of this. Any changes to the surface water drainage strategy to address such concerns would ultimately come back to SCC for further consideration as part of the surface water drainage strategy.	Matt Williams - SCC 03/02/2022	Michael Sheridan - ATK	No	Closed	2	The WMZ 8 area with a slightly reduced area will represent the permanent catchment discharging to the Sizewell Drain.	This represents the area outside NSL.
EW0320	63	8b	SZC-EW0320-XX-000-XXXXXX-NOT-CCD-000016 P01	Technical Note - WMZs 7, 8, 9 Surface Water Discharges	SCC reserve comment on Stage 5 (1.4.5) RE SZC plant operation.	Matt Williams - SCC 03/02/2022	Michael Sheridan - ATK	No	Closed	2	Comment noted, no further action required.	None
EW0320	64	9b	-	Report - Drainage intent statement for Sports Pitches and Non-Nuclear Island Operational Drainage	Sports pitches are proposed for either infiltration or positive discharge. Infiltration has not been proven at this location. Whilst the intention to limit offsite discharges to greenfield runoff rates is supported, a location for this discharge has not been identified, therefore the feasibility of this option cannot be supported at this stage.	Matt Williams - SCC 03/02/2022	Michael Sheridan - ATK	No	Closed	2	Infiltration is proposed for the sports pitches. These potentially can have a storage volume of 530 m3 based upon the minimum acceptable SCC infiltration rate (5mm/hr.). Anglian Water have confirmed there is no opportunity to dicscharge to the local Combine Sewerage system.	Infiltration testing to take place during Detailed Design. Identification of storage requirement at this stage. Further possible discharge options include non-potable supplies to the Local Sports Centre or Local Allotments. A possible deep infiltration solution is available into the deep crag aquifer.
EW0320	65	9b	-	Report - Drainage intent statement for Sports Pitches and Non-Nuclear Island Operational Drainage	Agreed grass pitches can be excluded from consideration, other pitches will require drainage.	Matt Williams - SCC 03/02/2022	Michael Sheridan - ATK	No	Closed	2	Comment Noted.	None
EW0320	66	9b	-	Report - Drainage intent statement for Sports Pitches and Non-Nuclear Island Operational Drainage	Drainage outside of NSL – Whilst I'd like to see more information, these areas are either small or have an obvious means of surface water disposal (car park through permeable paving to infiltrate, or (whilst not stated) if infiltration isn't possible it's obvious to conclude a discharge to the adjacent watercourse would be feasible	Matt Williams - SCC 03/02/2022	Michael Sheridan - ATK	No	Closed	2	Comment noted.	Infiltration within car park and possible discharge to nearby watercourse.
EW0320	67	9b	-	Report - Drainage intent statement for Sports Pitches and Non-Nuclear Island Operational Drainage	In short, drainage outside of NSL can be agreed in principle but sports pitches don't have an obvious solution still.	Matt Williams - SCC 03/02/2022	Michael Sheridan - ATK	No	Closed	2	Comment noted. See item 64 above.	None
				Road schemes [REP5-120, Appendix F, G & H]								
EW0320	68	13	-	Appendix F Sizewell Link Road Preliminary Drainage Design Statement Rev2	The general principles of surface water drainage for the road schemes (Two Village Bypass, Sizewell Link Road and Yoxford Roundabout) and agreed between SZC Co and SCC.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2	SLR rev 3 issued 09/02/22	MW confirmed in meeting 16/02/22 that SLR reviewed and only minor comments to return
EW0320	69	13	-		the details required to confirm that the drainage strategies are deliverable within the Order Limits, whilst complying with national and local policy, best practice and guidance (in order to be eligible for adoption by SCC Highways) have not been provided to SCC. Design assumptions, such as maximum water depths, maximum basin depths, side slope gradients, factors of safety and maintenance requirements has not been provided to SCC to confirm agreement, any forthcoming design which does comply with SCC requirements will not be accepted. We are therefore unable to confirm that the proposed drainage strategies deliver suitable and sufficient mitigation.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		Full set of drainage drawings issued at preliminary design show all drainage infrastructure located within red line boundary Details of attenuation basin parameters are provided in Appendix B and in text Also provided MicroDrainage calculations shown in previously issued Hydraulic Modelling Report
EW0320	70	13	-		Final results of infiltration testing, used for design, have not been provided.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		Site testing logs issued in October 2020 showing that infiltration is not viable so alternative of attenuation and discharge to watercourse was agreed prior to start of preliminary design
EW0320	71	13	-		Results of pollution assessments have not been provided.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		Provided in Pollution Assessment Report July 2021
EW0320	72	13	-		The location of roadside swales when the road is at grade, in cutting and on embankment is not clear. Indicative sections should be provided for each of the schemes (multiple if necessary) to demonstrate where the swales will be located in each scenario and the size of the proposed swale. Some of the current proposals locate swales at the bottom of embankments, proposing runoff flows down the embankment prior to entering the swale. SCC have been clear that this arrangement will not be acceptable due to the risk of scour this approach could present to the embankment and the swale.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		Arrangements for draining of SLR embankments agreed at SCC/SZC meeting on 20/01/22 Details of agreement stated in 13.1.15
EW0320	73	13	-		It has not been demonstrated that positive outfalls (where required) are located within the Order Limits.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		All outfalls are shown within the red line boundary on layout drawings issue at preliminary design
EW0320	74	13	-		It is proposed that SCC adopt 50m either side of the proposed watercourse crossings on Sizewell Link Road. This is not a standard approach and SCC do not intend to adopt watercourses 50m either side of the crossing.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		This is not correct, SCC will adopt the outfalls and headwalls, but not the watercourses clear of the culvert crossings
EW0320	75	14	-	Appendix G Two Village Bypass Preliminary Drainage Design Statement Rev2	The general principles of surface water drainage for the road schemes (Two Village Bypass, Sizewell Link Road and Yoxford Roundabout) and agreed between SZC Co and SCC.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2	TVB rev 3 issued16/02/22	
EW0320	76	14	-		the details required to confirm that the drainage strategies are deliverable within the Order Limits, whilst complying with national and local policy, best practice and guidance (in order to be eligible for adoption by SCC Highways) have not been provided to SCC. Design assumptions, such as maximum water depths, maximum basin depths, side slope gradients, factors of safety and maintenance requirements has not been provided to SCC to confirm agreement, any forthcoming design which does comply with SCC requirements will not be accepted. We are therefore unable to confirm that the proposed drainage strategies deliver suitable and sufficient mitigation.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		Full set of drainage drawings issued at preliminary design show all drainage infrastructure located within red line boundary Details of attenuation basin parameters are provided in Appendix B and in text Also provided MicroDrainage calculations shown in previously issued Hydraulic Modelling Report
