



Drainage Statement

Client: Woodgate Developments Ltd

Project : Residential Development
Land off Boston Road, Gosberton
Lincolnshire

Job No. : 10/5549

Revision :

Date : July 2021

Engineer : D. Mutepfa

WARD  **COLE**
consulting engineers

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SCHEDULE OF REVISIONS

REVISION	ISSUE DATE	DESCRIPTION
A	08-07-2021	Drawings amended to suit revised site layout plan.

PROPOSED RESIDENTIAL DEVELOPMENT
BOSTON ROAD, GOSBERTON, LINCOLNSHIRE

Drainage Statement – Approval of Reserved Matters

Discharge of Planning Conditions 3(iii) & 10

The proposed foul and surface water drainage systems are shown in the attached drawings and hydraulic simulation results. The drainage schemes are generally in accordance with the approved Flood Risk Assessment (FRA) prepared by RM Associates dated 1 June 2016.

Private drainage will conform to stipulations in Document H of the Building Regulations 2015. Adoptable drainage will be constructed in accordance with the Design and Construction Guidance (Appendix C in the Sewerage Sector Guidance which forms part of the Sewerage Codes for Adoption (April 2020).

According to the Ground Investigation Report issued by Lincs Laboratory in April 2016, superficial deposits consisting of clayey silts were encountered on the site to a maximum depth of 2m below ground level. Groundwater was encountered at 1.0 – 1.1m below ground level. Soil infiltration testing indicated that soakaways would not be feasible as a means of surface water runoff disposal. An extract from the GI report is included in Appendix A.

The approved FRA noted that drainage in the locality was provided by a riparian-maintained dyke. This dyke discharges into a drain maintained by the Welland and Deepings Internal Drainage Board. The FRA also noted that though the site is situated within Flood Zone 3a with a high probability of flooding, it is protected by flood defences that are maintained by the Environment Agency. Further, the South Holland Strategic FRA indicates that the site will not be subject to flooding during breach flood events up to the year 2115.

Proposed Foul Water Drainage

In its response to a pre-development enquiry in January 2016 Anglian Water confirmed that the impact of gravity foul flows from the planned development would be acceptable. The achievement of a gravity foul system will be made possible by the raising of ground levels on the site as noted in the FRA. The proposed foul connection would be at a new manhole constructed on the existing 150mm diameter public sewer along High Street south of the site. It is intended that all foul sewers in the proposed adoptable roads and footways will be adopted by the Water Authority under Section 104 of the Water Industry Act.

Surface Water Drainage

The system for surface water runoff disposal was designed in accordance with the hierarchy of drainage options stipulated in Document H of the Building Regulations and the Planning Practice Guidance, i.e., infiltration, surface water bodies, and sewers.

As discussed above, infiltration methods are not feasible as the means for surface water runoff disposal. Surface water will therefore drain into the ditch forming the north-west boundary of the site.

It is noted that Planning Condition stipulates a maximum runoff discharge rate of 1.4 l/s/ha. This would result in an outflow rate of 3.03 l/s. However, the peak pre-development outflow rates calculated using MicroDrainage are found to be 4.8, 11.8 and 15.7 l/s respectively for the 1 in 1, 1 in 30 and 1 in 100-year return periods. Q_{BAR} , the Greenfield rate, is calculated to be 5.5 l/s.

The proposed surface water drainage system incorporates the following SUDS techniques.

- a) An attenuation pond detention basin 1.8m deep (base level 1.28m AOD) and extending over approximately 680m². It will have a permanent water level 600mm deep (1.88m AOD) and storage capacity above this level of approximately 610m³. The restricted available space has meant that additional required attenuation storage capacity has had to be provided elsewhere.
- b) Pipe attenuation with a storage capacity approximately 45m³ to be provided in prefabricated 750mm diameter pipe structures.
- c) A vortex flow control unit installed downstream of the attenuation pond to restrict surface water runoff flows from the site to 5 l/s as calculated in MicroDrainage (see Appendix C) and stated in the FRA.
- d) Soft landscaping, planting, and maintenance of mature trees.

Under-drained roadside swales have been excluded due to the high groundwater levels, their inability to provide significant attenuation capacity, and road adoption requirements.

The drainage and SUDS components have been sized to cope with runoff flows from storm events up to the 1% Annual Exceedance Probability plus a 30% allowance for climate change. Micro Drainage simulation results are included in this statement. The results indicate that there will be no flooding in any part of the system during critical design storm events.

Exceedance flows arising from abnormal events or blockages shall be directed away from buildings and towards roads, the attenuation pond and drainage ditches along the site boundaries (see Appendix D).

The management and maintenance responsibilities of the private drainage and attenuation pond shall fall under the remit of a private management company that will be set up for that purpose. The maintenance requirements for SUDS assets will be as follows for the different components in accordance with the recommendations of CIRIA C753 (*The SUDS Manual*) and manufacturers' manuals where applicable.

Attenuation Pond

- Remove trash, debris, and litter, monthly or as required.
- Cut grass – landscaped areas and access routes, monthly during growing season, or as required.
- Cut grass – meadow grass in and around basin, half-yearly: spring (before nesting season) and autumn.
- Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years): monthly at start then as required.
- Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage: monthly.
- Inspect water body for signs of poor water quality: monthly (May – October)

- Inspect silt accumulation rates and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options: half-yearly.
- Check any mechanical devices, e.g., vortex flow control unit: half-yearly.
- Hand cut submerged and emergent aquatic plants (at minimum 100mm above pond base; include max 25% of pond surface): annually.
- Remove 25% of bank vegetation from water's edge to a minimum of 1m above water level: annually.
- Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract): annually.
- Remove sediment from any forebay: every 1 – 5 years, or as required.
- Remove sediment and planting from pond when pond volume is reduced by 20%: With effective pre-treatment, this will only be required rarely, e.g., every 25 – 50 years.
- Re-plant, where necessary: as required.
- Repair erosion or other damage: as required.
- Aerate pond when signs of eutrophication are detected: as required.
- Re-align rip-rap or repair other damage: as required.
- Repair / rehabilitate inlets and outlets: as required.

Appendices

Appendix A – Extract from Ground Investigation Report

Appendix B - Anglian Water Consultation Responses

Appendix C - Micro Drainage Simulation Results

Appendix D – Drainage Drawings

Drawings

10-5549-500A Proposed Drainage Layout

10-5549-501 Proposed Drainage Details

10-5549-502A Manhole Schedules

10-5549-SK501A Exceedance Flow Routes

Appendix A
Extract from the Ground Investigation Report

4.0 ENGINEERING ASSESSMENT AND RECOMMENDATIONS

- 4.1 During the ground investigation the anticipated Kellaways Formation and Oxford Clay Formation was not encountered. Typical superficial deposits encountered generally consisted of orange/grey/brown clayey silts to a maximum proven depth of 2.0m BGL. Topsoil encountered ranged from 0.35m to 0.40m BGL.

Groundwater was encountered during the investigation in TP1 and TP3 at 1.0m BGL, and TP4 at 1.1m BGL. No ground water was encountered in TP2.

Trial pit logs, in Appendix (ii), give the details of the encountered soils.

- 4.2 Owing to the practically impervious characteristics of the soil types encountered there was little or no infiltration at the targeted depth of between 0.5 to 1.0m BGL. It was considered unfeasible to carry out further subsequent refills. Soakaway testing sheets in Appendix (iii), give details of infiltration rates for both trial pits.
- 4.3 The soils encountered in the trial pit did not show any visual or odorous signs of contamination. Additionally, the surrounding land showed no signs of superficial contamination. Considering all these factors, along with the history of the area and the present surrounding land uses, it is not considered that the site is chemically contaminated. Consequently, the risk of contamination associated with constructing and using the site is considered to be low.