EW0320	77	14	-		Final results of infiltration testing, used for design, have not been provided.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		Provided in Appendix A
EW0320	78	14	-		Results of pollution assessments have not been provided.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		Provided in Appendix B
EW0320	79	14	-		Results of groundwater monitoring at proposed infiltration basin adjacent River Alde (east) have not been provided. High infiltration rates have led to concerns RE potential continuity with groundwater. Alternative option not proposed if groundwater does present a problem.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		Provided in Appendix A Concern re groundwater noted but basin is at the top of the slope above the river Alde floodplain Concern re high infiltration rate confirmed to be addressed by lining the basin bed
EW0320	80	14	-		It has not been demonstrated that positive outfalls (where required) are located within the Order Limits.	Matt Williams - SCC 08/09/2021	Derek Lord - WSP	No	Closed	2		Only one outfall for A12 west roundabout northern arm. Shown within the red line boundary on layout drawings within report Plate 12

EW0320	81	14	-		Ideally, we would like to see the same level of information for Two Village Bypass as for the Sizewell Link Road and Yoxford. The document should include, but not be limited to: • Drainage plans • Indicative sections • Calculations • Dimensioned plans of proposed basins to demonstrate there is sufficient space in the Order Limits • Supporting results of infiltration testing • Pollution assessment	Matt Williams - SCC	09/02/2022	Derek Lord - WSP	No	Closed	2		Report revision 3 addresses list	
EW0320	82	15	-	Appendix H Yoxford Roundabout Preliminary Drainage Design Statement Rev2	The general principles of surface water drainage for the road schemes (Two Village Bypass, Sizewell Link Road and Yoxford Roundabout) and agreed between SZC Co and SCC.	Matt Williams - SCC	08/09/2021	Derek Lord - WSP	No	Closed	2			
EW0320	83	15	-		the details required to confirm that the drainage strategies are deliverable within the Order Limits, whilst complying with national and local policy, best practice and guidance (in order to be eligible for adoption by SCC Highways) have not been provided to SCC. Design assumptions, such as maximum water depths, maximum basin depths, side slope gradients, factors of safety and maintenance requirements has not been provided to SCC to confirm agreement, any forthcoming design which does comply with SCC requirements will not be accepted. We are therefore unable to confirm that the proposed drainage strategies deliver suitable and sufficient mitigation.	Matt Williams - SCC	08/09/2021	Derek Lord - WSP	No	Closed	2		Full set of drainage drawings issued at preliminary design show all drainage infrastructure located within red line boundary Details of attenuation basin parameters are provided in Appendix B and in text Also provided MicroDrainage calculations shown in previously issued Hydraulic Modelling Report	
EW0320	84	15	-		Final results of infiltration testing, used for design, have not been provided.	Matt Williams - SCC	08/09/2021	Derek Lord - WSP	No	Closed	2		Provided in Appendix A	
EW0320	85	15	-		Results of pollution assessments have not been provided.	Matt Williams - SCC	08/09/2021	Derek Lord - WSP	No	Closed	2		Provided in Appendix B	
EW0320	86	15	-		It has not been demonstrated that positive outfalls (where required) are located within the Order Limits.	Matt Williams - SCC	08/09/2021	Derek Lord - WSP	No	Closed	2		One outfall is now required for the A12 roundabout northern arm discharging to the river Yox as agreed with SCC and EA on 12/01/22 The river Yox forms the red line boundary.	
EW0320	87	10	-	Northern P&R	Table 1 – Provide greenfield runoff calcs to support Qbar rate 7.1.10 – Basin depth and maximum water depth would leave freeboard <300mm, but I note you have additional space available 10.1.6 – Please note that length of culverting should be minimised through good design 11.1.6 & 11.1.7 – Provide greenfield runoff calcs to support stated rates 11.1.7 – Whilst SCC guidance does permit discharge at 1:100, we prefer Qbar. If you want to use 1:100, you need to implement the Long-Term Storage method to manage additional runoff volume. Not quite as simple as simply matching 1:100 rate. July 2021 testing – I note the test which achieved infiltration was at significant depth so wouldn't be accepted anyway. Happy to proceed on the basis the site has no infiltration Appendix B – Main Site – OK, especially given no storage in permeable surfacing has been accounted for A12 – At 16.2l/s discharge, you need 1,063m3 storage but have only demonstrated 800m3. As per earlier comment, your discharge rate would be less than 16.2l/s using LTS so your attenuation requirement will be larger than stated. Whilst I appreciate the area marked red could be available for storage, I can't estimate how much storage this would provide. Current design would result in flooding to the A12 in excess of 200m3 which we would regard as significant - @Steve Merry FYI Appendix F - 5l/s discharge rate for A12 should be amended based on above	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Comments noted.	Greenfield calcs and basin dimensions to be clarified. Storage areas to be clarified.	Please refer to Appendices Cand D
EW0320	88	9	-	Report - Drainage intent statement for Sports Pitches and Non-Nuclear Island Operational Drainage	Leiston Sports Pitches The secondary option is still reliant on unproven infiltration. If infiltration testing returns a failed result, there is no method of surface water disposal. I think the best thing you can do now is demonstrate you have sufficient space for attenuation requirements above and beyond the 1:100+40% rainfall event and you will explore options for water re-use at the adjacent leisure centre, academy and primary school. All of these locations have a demand for non-potable water usage. You would need to clarify this demand, but I expect the non-potable demand of these sites far exceeds the surface water generated by your proposed development, which could therefore act as a positive outfall. This is far from conventional, and I wouldn't expect you to do any detailed work on this at this stage given time constraints, but it would at least give you a method of surface water disposal if infiltration fails. It could even be the most preferable regardless of infiltration results, but I appreciate the associated costs. A simple statement at this stage would be sufficient.	Matt Williams - SCC	#########	Michael Sheridan - ATK	No	Closed	2	Infiltration is proposed for the sports pitches. These potentially can have a storage volume of 530 m3 based upon the minimum acceptable SCC infiltration rate (5mm/hr.). Anglian Water have confirmed there is no opportunity to dicscharge to the local Combine Sewerage system.	Infiltration testing is to take place during Detailed Design. Storage requirement if requirement can be placed within the sports area. Further possible discharge options include non-potable supplies to the Local Sports Centre or Local Allotments. A possible deep infiltration solution is also available into the deep crag aquifer. Th	
EW0320	89	15	-	Appendix H Yoxford Roundabout Preliminary Drainage Design Statement Rev2	Only potential criticism is the lack of corresponding plan for the calculations. Always difficult to interpret calcs without a plan! That being said, we wouldn't expect Network calcs at this stage usually, so you've gone a step further than needed there, which is appreciated.	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Preliminary Design Layout drawing is available	Include drawing in update	Pleasae refer to Appendix F for layout plan and labels for pipe lengths
EW0320	90	13	-	Appendix F Sizewell Link Road Preliminary Drainage Design Statement Rev3	9.1.14 only identifies ordinary watercourse crossing at 250m and 750m but there is also an ordinary watercourse at chainage 950m, from memory of our site visit. The road crosses the watercourse at a skewed angle due to which it is unlikely a simple culvert will be feasible. You'll most likely need to diver the watercourse either side for a short distance to facilitate a short, direct crossing. Appendix A – 4.1.4, a point SCC has made previously, there is no reason for SCC to adopt the 50m upstream and downstream of culverts if the road is adopted – not an LLFA point but I expect Steve Merry will pick up on this too Appendix B – I've worked through this and noted some particularly deep basins and water depths, but likewise some well-designed basins with shallow water depths. I note you state these will be revisited as part of detailed design and there is space to increase basin sizes, but that isn't the case for all basins (SLR-AB-09). Some basins also have insufficient freeboard, some only just short (SLR-AB-37) and some very short (SLR-AB-10a & SLR-AB-26). There looks to be an error on SLR-AB-33. Not suggesting any further changes, but comments to note for future design iterations Query – Any reason the calculations have been removed? These were provided previously and it's good that you've included a summary for each basin, but you still need to support this with a demonstration (i.e. calculations). This is a significant road scheme, we cannot support a drainage strategy that has no calculations to support it. Indeed, we wouldn't recommend approval of any size development at Outline that doesn't submit calculations. Plan areas could be inferred from calculations previously but no longer any information on this	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	9.1.14 relates to land west of the railway and the one at 950 m is east The reference is to land take within which the watercourse works will be undertaken. It does not imply that the 50 m length of watercourse upstream and downstream of culverts will be adopted by SCC . Land is returned to landownewr if not required for adoption Comment agreed Calculations were not provided for Drainage Strategy but were provided for Preliminary Design review and commented upon by SCC	Review land drain LD1, 2 and 3 taking into account SCC comment on skew Appendix A is a previously issued DCO document so should not be changed tn . Can clarify ownershiop expectations in report Calculations and layout plans can be added as an Appendix. Any comments on calculations to be addressed at detailed design stage as agreed in SCC comment	Pleaase refer to Section 9.1.14 update. Please refer to Section 12 for adoption extent comment. Please refer to Appendices B,C,D and E for hydraulic modelling, general layout and attenuation basin performance
EW0320	91	16	-	Drainage Strategy Annex 2A.12 - Green Route rail	3.3 is a repeat of 3.2 5.5 states an infiltration rate achieved of 1.06x10-4 (381.6mm/hr). It looks like this is what you have used for the design of the east basin. If you're going to use this rate, you need to support it with the results of testing as it's a magnitude of 10 higher than the nearby rate which you have evidenced in AD6-TH305 of 1.05x10-5 (37.44mm/hr). Also, using the highest of two rates from tests close to one another isn't the conservative approach encouraged by SCC LLFA or national guidance. Your calculations for this basin also utilise an offsite discharge through a hydrobrake at 2.2l/s in the critical event, but this is not mentioned in Section 8 or shown in Plate 5? Hydrobrake and basin invert levels do not correspond with Plate 5. Plate 5 contains some errors. The basin invert and top levels are consistent but the predicted maximum water levels look wrong and don't match the calculations provided in Appendix F. The calcs in Appendix F show a volume of 463m3 storage provided. This accords with AD6 Technical Note, but 8.1.26 of this document states that an 'additional 463m3' is required. So, should it be 463m3 in addition to the volumes already required, in which case you need more than the 463m3 modelled? Table 4 of AD6 Technical Note only notes a 'storage volume top of bank' of 383m3. The information contained in AD6 Technical Note and GRR Technical Note in relation to the basin East of Abbey Road should be the same as it is serving both areas, but there's no consistency and I can't say with any certainty what the cumulative attenuation volume requirements are, let alone confirm that sufficient attenuation is provided. The plans provided in both documents aren't consistent either. Approach for area west of Abbey Road with no outfall is conservative and leaves options for infiltration or pumping to MDS WMZs. Good.	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Error agreed The value is qviability of infiltration but is not BRE3w65 confirmed . The AD6 is BRE365 hence used. The calculations are used to get a high level estimate of volume required for GRR runoff which will discharge into the AD6 infitration basin Plate 5 not in error as provides the AD6 perforrmance not trhe Source Control calculations in Appendix F As stated on Plate 5 a volume of 463 m3 is provided in the AD6 basin for GRR runoff	This drainage statement is to be replaced by an update to the original report iossued for DCOThe intergration of AD6 and GRR will be cross referenced to avoid any ambiguity	Refer to Section 9 for explanation of inconsistencies between AD6 and GRR and AD6 infiltration to be used at detailed design

EW0320	92	17	-	Drainage strategy - AD6	2.1.3 appears to have been taken straight from Freight Management Facility Technical Note without any changes Table 1 – Where have these numbers come from and how have they been calculated. I'm not expecting to see a full set of supporting calculations, but some context is needed Table 2 – TH301 is a fail. Supporting logs show 25% was not reached on Test 1 or 2 and therefore Test 3 was not undertaken. Note BRE365 compliant 7.1.3 – Note that generally SCC would expect to see 10mm/hr for infiltration only to be a suitable means of surface water disposal, as previously stated and as implemented on SPR DCO 8.1.1 – Formatting error 8.1.2 – Reference to underground storage discouraged Table 3 – Provide supporting calculations Table 4 – Provide supporting calculations. Note comments on Green Rail Route above and lack of consistency for this basin.	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Agreed its standard across all reports. Flow rates calculated based on assessment of catchment extent using FEH data Agreed not full BRE365 compliant but does indicate some infitration capacity Noteds clarification of SCC position Agreed Clarification this is not a referenc e to underground storage in tanks but storage in underground filter draons, their trenches and manholes pending infiltration. Calculations are available for both basins	Allow for in update Provide calculatiosn as appendix	Please reefer to Appendice