However, as with all developments, the workforce should wear overalls, gloves and boots to minimise contact with soils and water. For example, the presence of water contaminated with Weil's disease (caused by rats) is a small probability and working on many developments increases the overall risk of infection to an individual. Care should be taken if any heavily discoloured or pungent smelling materials are encountered as this could indicate that small amounts of chemicals have been discarded. In the unlikely event of encountering suspicious materials, appropriate advice should be sought

- 4.4 This report is based on data from test results and site records obtained during the ground investigation. There is the possibility of variations in ground conditions that have not been revealed during the ground investigation. It should also be noted that changes in groundwater levels are likely to occur from season to season and that groundwater may be encountered during construction.

The report is also based on the information given to Lincs Laboratory by the client. Should there be any subsequent alterations to the project's design it will be necessary to check with Lincs Laboratory that the geotechnical assessments and recommendations are still valid.

Gosberton Option B



JH Walter
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www.jhwalter.co.uk

Mr T & Mrs B Dennis
Land off High Street & Boston Road Gosberton
Proposed Residential Development
Site Layout Plan - PROPOSED

L-DEN-081-SLPP

ISO A2 sheet @ Scale 1:1250	Date: 14-03-2016	Revision
Drawn by: PAW	Checked by:	1

[illegible]

[illegible]

Job Number: 39367

Remarks :
Greenfield - maintained lawn

Site: High Street, Gosberton

Location: 524307E - 331571N

Client: JH Waller

Excavation Method: JCB

Trial Pit.: TP 3

Orientation: Length : 1.40m
Width : 0.40m
Depth : 1.00 m

Dimensions:

Sheet 1 of 1

Date (2016)

14/04

Depth of Water (m)

1.00

Sample/Test

No

Type

Depth (m)

Change of Strata

Depth below GL (m)

Reduced Level m AOD (m)

Thickness of Stratum (m)

Legend

0.00

0.40

0.60

1.00

Description of Strata

Light brown silty TOPSOIL with fine rootlets

Soft light orange brown fine SILT

End of Trial Pit at 1.00 m

MPT Test Result

Atterberg Limits

LL %

PL %

PI %

CBR %

Dry Bulk ³ Mg/m

Density ³ Mg/m

Shear Strength

Cu kPa

Øu°

Type of Shear Test

Chemical

SO₄ g/l

pH

Other Tests

Log Scale: 2.50

m/page

Ground Level: -

m AOD

Scale as Shown

Disturbed Samples

W Water Sample

D Small Bag

B Large Bag

T Tin

Undisturbed Samples

U100 105mm Diameter

U38 U100

Groundwater:

▼ Struck

▽ Rose to

Symbols

PT Penetration Tests

P Probe CBR

(i) Other Tests Undertaken

Type of Shear Test

SB Shear Vane

TX Shear Box

Triaxial (Undrained)

Cu Undrained Cohesive Strength

Øu° Internal Friction Angle

Notes : Geology and Other Tests :

See "Sample Descriptions & Symbols" at end of logs

Soil strengths (in brackets) are assessed from on-site observations

LINCS

LAB

Telephone (01522) 530355

[illegible]

Appendix B
Anglian Water Consultation Responses

Section 1: Proposed Development

Thank you for submitting a pre-planning enquiry. This has been produced for J H Walter LLP. Your reference number is **00010611**. If you have any questions upon receipt of this report, please contact Carl Lee on 01733 414690 or email planningliaison@anglianwater.co.uk.

The response within this report has been based on the following information which was submitted as part of your application:

List of Planned Developments	
Type of Development	No. Of Units
C3 Dwellings	60

The anticipated residential build rate is:

Year	2016	2017
Build Rate	50	10

- The grid reference for the site is TF2444631589.
- The site currently does not have planning permission and is located on a greenfield site.

Section 2: Assets Affected

Our records indicate that there are no public water mains or public sewers or other assets owned by Anglian Water within the boundary or overlapping your development site. However, it is recommended that you carry out a thorough investigation of your proposed working area to establish whether any unmapped public or private sewers and lateral drains are in existence.

Due to the private sewer transfer in October 2011 many newly adopted public used water assets and their history are not indicated on our records. You also need to be aware that your development site may contain private water mains, drains or other assets not shown on our records. These are private assets and not the responsibility of Anglian Water but that of the landowner.

Section 3: Water Recycling Services

In examining the used water system we assess the ability for your site to connect to the public sewerage network without causing a detriment to the operation of the system. We also assess the receiving water recycling centre and determine whether the water recycling centre can cope with the increased flow and influent quality arising from your development.

Water Recycling Centre

The foul drainage from the proposed development is in the catchment of Gosberton Water Recycling Centre, which currently has capacity to treat the flows from your development site. Anglian Water cannot reserve capacity and the available capacity at the water recycling centre can be reduced at any time due to growth, environmental and regulation driven changes.

Used Water Network

Anglian Water has assessed the impact of gravity flows from the planned development to the public foul sewerage network. We can confirm that this is acceptable as the foul sewerage system, at present, has available capacity for your site. The connection point will be to the 150mm public foul sewer in the High Street via a new connection between manholes 2401 and 3401 at National Grid Reference (NGR) TF2444631589.

Surface Water Disposal

There are no public surface water sewers within the vicinity of the proposed development. Therefore Anglian Water will be unable to provide the site with a feasible solution of surface water disposal within the current assets. Alternative methods of surface water disposal will need to be investigated such as infiltration techniques or a discharge to a watercourse in accordance with the surface water management hierarchy as outlined in Building Regulations Part H.

The alternative is that a new surface water sewer is constructed which is used to convey your surface water to a watercourse or as part of a SuDs scheme, where appropriate. Subject to the sewer being designed in accordance with the current version of Sewers for Adoption, the sewer can be put forward for adoption by Anglian Water under Section 104 of the Water Industry Act 1991. If the outfall is to a watercourse, the applicant will be required to obtain consent to discharge via the appropriate body.

If your site has no means of drainage due to third party land then you may be able to requisition Anglian Water, under Section 98, to provide a connection to the public sewer for domestic drainage purposes. As part of this option, you may wish to enter into a works agreement in accordance with Section 30 of the Anglian Water Authority Act 1977. This will allow you to design and construct the public sewer using Anglian Waters' statutory powers in accordance with Section 159/168 of the Water Industry Act 1991.

As you may be aware, Anglian Water will consider the adoption of SuDs provided that they meet the criteria outline in our SuDs adoption manual. This can be found on our website at <http://www.anglianwater.co.uk/developers/suds.aspx>. We will adopt features located in public open space that are designed and constructed, in conjunction with the Local Authority and Lead Local Flood Authority (LLFA), to the criteria within our SuDs adoption manual. Specifically, developers must be able to demonstrate:

1. Effective upstream source control,
2. Effective exceedance design, and
3. Effective maintenance schedule demonstrating that the assets can be maintained both now and in the future with adequate access.

If you wish to look at the adoption of any SuDs then an expression of interest form can be found on our website at: <http://www.anglianwater.co.uk/developers/suds.aspx>

Trade Effluent

We note that you do not have any trade effluent requirements. Should this be required in the future you will need our written formal consent. This is in accordance with Section 118 of the Water Industry Act (1991).