EW0320	93	11	-	Southern Park and Ride	Southern Catchment WTP217, which has been used for design purposes, is not compliant with BRE365. Only one test was undertaken, with the subsequent two tests failing to reach 25% and therefore not achieving an infiltration rate. The design for the southern catchment is entirely reliant on the first result from WTP217 which was 2.94x10-5 (105.84mm/hr). We cannot accept a design which is entirely reliant on results of non-compliant BRE365 testing, also noting that the first test which you've used for design would be a massive overestimation compared to the subsequent two results, had they reached 25%. Also, worth noting that WTP01 & WTP03 failed as this gives further context to the above, although I note the recorded geology differs I'm not entirely sure what a 'crate basin' is, as shown in Appendix C. Northern catchment Looks acceptable in principle as the infiltration potential is proven at this location Pollution mitigation I don't think it's accurate to compare this to Northern Park and Ride. Northern Park and Ride discharges through multiple swales and basins before discharging through a positive outfall. At this location there's the potential for infiltration straight to ground without adequate treatment. It looks like most areas are proposed to pass from either swale or permeable paving and then into attenuation basins. Permeable paving shouldn't be an issue but the swales may need to be lined, especially along the access roads. This shouldn't be a problem as I note the calcs don't allow infiltration from these features anyway Plan in Appendix C still notes pumping station	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Agreed that results are not BRE365 compliant but do show that infiltration does occur. Underground storage tank but the model uses oversized pipes	Propose to allow for 2 options and update. Option 1 orignnal pumping option Option 2 gravity option subject to futher validation of infiltration in the souith west of the site	Please refer to Section 10 and referenced Appendices for Options 1 and 2
EW0320	94		-	Highways Schemes	This is relevant to all highway schemes. Swales have been reduced in depth and side slopes slackened off to avoid the need for VRS. The shallower swale depths will silt up quicker which will require more regular maintenance. Steve is content for deeper swales with steeper side slopes (max 1:3, ideally 1:4) to be included without a need for VRS. The key thing at this stage is ensuring there is adequate space for detailed design to intercept flows from the carriageways served.	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Application of DMRB would imply the requirement for VRS if depth of swale is increased. If SCC as adopting authority is happy to remove the VRS requirement this could be done as a departure from standards	Discuss this issue with SCC and get agreed positiuon	
EW0320	95	14	-	Appendix G Two Village Bypass Preliminary Drainage Design Statement Rev3	Plate 10 Infiltration rate stated: 0.11239m/hr (112.39mm/hr) Relevant test in Appendix A: TVTH201 Result of TVTH201: 60.12mm/hr Plate 14 Infiltration rate stated: 0.82005m/hr (820.05mm/hr) Relevant test in Appendix A: TVTH212A Result of TVTH212A: 363.6mm/hr Plate 16 Infiltration rate stated: 0.12611m/hr (126.11mm/hr) Relevant test in Appendix A: TVTH211 Result of TVTH211: 149.76mm/hr	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	The values in the Plates are those applicable at preliminary design. The change to the more conservative Fugro infiltration rates is confirmed in10.1.5	None	Please refer to Appendix E which provides conservative Source Control calculated volumes using the Fugro infiltration rates
EW0320	96	14	-		8.1.4 – As per email on 21/02/2022 @ 13:44, when road is at grade or in cutting, shallow swales not required. Also, this isn't reflected in calculations, thus any storage in swale could be overestimated. 8.1.18 – Infiltration through swales has not been evidenced through the results of infiltration testing along the corridor. Assuming that infiltration is available along the entire corridor at the same rate as achieved at the location of the proposed infiltration basins is not a conservative approach and is likely to underestimate the required land take of the proposed infiltration basins. Worth noting that BGS mapping identifies Lowestoft Formation along a significant part of the proposed route, where infiltration should not be expected. 10.1.3 – The lower values, which SCC agreed would be used, as stated, should be used at this stage of design development	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Application of DMRB would imply the requirement for VRS if depth of swale is increased. If SCC as adopting authority is happy to remove the VRS requirement this could be done as a departure from standards. Infiltration viability is proven at the receiving infiltration basins. The infiltration test results do show that for the portion of TVBP which is in cutting to thew north of Hill Farm Road, infiltration is not viable. However the swale/filter drain has a faulting gradient towards the A12 north east roundabout and hence runoff will be conveyed to basin 2 The hydraulic modelling results provided in Appendix C do use the lower Fugro infiltration rates .	SCC to confirm a departure removing the requirement for VRS will be granted prior to commencement of Detailed Design. Hydraulic modelling will be updated and optimised as part of Detailed Design	
EW0320	97	14	-		Appendix A – It's not possible to use the plans that contain the locations of test results without context of the proposed scheme overlaid	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Comments noted.	A plan showing test locations with the scheme layout will be added to Appendix A	Plan added
EW0320	98	14	-		Network 1 Infiltration rate used of 60.12mm/hr. This conflicts with Plate 10 but uses the right infiltration rate as far as SCC are concerned. Basin levels and modelled flood levels are different to that contained in Plate 10. Infiltration basin DS/PN is N1-1.010 with a weir overflow of 8.622m. Given this is an infiltration basin, I wouldn't expect to see any flow through this pipe but during 1:100+40% it is discharging at 12l/s. This is not in accordance with the proposed drainage strategy and does not represent the required attenuation volumes. In addition to the above, despite the offsite discharge, there is a cumulative flood volume of 96.661m3. This is a significant volume and I don't expect @Steve Merry would be content with this being retained on the road. Given the location next to the River Alde, it's likely this water would find its way to the river, thus increasing offsite flood risk, which is not something SCC can support.	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Comments noted.	As noted in the report Section 8 describes the position at the time of submission of the Appendix for Examination. Section 10 and the Appendices provide updated results. Issue discussed by Matt Williams and Derek Lord by phone on 24 February. SCC would like to see a simple Source Control calculation to validate the size of basins 1, 2 and 3 since this will produce a conservation volume requirement. Evidence that the basin with required size will fit within available space will also be provided. Agreed that SCC do not require updating of full hydraulic model prior to detailed design if source control output is provided.	