Used Water Budget Costs

It has been assumed that the onsite used water network will be provided under a section 104 Water Industry Act application. It is recommended that you also budget for both infrastructure charges and connection costs. The 2015/16 charges are:

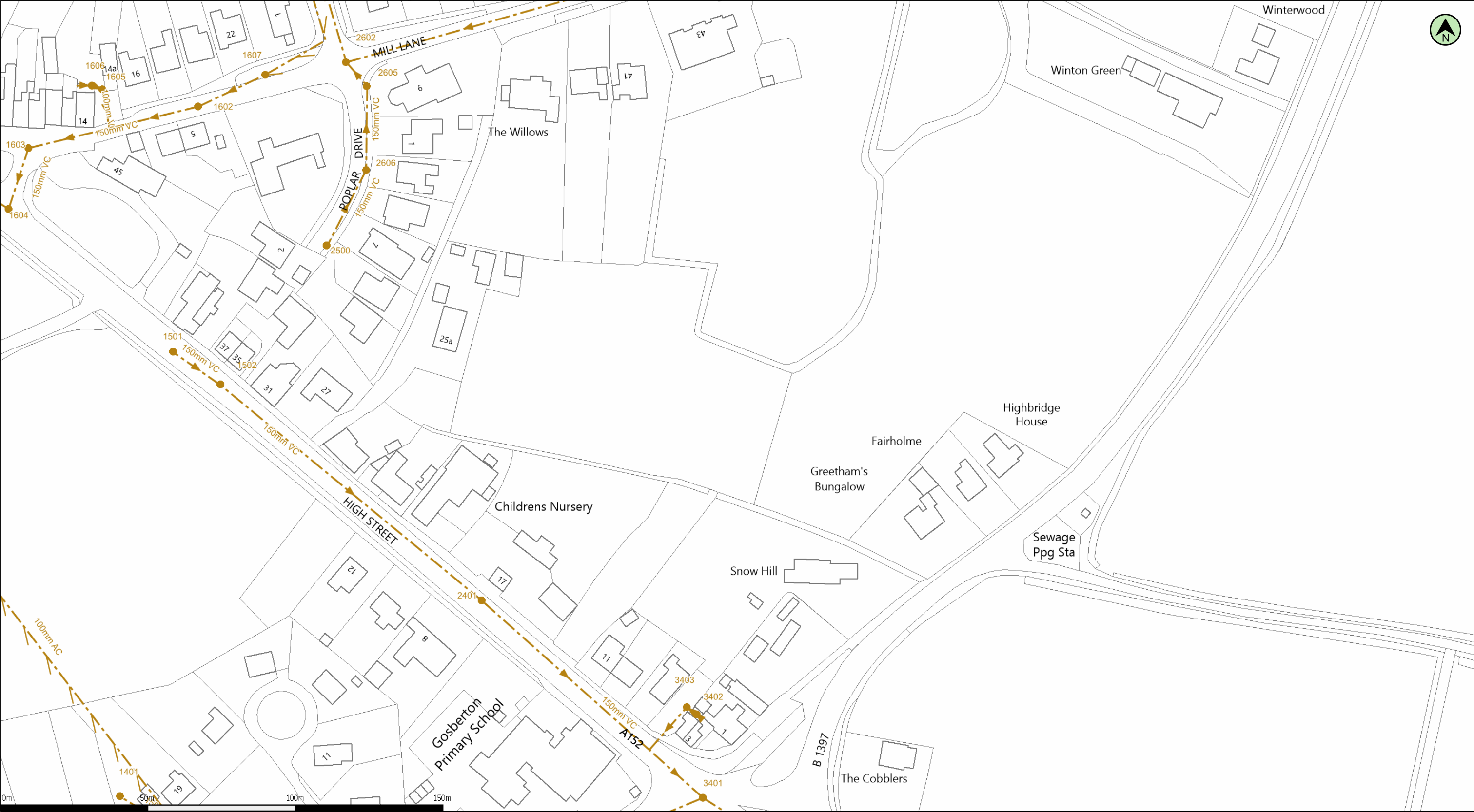
Infrastructure Charge	£351.00 per connection
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Please note that we offer alternative types of connections depending on your needs and these costs are available in our annual charges booklet, which can be downloaded from www.anglianwater.co.uk/developers/charges.

Section 4: Map of Proposed Connection Points



Figure 1: Showing your used water point of connection between manholes 2401 and 3401



(c) Crown copyright and database rights 2021 Ordnance Survey 100022432

Date: 17/06/21

Scale: 1:1250

Map Centre: 524349,331538

Data updated: 31/05/21

Our Ref: 580081 - 1

Wastewater Plan A3

This plan is provided by Anglian Water pursuant its obligations under the Water Industry Act 1991 sections 198 or 199. It must be used in conjunction with any search results attached. The information on this plan is based on data currently recorded but position must be regarded as approximate. Service pipes, private sewers and drains are generally not shown. Users of this map are strongly advised to commission their own survey of the area shown on the plan before carrying out any works. The actual position of all apparatus MUST be established by trial holes. No liability whatsoever, including liability for negligence, is accepted by Anglian Water for any error or inaccuracy or omission, including the failure to accurately record, or record at all, the location of any water main, discharge pipe, sewer or disposal main or any item of apparatus. This information is valid for the date printed. This plan is produced by Anglian Water Services Limited (c) Crown copyright and database rights 2021 Ordnance Survey 100022432. This map is to be used for the purposes of viewing the location of Anglian Water plant only. Any other uses of the map data or further copies is not permitted. This notice is not intended to exclude or restrict liability for death or personal injury resulting from negligence.

Foul Sewer					
Surface Sewer		Outfall*		Sewage Treatment Works	
Combined Sewer				Public Pumping Station	
Final Effluent		Inlet*		Decommissioned Pumping Station	
Rising Main*					
Private Sewer*		Manhole*			
Decommissioned Sewer*					

*(Colour denotes effluent type)

daniel@wardcole.co.uk
GOSBERTON



Appendix C
MicroDrainage Simulation Results

Ward & Cole		Page 1
Fosse House Roman Wharf Lincoln LN1 1SR	Residential Development Boston Road, Gosberton 10/5549	
Date 21/06/2021 File	Designed by DM Checked by	
Micro Drainage Source Control 2016.1		

ICP SUDS Mean Annual Flood

Input

Return Period (years) 100 SAAR (mm) 600 Urban 0.250
Area (ha) 2.167 Soil 0.300 Region Number Region 5

Results 1/s

QBAR Rural 3.3
QBAR Urban 5.5

Q100 years 15.7

Q1 year 4.8
Q30 years 11.8
Q100 years 15.7

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Ward & Cole		Page 1
Fosse House Roman Wharf Lincoln LN1 1SR	Residential Development High Street, Gosberton 10/5549	
Date 05/07/2021	Designed by DM	
File Surface Water Drainage.MDX	Checked by	
Micro Drainage		Network 2016.1

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

- Indicates pipe length does not match coordinates

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section	Type	Auto Design
1.000	17.112	0.057	300.2	0.058	4.00	0.0	0.600	o	300	Pipe/Conduit		
2.000	11.150	0.037	301.4	0.032	4.00	0.0	0.600	o	300	Pipe/Conduit		
1.001	10.967	0.087	126.1	0.007	0.00	0.0	0.600	o	300	Pipe/Conduit		
1.002	15.608	0.042	371.6	0.024	0.00	0.0	0.600	o	450	Pipe/Conduit		
3.000	14.950	0.050	299.0	0.048	4.00	0.0	0.600	o	300	Pipe/Conduit		
1.003	11.345	0.025	453.8	0.017	0.00	0.0	0.600	o	450	Pipe/Conduit		
1.004	29.182	0.055	530.6	0.032	0.00	0.0	0.600	o	525	Pipe/Conduit		
4.000	22.683	0.075	302.4	0.049	4.00	0.0	0.600	o	300	Pipe/Conduit		
1.005	44.475	0.116	383.4	0.016	0.00	0.0	0.600	o	600	Pipe/Conduit		
1.006	5.829	0.015	388.6	0.068	0.00	0.0	0.600	o	600	Pipe/Conduit		
1.007	22.728	0.059	385.2	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit		
1.008	6.619	0.018	367.7	0.031	0.00	0.0	0.600	o	600	Pipe/Conduit		
5.000	39.877	0.104	383.4	0.041	4.00	0.0	0.600	o	375	Pipe/Conduit		
5.001	22.809	0.062	367.9	0.048	0.00	0.0	0.600	o	375	Pipe/Conduit		
5.002	19.675	0.052	378.4	0.023	0.00	0.0	0.600	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)
1.000	75.00	4.32	2.737	0.058	0.0	0.0	0.0	0.90	63.8	14.1
2.000	75.00	4.21	2.717	0.032	0.0	0.0	0.0	0.90	63.7	7.8
1.001	75.00	4.45	2.680	0.097	0.0	0.0	0.0	1.40	98.9	23.6
1.002	75.00	4.69	2.443	0.121	0.0	0.0	0.0	1.05	166.8	29.5
3.000	75.00	4.28	2.601	0.048	0.0	0.0	0.0	0.90	63.9	11.7
1.003	75.00	4.89	2.401	0.186	0.0	0.0	0.0	0.95	150.7	45.3
1.004	75.00	5.40	2.301	0.218	0.0	0.0	0.0	0.97	209.0	53.1
4.000	75.00	4.42	2.546	0.049	0.0	0.0	0.0	0.90	63.5	11.9
1.005	75.00	6.00	2.171	0.283	0.0	0.0	0.0	1.24	349.9	69.0
1.006	75.00	6.08	2.055	0.351	0.0	0.0	0.0	1.23	347.6	85.6
1.007	75.00	6.38	2.040	0.351	0.0	0.0	0.0	1.23	349.1	85.6
1.008	75.00	6.47	1.981	0.382	0.0	0.0	0.0	1.26	357.4	93.1
5.000	75.00	4.72	2.493	0.041	0.0	0.0	0.0	0.92	101.5	10.0
5.001	75.00	5.13	2.389	0.089	0.0	0.0	0.0	0.94	103.7	21.7
5.002	75.00	5.48	2.327	0.112	0.0	0.0	0.0	0.93	102.2	27.3

Ward & Cole		Page 2
Fosse House Roman Wharf Lincoln LN1 1SR	Residential Development High Street, Gosberton 10/5549	
Date 05/07/2021 File Surface Water Drainage.MDX	Designed by DM Checked by	
Micro Drainage	Network 2016.1	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
5.003	48.497	0.237	204.6	0.054	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.009	5.503	0.010	550.3	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.010	29.596	0.043	688.3	0.050	0.00	0.0	0.600	o	750	Pipe/Conduit	
6.000	23.255	0.111	209.5	0.030	4.00	0.0	0.600	o	225	Pipe/Conduit	
6.001	14.638	0.039	375.3	0.067	0.00	0.0	0.600	o	375	Pipe/Conduit	
6.002	22.180	0.045	492.9	0.034	0.00	0.0	0.600	o	450	Pipe/Conduit	
7.000	13.279	0.044	301.8	0.048	4.00	0.0	0.600	o	300	Pipe/Conduit	
1.011	22.626	0.024	942.8	0.061	0.00	0.0	0.600	ooo	750	Triple Pipe	
1.012	5.646#	0.006	941.0	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.013	3.969#	0.027	147.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.014	2.700	0.018	150.0	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)
5.003	75.00	6.05	2.200	0.166	0.0	0.0	0.0	1.42	225.4	40.5
1.009	75.00	6.55	1.963	0.548	0.0	0.0	0.0	1.19	523.9	133.6
1.010	75.00	7.01	1.953	0.598	0.0	0.0	0.0	1.06	467.9	145.8
6.000	75.00	4.43	2.630	0.030	0.0	0.0	0.0	0.90	35.8	7.3
6.001	75.00	4.69	2.369	0.097	0.0	0.0	0.0	0.93	102.6	23.6
6.002	75.00	5.10	2.255	0.131	0.0	0.0	0.0	0.91	144.6	31.9
7.000	75.00	4.25	2.404	0.048	0.0	0.0	0.0	0.90	63.6	11.7
1.011	75.00	7.43	1.910	0.838	0.0	0.0	0.0	0.90	1197.0	204.3
1.012	75.00	7.53	1.886	0.838	0.0	0.0	0.0	0.90	399.4	204.3
1.013	75.00	7.61	1.880	0.838	0.0	0.0	0.0	0.83	14.6«	204.3
1.014	75.00	7.67	1.853	0.838	0.0	0.0	0.0	0.82	14.5«	204.3