EW0320	99	14	-		Network 2 No comments as subject to change as per 8.1.10 of the report. Not ideal but I agree with the principles outlined in 8.1.10 and given the small area I'm content to leave this until detailed design	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Comment noted.	Action as per Network1 above	Refer to 10.1.8 for confirmation of discharge to watercxourse
EW0320	100	14	-		Network 3 Infiltration rate of 522mm/hr used. This conflicts with both Plate 14 and the results of TVTH212A. Where has this infiltration rate come from? Below comments are based on this aspect being addressed Basin levels and modelled flood levels are different to that contained in the relevant plate. This network model is very detailed, including losses through complex structures (swale/filter drains). Notwithstanding the comments made above in response to 8.1.18, if you're going to have a model with this much detail, you'll need to support it with plans and sections, this would include catchment extent, drainage strategy plans, swale and basin plans and sections. Without this information, we can't accept upstream losses. Whilst you haven't undertaken infiltration testing along the route away from proposed infiltration basins, I note there are trial pits. I would suggest there's some form of assessment of soil type in these trial pits, compared against that found at the infiltration test location to determine if the soil type is the same and therefore the infiltration rate achieved at TVTH212A may be suitable to be used elsewhere. But again, highlighting the point made in response to 8.1.18, this is not a conservative approach. Swale base infiltration rate wouldn't be natural soils so not correct to use same infiltration rate as for the filter drain. Any swales sections and plans should also reflect the use of V-notch weirs, which are also modelled At this stage we don't have the GI information to be modelling upstream losses to this extent, hence we usually only require source control calculations as this would demonstrate a worst-case scenario for attenuation requirements based on the limited GI undertaken to date. The current approach taken isn't very conservative in terms of attenuation volumes required and there's no justification for such an approach Cumulative flood volume of 44.46m3 for 1:100+40%. See comments on flood volumes in Network 1	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Comments noted.	Action as per Network1 above	Refer to Appendices Cand D for hydraulic modelling and Appendix E for source control modelling
EW0320	101	14	-		Network 4 No comment as modelled network is not what is proposed	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Comment noted.	Action as per Network1 above	Refer to 10.1.9 for confirmation of discharge to deep borehole

EW0320	102	14	-		Network 5 Infiltration rate of 117mm/hr used. This conflicts with both Plate 16 and the results of TVTH 211. Where has this infiltration rate come from? Below comments are based on this aspect being addressed Technical comments similar to those as for Network 3 as similar level of detail provided DS/PN showing a pipe flow of 14.3l/s for 1:100+40%. Same issue as for Network 1 as this looks to be providing a positive discharge offsite and therefore not modelling as an infiltration only system Cumulative flood volumes of 86.37m3 for 1:100+40%. See comments on flood volumes in Network 1	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Comment accepted.	Action as per Network1 above	Refer to Appendices Cand D for hydraulic modelling and Appendix E for source control modelling
EW0320	103	14	-		Appendix D Confirm that invert levels, top levels, 1:100+40% levels and freeboard levels align with current calcs	Matt Williams - SCC	#########	Derek Lord - WSP	No	Closed	2	Comment accepted.	Action as per Network1 above	Calculations updated but note subject to revision at detailed design
EW0320	104		Sizewell Link Road	Appendix C	Calculations, table and plans do not always align. Calculations and tables appear to be consistent, but plans do not always match. For example, SLR-AB- 15, -16 & -21 match on calcs and tables, but not plan	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2	Comment accepted.	As noted the Appendix C calculations and Appendix D tables are consistent. The Appendix E plans were added as requested in order to assist with review of the calculations. They contain basin performance but in some cases the basin perrformance is out of date. A comment has been added in 14.1.11 confirming this. A comment is also provided at the start of Appendix E.	
EW0320	105		Sizewell Link Road	Appendix C	SLR-AB-25, calculations incomplete, no outputs	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2	Comment accepted.	The SLR-AB-25 catchment has been modelled and the full calculations and performance data is now provided. Subsequent to completion of drainage preliminary design, the highways vertical alignment design has been altered as part of work on departure from standards and this impacts on the outfall pipe. The design requires updating at detailed design.	
EW0320	106		Sizewell Link Road	Appendix C	SLR-AB-30, basin top level is different on all plan, calcs and table	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2	Comment accepted.	The plans have been provided to enable the position of pipe legs shown in the model to be identified. The data on basin performance shown on the plans in Appendix E is superseded by that in the model contained in Appendix C and the basin performance in Appendix D. The top of basin level in Appendix C and D is common at 12.5 mAOD.	
EW0320	107		Sizewell Link Road	Appendix C	SLR-AB-32, calculations incomplete, no structures	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2	Comment accepted.	Full calculations are now provided.	
EW0320	108		Sizewell Link Road	Appendix C	Was western network modelled surcharged? This is the network most vulnerable to surcharging due to the upstream pumps	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2	Comment accepted.	Yes, the outfall into Middleton Drain is modelled with surcharge conditions. In practice there is no direct impact on the drainage to the west of the railway. The 2 pumping stations are modelled with 5 l/s pump out and flow rate discharging to the east of the railway is set at 5 l/s.	