Ward & Cole		Page 3
Fosse House	Residential Development	
Roman Wharf	High Street, Gosberton	
Lincoln LN1 1SR	10/5549	
Date 05/07/2021	Designed by DM	
File Surface Water Drainage.MDX	Checked by	
Micro Drainage	Network 2016.1	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S1	3.600	0.863	Open Manhole	1350	1.000	2.737	300				
S2	3.600	0.883	Open Manhole	1350	2.000	2.717	300				
S3	3.500	0.820	Open Manhole	1200	1.001	2.680	300	1.000	2.680	300	
								2.000	2.680	300	
S4	3.400	0.957	Open Manhole	1350	1.002	2.443	450	1.001	2.593	300	
S5	3.450	0.849	Open Manhole	1200	3.000	2.601	300				
S6	3.530	1.129	Open Manhole	1350	1.003	2.401	450	1.002	2.401	450	
								3.000	2.551	300	
S7	3.570	1.269	Open Manhole	900 x 1120	1.004	2.301	525	1.003	2.376	450	
S8	3.400	0.854	Open Manhole	1350	4.000	2.546	300				
S9	3.530	1.359	Open Manhole	900 x 1220	1.005	2.171	600	1.004	2.246	525	
								4.000	2.471	300	
S10	3.320	1.265	Open Manhole	900 x 1220	1.006	2.055	600	1.005	2.055	600	
S11	3.310	1.270	Open Manhole	900 x 1220	1.007	2.040	600	1.006	2.040	600	
S12	3.360	1.379	Open Manhole	900 x 1220	1.008	1.981	600	1.007	1.981	600	
S13	3.700	1.207	Open Manhole	1350	5.000	2.493	375				
S14	3.500	1.111	Open Manhole	1350	5.001	2.389	375	5.000	2.389	375	
S15	3.400	1.073	Open Manhole	1350	5.002	2.327	375	5.001	2.327	375	
S16	3.270	1.070	Open Manhole	1350	5.003	2.200	450	5.002	2.275	375	
S17	3.400	1.437	Open Manhole	1200	1.009	1.963	750	1.008	1.963	600	
								5.003	1.963	450	
S18	3.410	1.457	Open Manhole	1200	1.010	1.953	750	1.009	1.953	750	
S19	3.900	1.270	Open Manhole	600	6.000	2.630	225				
S20	3.850	1.481	Open Manhole	1350	6.001	2.369	375	6.000	2.519	225	
S21	3.760	1.505	Open Manhole	1350	6.002	2.255	450	6.001	2.330	375	
S22	3.550	1.146	Open Manhole	1200	7.000	2.404	300				
S23	3.600	1.690	Open Manhole	1200	1.011	1.910	750	1.010	1.910	750	
								6.002	2.210	450	
								7.000	2.360	300	
S24	3.200	1.314	Open Manhole	1200	1.012	1.886	750	1.011	1.886	750	
POND	3.100	1.220	Open Manhole	1800	1.013	1.880	150	1.012	1.880	750	
S25-HB	3.100	1.247	Open Manhole	1200	1.014	1.853	150	1.013	1.853	150	
DITCH	3.000	1.165	Open Manhole	0		OUTFALL		1.014	1.835	150	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	300	S1	3.600	2.737	0.563	Open Manhole	1350
2.000	o	300	S2	3.600	2.717	0.583	Open Manhole	1350
1.001	o	300	S3	3.500	2.680	0.520	Open Manhole	1200
1.002	o	450	S4	3.400	2.443	0.507	Open Manhole	1350
3.000	o	300	S5	3.450	2.601	0.549	Open Manhole	1200
1.003	o	450	S6	3.530	2.401	0.679	Open Manhole	1350
1.004	o	525	S7	3.570	2.301	0.744	Open Manhole	900 x 1120
4.000	o	300	S8	3.400	2.546	0.554	Open Manhole	1350
1.005	o	600	S9	3.530	2.171	0.759	Open Manhole	900 x 1220
1.006	o	600	S10	3.320	2.055	0.665	Open Manhole	900 x 1220
1.007	o	600	S11	3.310	2.040	0.670	Open Manhole	900 x 1220
1.008	o	600	S12	3.360	1.981	0.779	Open Manhole	900 x 1220
5.000	o	375	S13	3.700	2.493	0.832	Open Manhole	1350
5.001	o	375	S14	3.500	2.389	0.736	Open Manhole	1350
5.002	o	375	S15	3.400	2.327	0.698	Open Manhole	1350
5.003	o	450	S16	3.270	2.200	0.620	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	17.112	300.2	S3	3.500	2.680	0.520	Open Manhole	1200
2.000	11.150	301.4	S3	3.500	2.680	0.520	Open Manhole	1200
1.001	10.967	126.1	S4	3.400	2.593	0.507	Open Manhole	1350
1.002	15.608	371.6	S6	3.530	2.401	0.679	Open Manhole	1350
3.000	14.950	299.0	S6	3.530	2.551	0.679	Open Manhole	1350
1.003	11.345	453.8	S7	3.570	2.376	0.744	Open Manhole	900 x 1120
1.004	29.182	530.6	S9	3.530	2.246	0.759	Open Manhole	900 x 1220
4.000	22.683	302.4	S9	3.530	2.471	0.759	Open Manhole	900 x 1220
1.005	44.475	383.4	S10	3.320	2.055	0.665	Open Manhole	900 x 1220
1.006	5.829	388.6	S11	3.310	2.040	0.670	Open Manhole	900 x 1220
1.007	22.728	385.2	S12	3.360	1.981	0.779	Open Manhole	900 x 1220
1.008	6.619	367.7	S17	3.400	1.963	0.837	Open Manhole	1200
5.000	39.877	383.4	S14	3.500	2.389	0.736	Open Manhole	1350
5.001	22.809	367.9	S15	3.400	2.327	0.698	Open Manhole	1350
5.002	19.675	378.4	S16	3.270	2.275	0.620	Open Manhole	1350
5.003	48.497	204.6	S17	3.400	1.963	0.987	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.009	o	750	S17	3.400	1.963	0.687	Open Manhole	1200
1.010	o	750	S18	3.410	1.953	0.707	Open Manhole	1200
6.000	o	225	S19	3.900	2.630	1.045	Open Manhole	600
6.001	o	375	S20	3.850	2.369	1.106	Open Manhole	1350
6.002	o	450	S21	3.760	2.255	1.055	Open Manhole	1350
7.000	o	300	S22	3.550	2.404	0.846	Open Manhole	1200
1.011	ooo	750	S23	3.600	1.910	0.940	Open Manhole	1200
1.012	o	750	S24	3.200	1.886	0.564	Open Manhole	1200
1.013	o	150	POND	3.100	1.880	1.070	Open Manhole	1800
1.014	o	150	S25-HB	3.100	1.853	1.097	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)
1.009	5.503	550.3	S18	3.410	1.953	0.707	Open Manhole	1200
1.010	29.596	688.3	S23	3.600	1.910	0.940	Open Manhole	1200
6.000	23.255	209.5	S20	3.850	2.519	1.106	Open Manhole	1350
6.001	14.638	375.3	S21	3.760	2.330	1.055	Open Manhole	1350
6.002	22.180	492.9	S23	3.600	2.210	0.940	Open Manhole	1200
7.000	13.279	301.8	S23	3.600	2.360	0.940	Open Manhole	1200
1.011	22.626	942.8	S24	3.200	1.886	0.564	Open Manhole	1200
1.012	5.646#	941.0	POND	3.100	1.880	0.470	Open Manhole	1800
1.013	3.969#	147.0	S25-HB	3.100	1.853	1.097	Open Manhole	1200
1.014	2.700	150.0	DITCH	3.000	1.835	1.015	Open Manhole	0

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Online Controls for Storm

Hydro-Brake Optimum® Manhole: S25-HB, DS/PN: 1.014, Volume (m³): 1.5

Unit Reference	MD-SHE-0103-5000-1200-5000
Design Head (m)	1.200
Design Flow (l/s)	5.0
Flush-Flo™	User Defined
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	103
Invert Level (m)	1.853
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)	1.200	5.0	Kick-Flo®	0.745	4.0
Flush-Flo™	0.354	5.0	Mean Flow over Head Range	-	4.4

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	3.4	0.800	4.1	2.000	6.3	4.000	8.8	7.000	11.5
0.200	4.7	1.000	4.6	2.200	6.6	4.500	9.3	7.500	11.8
0.300	5.0	1.200	5.0	2.400	6.9	5.000	9.8	8.000	12.2
0.400	5.0	1.400	5.4	2.600	7.2	5.500	10.2	8.500	12.6
0.500	4.9	1.600	5.7	3.000	7.7	6.000	10.7	9.000	12.9
0.600	4.7	1.800	6.0	3.500	8.3	6.500	11.1	9.500	13.3

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Storage Structures for Storm

Tank or Pond Manhole: POND, DS/PN: 1.013

Invert Level (m) 1.880

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	321.2	2.400	0.0	4.800	0.0	7.200	0.0	9.600	0.0
0.400	430.7	2.800	0.0	5.200	0.0	7.600	0.0	10.000	0.0
0.800	549.3	3.200	0.0	5.600	0.0	8.000	0.0		
1.200	677.0	3.600	0.0	6.000	0.0	8.400	0.0		
1.600	813.7	4.000	0.0	6.400	0.0	8.800	0.0		
2.000	0.0	4.400	0.0	6.800	0.0	9.200	0.0		

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

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Flow / Overflow (l/s)	Flow (l/s)		
1.000	S1	0.000	0.20		10.7	OK	
2.000	S2	0.000	0.12		5.9	OK	
1.001	S3	0.000	0.22		17.4	OK	
1.002	S4	0.000	0.17		20.5	OK	
3.000	S5	0.000	0.17		8.9	OK	
1.003	S6	0.000	0.36		31.3	OK	
1.004	S7	0.000	0.20		34.4	OK	
4.000	S8	0.000	0.16		9.1	OK	
1.005	S9	0.000	0.14		42.5	OK	
1.006	S10	0.000	0.22		45.9	OK	
1.007	S11	0.000	0.17		45.6	OK	
1.008	S12	0.000	0.24		46.9	OK	
5.000	S13	0.000	0.08		7.2	OK	
5.001	S14	0.000	0.15		13.4	OK	
5.002	S15	0.000	0.19		16.2	OK	
5.003	S16	0.000	0.11		22.5	OK	
1.009	S17	0.000	0.19		65.8	OK	
1.010	S18	0.000	0.20		68.7	OK	
6.000	S19	0.000	0.17		5.6	OK	
6.001	S20	0.000	0.20		14.8	OK	
6.002	S21	0.000	0.17		19.6	OK	
7.000	S22	0.000	0.17		8.9	OK	
1.011	S23	0.000	0.14		86.0	OK	
1.012	S24	0.000	0.25		84.4	OK	
1.013	POND	0.000	0.49		5.6	SURCHARGED	

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

									Water	Surcharged
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)
1.014	S25-HB	360 Summer	1	+0%	1/15 Summer				2.142	0.139

Flooded		Pipe		Level	
US/MH	Volume	Flow / Overflow	Flow	Exceeded	
PN	Name	(m ³)	Cap.	(l/s)	(l/s) Status
1.014	S25-HB	0.000	0.45	4.9	SURCHARGED

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

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Flow / (l/s)	Flow (l/s)		
1.000	S1	0.000	0.25		13.5	OK	
2.000	S2	0.000	0.15		7.5	OK	
1.001	S3	0.000	0.28		21.9	OK	
1.002	S4	0.000	0.22		25.9	OK	
3.000	S5	0.000	0.21		11.2	OK	
1.003	S6	0.000	0.45		39.3	OK	
1.004	S7	0.000	0.25		43.4	OK	
4.000	S8	0.000	0.20		11.5	OK	
1.005	S9	0.000	0.18		53.8	OK	
1.006	S10	0.000	0.27		57.5	OK	
1.007	S11	0.000	0.21		56.9	OK	
1.008	S12	0.000	0.30		58.3	OK	
5.000	S13	0.000	0.10		9.1	OK	
5.001	S14	0.000	0.19		16.6	OK	
5.002	S15	0.000	0.24		20.2	OK	
5.003	S16	0.000	0.14		27.7	OK	
1.009	S17	0.000	0.24		82.2	OK	
1.010	S18	0.000	0.26		86.0	OK	
6.000	S19	0.000	0.21		7.0	OK	
6.001	S20	0.000	0.26		18.7	OK	
6.002	S21	0.000	0.22		24.7	OK	
7.000	S22	0.000	0.22		11.2	OK	
1.011	S23	0.000	0.18		108.4	OK	
1.012	S24	0.000	0.09		30.8	OK	
1.013	POND	0.000	0.55		6.3	SURCHARGED	

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

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)
1.014	S25-HB	360	Summer	2	+0%	1/15	Summer		2.191	0.188

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.014	S25-HB	0.000	0.46		5.0	SURCHARGED	

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

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Flow / Overflow (l/s)	Flow (l/s)		
1.000	S1	0.000	0.61		33.3	OK	
2.000	S2	0.000	0.36		18.3	OK	
1.001	S3	0.000	0.69		54.3	OK	
1.002	S4	0.000	0.53		62.1	OK	
3.000	S5	0.000	0.49		26.5	OK	
1.003	S6	0.000	1.00		88.1	OK	
1.004	S7	0.000	0.58		101.9	OK	
4.000	S8	0.000	0.50		28.3	OK	
1.005	S9	0.000	0.40		120.5	OK	
1.006	S10	0.000	0.61		128.7	OK	
1.007	S11	0.000	0.47		125.8	OK	
1.008	S12	0.000	0.07		14.5	OK	
5.000	S13	0.000	0.24		22.4	OK	
5.001	S14	0.000	0.52		46.3	OK	
5.002	S15	0.000	0.65		56.0	OK	
5.003	S16	0.000	0.37		75.0	OK	
1.009	S17	0.000	0.06		20.4	OK	
1.010	S18	0.000	0.07		22.4	OK	
6.000	S19	0.000	0.53		17.2	OK	
6.001	S20	0.000	0.75		55.1	OK	
6.002	S21	0.000	0.65		72.9	OK	
7.000	S22	0.000	0.53		27.8	OK	
1.011	S23	0.000	0.05		31.7	OK	
1.012	S24	0.000	0.08		29.0	OK	
1.013	POND	0.000	0.55		6.2	SURCHARGED	

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

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)
1.014	S25-HB	360 Winter	30	+0%	1/15 Summer				2.502	0.499

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.014	S25-HB	0.000	0.46	5.0	SURCHARGED	

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

PN	US/MH Name	Flooded		Pipe	Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Flow (l/s)		
1.000	S1	0.000	1.15	62.4	FLOOD RISK	
2.000	S2	0.000	0.66	33.5	FLOOD RISK	
1.001	S3	0.000	1.29	101.6	FLOOD RISK	
1.002	S4	0.000	1.04	123.0	FLOOD RISK	
3.000	S5	0.000	0.97	52.1	FLOOD RISK	
1.003	S6	0.000	2.14	188.6	SURCHARGED	
1.004	S7	0.000	1.20	209.0	SURCHARGED	
4.000	S8	0.000	0.95	53.4	SURCHARGED	
1.005	S9	0.000	0.82	246.9	SURCHARGED	
1.006	S10	0.000	0.09	18.7	SURCHARGED	
1.007	S11	0.000	0.07	18.3	SURCHARGED	
1.008	S12	0.000	0.10	19.3	SURCHARGED	
5.000	S13	0.000	0.45	41.9	SURCHARGED	
5.001	S14	0.000	0.88	78.3	SURCHARGED	
5.002	S15	0.000	0.07	5.9	SURCHARGED	
5.003	S16	0.000	0.04	8.8	FLOOD RISK	
1.009	S17	0.000	0.08	27.2	SURCHARGED	
1.010	S18	0.000	0.09	29.7	SURCHARGED	
6.000	S19	0.000	0.05	1.7	SURCHARGED	
6.001	S20	0.000	0.08	5.5	SURCHARGED	
6.002	S21	0.000	0.06	7.1	SURCHARGED	
7.000	S22	0.000	0.05	2.7	SURCHARGED	
1.011	S23	0.000	0.07	41.9	SURCHARGED	
1.012	S24	0.000	0.12	41.8	FLOOD RISK	
1.013	POND	0.000	0.54	6.2	FLOOD RISK	