EW0320	109		Sizewell Link Road	Appendix C	Note - Calcs titled 11a are actually for 10 & 10a	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2	Comment accepted.	Confirmed that there was a typographic error in the title but the content was correct. The typographic error has been corrected at this revision.	
EW0320	110		Sizewell Link Road	Appendix F	Response to 9.1.14 is not correct. Chainage 950m is west of rail bridge and is at a location of a watercourse crossed at a skewed angle that has still not been recognised	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2	Comment accepted.	9.1.14 confirms that SCC believe that is a ditch crossing at ch 950. It also confirms that where ditches are found they will be culverted and if crossing SLR at an acute angle they will be diverted to cross perpendicular to the road	
EW0320	111		Two Village bypass		Can't say I'd noticed the GW at 2.4m on TVTH201 previously, slightly concerning. Not much we can do about this at the moment, but something of note to think about for future testing, monitoring and design	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2	Comment accepted.	Bed of basin is at 1.9 m bgl so 0.5 m above GW level. Normal depth for unsaturated zone is 1 m. Seek to raise bed level if possible at detailed design and/or increase plan area of basin. Potential high level overflow into existing watercourse if necessary as resiliance measure.	
EW0320	112		Yoxford		No comments	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2			
EW0320	113		Northern Park and Ride		You can use 1:100 discharge rate for roundabout, but you'll need to implement long term storage methodology	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2	Comment accepted	The available space will be reviewed at detailed design and if reasonably acheivable discharge rate will be limited to 5 l/s. If discharge rate remains at pro rata greenfield then long term storage methodology will be applied.	
EW0320	114		Freight Management Facility		No comments	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2			
EW0320	115													
EW0320	116		Southern Park and Ride		Comments sent 22/03. Revisions received, to be reviewed	Matt Williams - SCC	#########	Derek Lord - WSP		Closed	2			
EW0320	117													
EW0320	118		Main Development Site	Drainage Strategy Update	pg 12 - Basin 1,2,3,4. Not sure what this means RE Final Effluent main to sea	Matt Williams - SCC	#########	Michael Sheridan - ATK		Closed	2	Now clarified in main document. Refers to ability to discharge to sea should construction site become flooded.		
EW0320	119		Main Development Site	Drainage Strategy Update	3.2.7 - Should this say limit the discharge rate to the equivalent greenfield run-off rate up to a 1 in 100-year event?	Matt Williams - SCC	#########	Michael Sheridan - ATK		Closed	2	Comment noted and updated within document.		
EW0320	120		Main Development Site	Annex 2A.3	Still says 90% for roads. I haven't got to some of the latter appendices yet, but I assume this is superseded	Matt Williams - SCC	#########	Michael Sheridan - ATK		Closed	2	Yes, this is superceded.		
EW0320	121		Main Development Site	Annex 2A.3	Table 3-6 - Again, I assume this is superseded?	Matt Williams - SCC	#########	Michael Sheridan - ATK		Closed	2	Yes, this is superceded.		

EW0320	122		Main Development Site	Annex 2A.5	Table 8-1 - Areas of basins don't match those in the drainage strategy update - which ones are we supposed to be using?	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	Please refer to updated Annexes 2A.17 onwards for the latest information.	
EW0320	123		Main Development Site	Annex 2A.5	Table 8-3 - Flood volumes	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	Please refer to updated Annexes 2A.17 onwards for the latest information.	
EW0320	124		Main Development Site	Annex 2A.5	8.3 - Pump rates differ to those in drainage strategy update	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	Please refer to updated Annexes 2A.17 onwards for the latest information.	
EW0320	125		Green Rail Route	Annex 2A.12	9.1.3 - I'm still not sure where you're planning to store 846m3? Plate 4 shows storage for 379m3 and looks to take up most of the available space	Matt Williams - SCC	#########	Derek Lord - WSP	Closed	2	Comment noted	This will be resolved at detailed design before which additional infiltration testing will be undertaken. The GRR infiltration rate from testing is higher than the AD6. Upstream storage and attenuation can be added if needed.
EW0320	126		Comparison of MDS Baseline topo and WMZ catchments	Annex 2A.13	No comments	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	No response required.	
EW0320	127		Temporary Marine Outfall Operation Summary	Annex 2A.14	No comments	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	No response required.	
EW0320	128		WMZ1 Surface Water Treatment Assessment	Annex 2A.15	No comments, see response to Annex 2A.17 below	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	No response required.	
EW0320	129		Review of Existing Infiltration and Permeability Test Data	Annex 2A.16	No comments	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	No response required.	
EW0320	130		Surface Water Drainage Treatment Narrative	Annex 2A.17	Very good! It's a shame Annex 2A.15 & 2A.17 can't be combined. 2A.17 supersedes most of 2A.15 so it gives the wrong impression when you read 2A.15 first. Removing Section 4 and Appendix B from 2A.15 and then adding the information from 2A.17 would resolve this.	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	Superceded information from Section 4 and Appendix B has been removed and the reader is signposted to Annex 2A.17 for the latest position where applicable.	
EW0320	131		PIMP Values Explanatory Note	Annex 2A.18	No comments	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	No response required.	
EW0320	132		Campus Outline Drainage Strategy Technical Note	Annex 2A.19	No comments	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	No response required.	
EW0320	133		ACA West Explanatory Note	Annex 2A.20	No comments	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	No response required.	
EW0320	134		WMZs 7, 8 & 9 Surface Water Discharge Technical Note	Annex 2A.21	More work needed at detailed design to assess potential impacts of removing surface water from Sizewell Drain, but no further action at this stage. IDB involvement critical.	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	No response required.	
EW0320	135		Topographical Catchment Narrative	Annex 2A.22	No comments			Michael Sheridan - ATK	Closed	2	No response required.	
EW0320	136	9b	Drainage Intent Statement Sports Pitches and Non Nuclear Island Operational Drainage	Annex 2A.23	Section 3 still doesn't present a solution for surface water drainage. As discussed, there's no proven infiltration and you have no proven outfall. You need to make it clear that your have at least one feasible option for surface water disposal (as discussed, water re-use in adjacent schools/facilities). I seem to recall this was mentioned elsewhere in the document but it should be stated in this Annex as well given this is the most recent update.	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	Option has been described further in the main annex.	