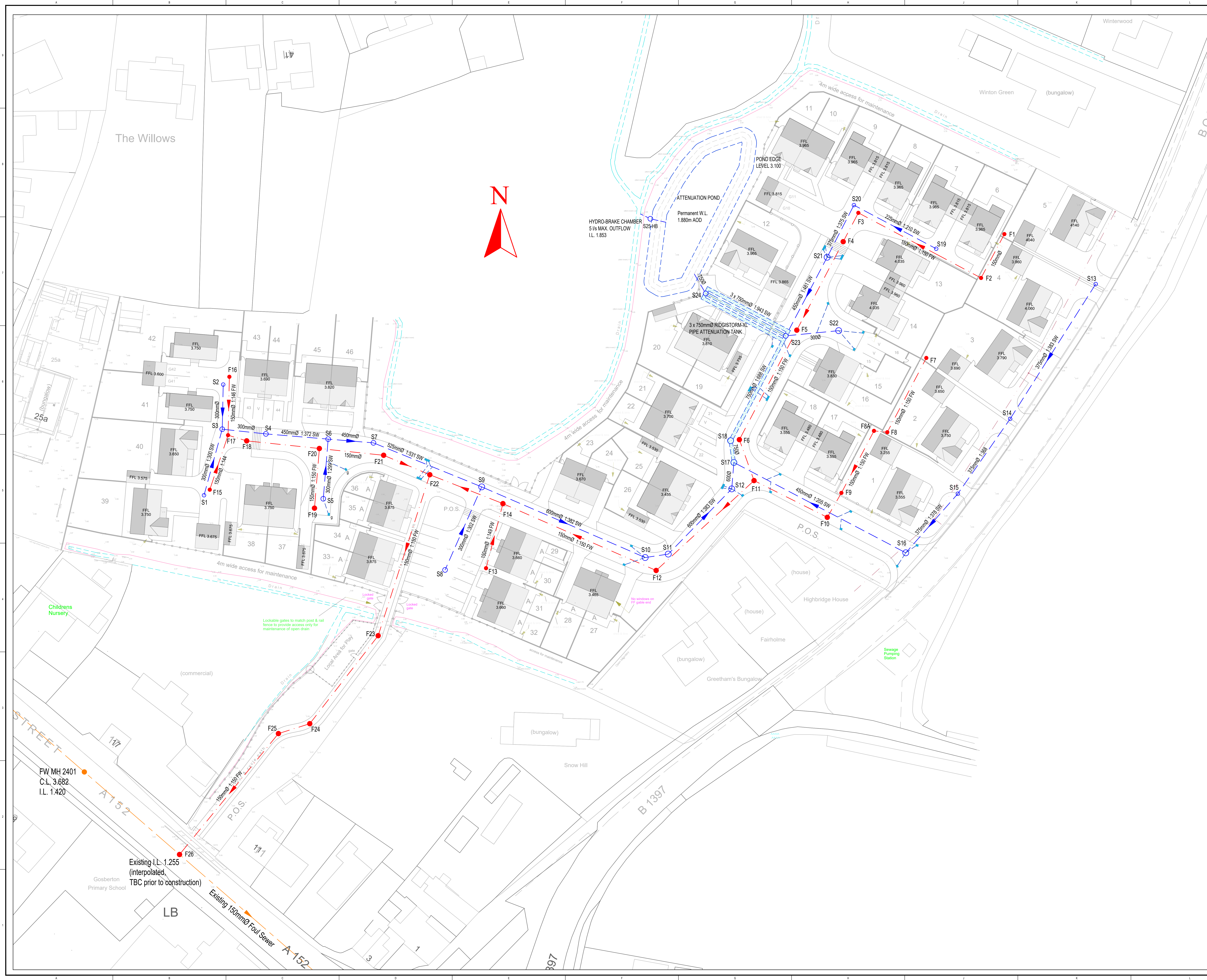
Ward & Cole		Page 19
Fosse House Roman Wharf Lincoln LN1 1SR	Residential Development High Street, Gosberton 10/5549	
Date 05/07/2021 File Surface Water Drainage.MDX	Designed by DM Checked by	
Micro Drainage		Network 2016.1

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

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)
1.014	S25-HB	720 Winter	100	+30%	1/15 Summer				2.987	0.984

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.014	S25-HB	0.000	0.46	5.0	FLOOD RISK	

Appendix D
Drainage Drawings



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- KEY**
- FOUL DRAINAGE
 - SURFACE WATER DRAINAGE
 - ROAD GULLY & 150mmØ DRAIN

- NOTES**
1. PROPOSED ADOPTABLE DRAINAGE WILL BE SUBJECT TO S104 AGREEMENT WITH SEVERN TRENT WATER.
 2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS' AND ARCHITECTS' DRAWINGS.
 3. THE DRAINAGE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE SEWERAGE SECTOR GUIDANCE (APRIL 2020), THE CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY (7TH EDITION), THE BUILDING REGULATIONS AND ANGLIAN WATER REQUIREMENTS.
 4. PREFABRICATED DRAINAGE COMPONENTS (e.g. PIPE ATTENUATION) ARE TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DRAWINGS, SPECIFICATIONS AND INSTRUCTIONS.
 5. UNLESS OTHERWISE INDICATED ROOF WATER DRAINAGE WITHIN PLOTS AND HOUSE FOUL CONNECTIONS ARE TO BE 100mmØ LAID AT 1:80 MINIMUM FALLS.
 6. ALL ROAD GULLY DRAINS TO BE 150mmØ AND ENCASED IN 150mm CONCRETE SURROUND AT JUNCTION WITH MAIN SEWER.

rev	date	description	drawn	checked
A	08.07.21	Updated to suit revised site layout plan.	DM	SLB
	05.07.21	First issue.	DM	SLB

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project:
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drawing title:
Proposed Drainage Layout

scale:
1:300 (A0)

status:
Planning

job number:
10-5549

drawing number:
500

revision:
A

job number: 10-5549	drawing number: 501	revision: 1
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FOUL MANHOLE SCHEDULE

Manhole Number	Cover Level	Connections	Pipe			Manhole Size	Types	
			Code	Inverts	Dimensions		Manhole	Cover
F1	3.992 E. 384496.690 N. 336456.613		0	1.000 3.492	150	450	E	A15
F2	3.999 E. 384488.807 N. 336394.665		0	1.001 3.499	150	450	D	A15
F3	3.850 E. 384454.828 N. 336468.935		0	1.002 3.377	150	450	D	3400
F4	3.880 E. 384458.136 N. 336653.782		0	1.003 3.380	150	450	D	3400
F5	3.630 E. 384438.825 N. 336386.620		0	1.004 3.130	150	1350	C	3400
F6	3.400 E. 384484.831 N. 336394.679		0	1.005 2.749	150	1350	C	3400
F7	3.406 E. 384471.896 N. 336374.666		0	0.800 3.246	150	450	E	A15
F8	3.600 E. 384461.449 N. 336394.682		0	0.801 3.300	150	450	E	A15
F8A	3.500 E. 384458.829 N. 336394.669		0	0.802 2.977	150	450	E	A15
F9	3.500 E. 384449.935 N. 336344.976		0	0.802 2.860	150	450	E	B125
F10	3.364 E. 384446.668 N. 336344.871		0	0.803 2.863	150	450	D	3400
F11	3.318 E. 384438.174 N. 336344.849		0	1.006 2.676	150	1350	C	3400
F12	3.300 E. 384463.728 N. 336382.996		0	1.007 2.454	150	1350	C	3400
F13	3.400 E. 384461.071 N. 336382.968		0	3.000 2.897	150	450	D	3400
F14	3.310 E. 384365.448 N. 336338.974		0	1.008 2.375	150	1350	C	3400
F15	3.600 E. 384392.881 N. 336344.771		0	4.000 2.495	150	450	E	3400
F16	3.600 E. 384397.054 N. 336356.976		0	5.000 2.495	150	450	E	3400
F17	3.300 E. 384394.888 N. 336355.386		0	4.001 2.395	150	450	D	3400
F18	3.450 E. 384381.482 N. 336353.970		0	4.001 2.358	150	450	D	3400
F19	3.400 E. 384318.407 N. 336337.126		0	6.000 2.336	150	450	E	3400
F20	3.500 E. 384303.607 N. 336302.899		0	4.003 2.236	150	1350	C	3400
F21	3.590 E. 384335.660 N. 336302.369		0	4.004 2.228	150	1350	D	3400
F22	3.600 E. 384347.803 N. 336343.915		0	1.009 2.244	150	1350	C	3400
F23	2.500 E. 384324.331 N. 336305.498		0	1.009 1.762	150	1350	C	3400
F24	2.400 E. 384312.039 N. 336483.381		0	1.011 1.576	150	1350	C	3400
F25	2.300 E. 384309.407 N. 336486.674		0	1.002 1.382	150	1350	C	3400
F26	2.600 E. 384389.798 N. 336495.648		0	1.003 1.255	150	1350	D	3400