EW0320	137		AD6 Drainage Design Note	Annex 2A.24	2.1.3 - Reference still made to Freight Management Facility			Derek Lord - WSP	Closed	2	Error agreed	Corrected to AD6
EW0320	138		AD6 Drainage Design Note	Annex 2A.24	8.1.26 - Last sentence states infiltration rate of 1.06x10-4 is more conservative than 1.04x10-5. Is this a typo?			Derek Lord - WSP	Closed	2	Comment noted	Paragraph modified
EW0320	139		Drainage Action Plan and Comments Sheet	Annex 2A.25	Appendix D - Drawings could do with a title or some context as location isn't clear on some			Derek Lord - WSP	Closed	2	Comment noted	Location plans are in order from north to south with note confirming relative location
EW0320	140											
EW0320	141											
EW0320	142				CV values explanatory note not included as far as I can see?	Matt Williams - SCC	#########	Michael Sheridan - ATK	Closed	2	Included within the PIMP document.	
EW0320	143	8b			Pg 12 section 2.1.3 -MCA – No previous discussion held on the overland flows from SZB being discharged into the sea during operational phase. Paragraph 1.4.5. of the previous MCA document stated the opposite. Please remove any reference of my agreement to this (see additional bullet point below but please also remove from response in commenting history).	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	The long term operational arrangement has always been that the nuclear license area would discharge to sea, except in exceedance cases. This means that current overland flows would continue into Sizewell Drain during these events, as at present.	
EW0320	144	8b			Pg 12 section 2.1.3 -MCA – please include maintenance access to be able to withstand heavy machinery and no underground attenuation within it. Also remove the reference to a “track”. We do not require a track, merely access.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Changes made in document to reflect this.	
EW0320	145	8b			Pg 30 3.0.11 – I believe there has been a slight misunderstanding. The IDB is the regulator for all ordinary watercourses (not including main rivers) within the internal drainage district as per the Land Drainage Act 1991. The Board has designated the two watercourses in question as “arterial” due to their importance to the catchment and we use our permissive powers (as per the same Land Drainage Act) to maintain these to the Boards satisfaction. Having said all the above, I am satisfied if you just remove “Section 23 of the” from the sentence.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Changes made in document to reflect this.	
EW0320	146				Pg 37 section 3.2.20 – Last I recall the WRSA was going to be connected to WMZ5 in case of discharge requirements. Am I missing a step here? Outfall 5 (see figure on pg 95) seems to support this?	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	WRSA is a lined independent water holding basin. Outfall 5 is dedicated to Basin 5 discharge only.	
EW0320	147				Pg 41 –please note that section 3.3.11 says the basin will allow infiltration and section 3.3.15 states that the same basin will be lined. Typo?	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	WMZ1 based has now been raised by 0.3m to allow the basin to infiltrate and therefore is unlined. Document now updated.	
EW0320	148	8b			Pg 50 section 3.3.56– “Parts of the area of WMZ-8 drain naturally to the marshes and this will be managed to help the existing water balance of the natural environment.” What exactly does this mean?	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	The western area of the MCA (part of WMZ8 outside the nuclear license area) will form its own catchment and drain into the Sizewell Drain through O14.	
EW0320	149	8b			Pg 178 section 3.2.2 please stop referring to it as an infiltration basin if it is lined.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	WMZ1 based has now been raised by 0.3m to allow the basin to infiltrate and therefore is unlined. Document now updated.	
EW0320	150	8b			Pg 185 section 3.6.2 – if there is no proposed outfall then what is outfall 5 for?	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Outfall 5 is dedicated to Basin 5 discharge only.	
EW0320	151	8b			Pg 1712 (pg 11 of TMO Op sum) section 2.3.3 – I feel like a lot of this has been superseded (have indeed resisted other comments on this part of the document as I believe they have already been covered multiple times) and am conscious of my intro paragraph above but outfalls into the SSSI which do not go directly into a main river will also require consent from the ESIDB as I know you are aware. Please include.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	The TMO is to discharge directly into the sea and therefore falls under EA permitting.	
EW0320	152	8b			Pg 1865 (pg 3 of WMZs 7, 8, 9 SWD tech notes) section 1.2.5 – cut off ditches along the western side of the site may not be within 6m of the Sizewell drain as per previous discussions on minimum 6m wide, flat maintenance access for IDB	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Noted and included into document.	
EW0320	153	8b			Pg 1866 (pg 3-4 of WMZs 7, 8, 9 SWD tech notes) Unclear what motivation for reducing outfalls and discharge to sizewell drain is. Is it pollution concerns? Or is it storage constraints? If it is storage constraints rather than pollution concerns, then the IDB does not support the use of the TMO as an “overall better approach” and indeed we have discussed the possibility of increasing permissible discharge rates to facilitate this.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	The number of outfalls to the Sizewell Drain has been reduced to better reflect the flowrates involved. The construction site is a very intense construction area with many changes occurring and with limited space. It is with this in mind it has been thought better to treat and discharge to sea rather than risk discharges to the SSSI where water quality is paramount.	
EW0320	154	8b			Pg 1871 (pg 9 of WMZs 7, 8, 9 SWD tech notes) Plate 1.6 indicates use of outfall 014 while the text indicates that WMZ 8 will be discharging into the sea (section 1.4.14). What is the plan here?	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	It is only during the latter stages of construction that is is thought prudent to direct water to the Sizewell Drain. It is only when the pollution risk reduces can water be directed to 014.	
EW0320	155	8b			Pg 1872 (pg 10 of WMZs 7, 8, 9 SWD tech notes) Plate 1.7 shows neither outfall 017 nor outfall 014. What are you proposing here exactly? My understanding was that both would continue during the operational phase.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	The plate was to demonstrate the broad principle of the nuclear site drainage. O14 & 017 have not been include for clarity but could be misunderstood. Both 014 and 017 are proposed to be permanent outfalls as described more fully elsewhere.	
EW0320	156	8b			WMZs 7, 8, 9 SWD tech notes – seems that there is now no planned discharge to the Sizewell drain from any of the WMZ during any of the phases. New to me. As per our many previous discussions if pollution is your concern, then the IDB supports discharging surface water to the sea, however my understanding was that pollution was no longer a concern in the operational phases (and to be quite honest Im not completely convinced that this is a valid reason in some of the other phases as well).	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	The construction site is a very intense construction area with many changes occurring and with limited space. It is with this in mind it has been thought better to treat and discharge to sea rather than risk discharges to the SSSI where water quality is paramount. Only during the latter stages of construction would flows be directed to 014. Flows to O17 would continue through the construction phase. Both O14 & O17 would be permanent operational outfalls.	
EW0320	157	8b			Pg 1872 (pg 10 of WMZs 7, 8, 9 SWD tech notes) section 1.5.2- it is not the material supporting the track that needs to maintain slope stability, rather you must establish whether the bank material is suitable for a 1:1 slope. If it is not then you must consider a shallower slope, thus reducing space. Furthermore, as per above bulletpoint, the IDB do not require a track, merely flat access that can take heavy machenary without damage.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Now clarified in document to reflect stability for bank material as well as construction material. Comments regarding access now included.	
EW0320	158	8b			Pg 1885 and 1887 (Figures on early and late SW outfall locations). Can’t read the table as it is blurry.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Drawings are being issued separately.	

EW0320	159	8b	Please add "IDB comment received 21/01/2022 and 24/012022 and 07/02/2022" to RAG /Comment column K in the Sizewell C – Drainage Strategy – Action Plan – also update date issued regarding the WMZ7, 8 and 9 technical notes. 21/1/22: 1. 6m minimum maintenance strip with additional space needed for turning if access is not provided at both the northern and southern boundaries. 2. Max discharges expected through outfalls O4 and O7. – More information on exactly what is draining through outfall 07. 3. What size impermeable, rough plan would be useful. You currently indicate that both "overland flows" and "SZB transferred drainage area" will go through here, but have no reference to what either of those entails. 4. Likely storage volumes required and indicative space for these/where these might be accommodated (specifically I do not want them anywhere within the above mentioned maintenance strip). 5. Potential for 7 and 8 to be joined. 24/1/22 1. Slope stability of bank material. 6. Stepped arrangement of western bank.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	1. 6m access strip now included in main document. 2. Only Greenfield rate through O14 and exceedance flows through O17. 3. SZB area plan now included in document. 4. No storage is to be located beneath the access trip. 5. Flows during the construction stage are very high pollution risk and therefore are proposed to be discharged to sea after treatment. Only WMZ 8 that remains outside the nuclear site is proposed to discharge permanently to the Sizewell Drain. 6. The two stepped western bank of the Sizewell Drain is now included within the document.
EW0320	160	8b	Active Surveillance comments - Please add my comment from e-mail dated 21/02/2022 that there is potential for WMZ 7 and 8 to be combined to discharge to Sizewell drain	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Comment noted. Pollution concerns have made this option unworkable.
EW0320	161	8b	Please edit comment from 21/02/2022 by removing "Max discharges expected through outfalls O4 and O7." This was in reference to what you had stated, and my response within the e-mail was in red after this. Without this context in the document, it seems that I am proposing that the max discharge be from these outfalls, which was not the case.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Comment noted. Only Greenfield rate proposed for O14 and exceedance flows through O17.
EW0320	162	8b	• Response to comment from 21/02/2022 – this is the first time I hear about SZB flows going to the sea after sea tunnels are operational.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	The long term operational arrangement has always been that the nuclear license area would discharge to sea, except in exceedance cases. This means that current overland flows would continue into Sizewell Drain during these events, as at present.
EW0320	163	8b	Active Surveillance comments - Please add comment in e-mail date 24/02/2022. I note you have a 1/1 berm on both sides. My understanding was that through multiple rounds of consultation it was decided that one side of the drain (the side which we will not be maintaining from) needs to have a 2 stage berm as supported by Natural England. We will not push for this if Natural England have changed their minds on that, but would be good to get confirmation if they have. Also, a 1/1 slope is acceptable on the access side subject to soil structure and stability. Do you know what soil is/will be present there? If its clay it should be fine but otherwise we might need to consider a shallower slope, which will of course require additional space.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	The western edge of the Siozewell Drain is to be a two stage berm, now included in document. Access material and bank material are proposed to be able to withstand a 1:1 slope.
EW0320	164	8b	Active Surveillance comments - Please add comment in e-mail date 07/02/2022. A couple of typos which Matt previuosly flagged (within paragraphs 1.2 and 1.3). There is likely some confusion over which WMZ is discharging through which outfall (O14 and O17).There is some conflict within the document as to whether you are proposing to drain WMZ8 to the Sizewell drain at all. Please clarify whether you are intending to discharge to the drain in the later stages of construction/operation? To be clear the IDB supports discharging surface water to the Sizewell Drain rather than directly to sea (pollution levels permitting of course) as the complete ceasing of discharge from what is to become the MDS could impact water levels and thus have knock on environmental impacts on the SSSI. In order to facilitate that the Board is willing to discuss potential higher than greenfield discharge rates into the drain (in an attempt to ease storage requirements). The ESIDB require a maintenance strip at least 6m wide along the entire stretch of the realigned Sizewell drain. The Board also requires that the previously discussed 2 stage bank will be on the opposite side of the realigned drain to the maintenance strip.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Comments noted: Clarification given on flows to O14 and 017 and whether during construction and/or operational phases. (see comment for point 156). Maintenance access described in point 159. Two step western drain bank addressed in point 159.
EW0320	165	8b	1. Cannot find mention of requirement for 2 stage berm/slope on western bank of realigned drain. Please include somewhere within your proposal unless something different has been decided with Natural England, in which case I would be grateful for confirmation of this. 2. Also, a 1/1 slope is acceptable on the access side subject to soil structure and stability. Do you know what soil is/will be present there? If its clay it should be fine but otherwise we might need to consider a shallower slope, which will of course require additional space.	Yvonne Smith - IDB	#########	Michael Sheridan - ATK	Closed	2	Comments noted and adressed in point 159 and now included within document.