SURFACE WATER MANHOLE SCHEDULE

Manhole Number	Cover Level	Connections	Pipe			Manhole Size	Types	
			Code	Inverts	Dimensions		Manhole	Cover
S1	3.600 E. 384496.692 N. 336461.384		0	1.000 2.737	300	600	D	3400
S2	3.600 E. 384495.618 N. 336368.829		0	2.000 2.737	300	600	D	3400
S3	3.500 E. 384495.369 N. 336356.688		0	2.000 2.680	300	1350	C	3400
S4	3.400 E. 384386.279 N. 336395.795		0	1.001 2.593	300	1350	C	3400
S5	3.450 E. 384386.647 N. 336379.312		0	2.000 2.626	300	1350	C	3400
S6	3.530 E. 384381.887 N. 336354.410		0	1.003 2.486	450	1350	C	3400
S7	3.370 E. 384393.330 N. 336353.659		0	1.004 2.361	585	900 1125	CI	3400
S8	3.400 E. 384381.816 N. 336381.726		0	4.000 2.546	300	1350	C	3400
S9	3.550 E. 384364.647 N. 336342.482		0	1.005 2.371	600	900 1025	CI	3400
S10	3.380 E. 384406.989 N. 336342.827		0	1.006 2.225	600	900 1025	CI	3400
S11	3.310 E. 384406.754 N. 336325.688		0	1.007 2.040	600	900 1025	CI	3400
S12	3.360 E. 384402.685 N. 336341.976		0	1.007 1.981	600	900 1025	CI	3400
S13	3.700 E. 384353.497 N. 336395.141		0	5.000 2.493	275	1350	C	A15
S14	3.300 E. 384492.120 N. 336359.449		0	5.000 2.389	275	1350	C	C250
S15	3.400 E. 384479.979 N. 336363.776		0	5.000 2.387	275	1350	C	C250
S16	3.670 E. 384466.964 N. 336363.699		0	5.000 2.275	275	1350	C	3400
S17	3.400 E. 384483.320 N. 336348.974		0	1.009 1.963	750	1050	PF	3400
S18	3.400 E. 384482.381 N. 336354.884		0	1.009 1.953	750	1050	PF	3400
S19	3.000 E. 384475.643 N. 336481.983		0	6.000 2.630	825	600	D	3400
S20	3.650 E. 384493.117 N. 336483.897		0	6.000 2.369	275	1350	C	3400
S21	3.760 E. 384446.428 N. 336395.827		0	6.000 2.235	450	1350	C	3400
S22	3.550 E. 384449.264 N. 336381.499		0	7.000 2.484	300	600	D	3400
S23	3.600 E. 384436.185 N. 336386.839		0	1.001 2.281	280	1050	PF	3400
S24	3.200 E. 384464.015 N. 336396.782		0	1.003 1.886	750	1050	PF	3400
S25-HB	3.100 E. 384482.284 N. 336469.428		0	1.004 1.853	150	1050	VORTEX FLUM CENTRE CHAMBER	3400
OUTFALL	3.000 E. 384399.888 N. 336463.888		0	1.004 1.853	150			

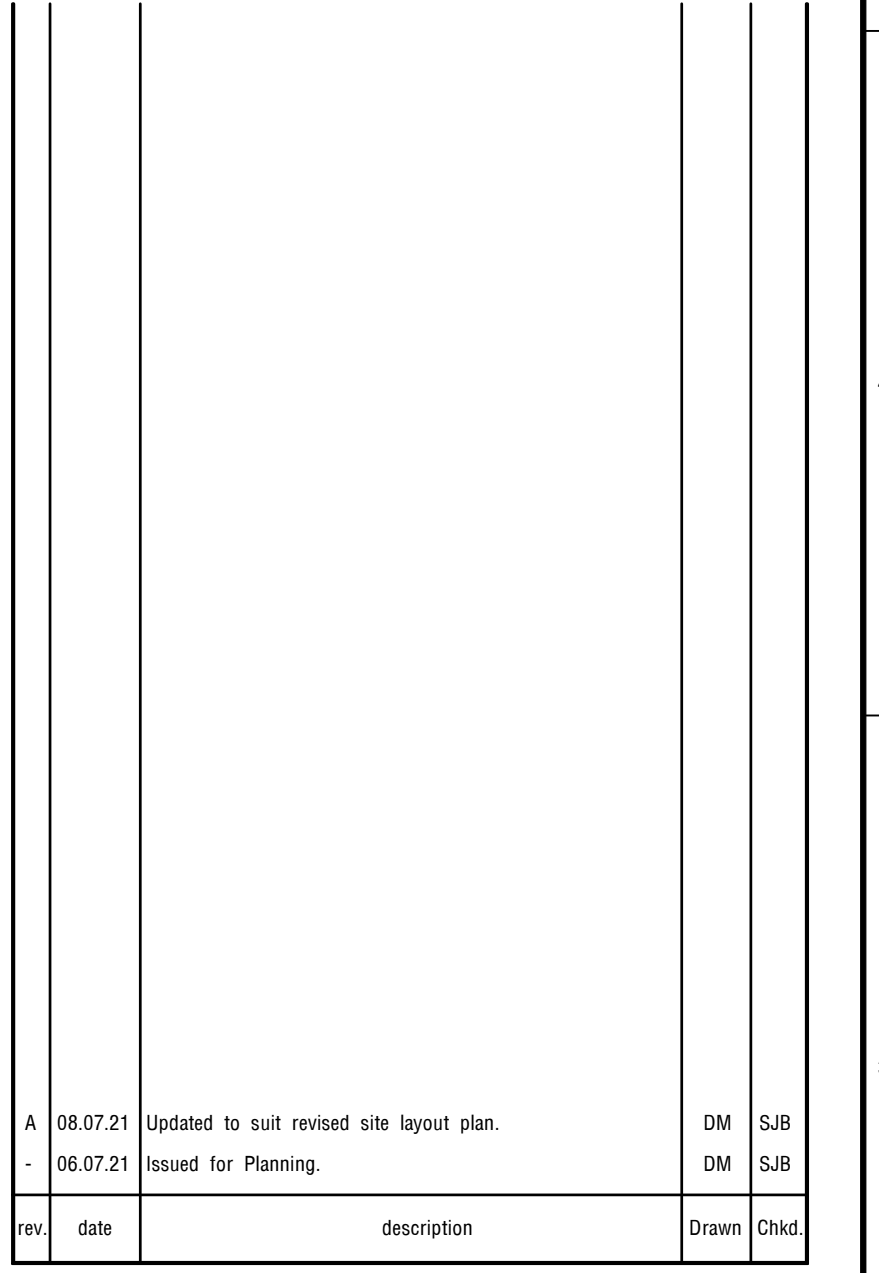
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NOTES

- THIS DRAWING SHOULD BE READ TOGETHER WITH THE DESIGN & CONSTRUCTION GUIDANCE (DCG) (APPENDIX C OF THE SEWERAGE SECTOR GUIDANCE, APRIL 2020).
- MANHOLES TYPE C1 ARE A SITE-SPECIFIC SOLUTION IN ACCORDANCE WITH FIGURE B3 IN THE DCG. THE DETAIL IS BASED ON ANGLIAN WATER'S FORMER TYPE D TYPICAL MANHOLE DETAIL. MANHOLES TYPE PF ARE TO BE INTEGRALLY FABRICATED IN THE PIPE ATTENUATION STRUCTURES.

rev.	date	Description	Drawn	Chk.
A	08.07.2021	Foul schedule updated to suit revised site layout plan.	DM	SJB
-	06.07.2021	First issue.	DM	SJB

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project: Residential Development Boston Road, Gosberton Lincolnshire		
drawing title: Manhole Schedules		
scale: N.T.S.	status: Planning	
job number: 10-5549	drawing number: 502	revision: A



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