

Report Title**Drainage Report****Property Address**

Proposed Depot Construction
Cleator Mills
Mill Street
Cleator
Cumbria
CA23 3FA

Client

Cleator Mills Business Park Ltd

Our Reference

23-406r004

Date

December 2023

Prepared by

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Contents

Introduction	1
The Site	2
Historic Usage	2
Existing Foul Network	3
Existing Site Drainage	3
Hydraulic Design	3
Surface Water Drainage	3
Detailed Engineering	4
Appendices	5
Drawings	5
Design Report	5

Introduction

The purpose of this report is to present the detailed drainage design for a planning application associated with the development of a depot and associated infrastructure on land at Cleator Mills, Mill Street, Cleator, Cumbria, CA23 3FA. The site lies within the administrative boundary of Cumberland Council (CC) and is currently subject to a planning application ref 4/22/2364/0F1.

Research has been undertaken on the site and observations made regarding the existing site and the drainage servicing the site.

Calculations associated with the drainage have been performed by software packages from a recognised resource. Where appropriate copies of calculations are provided in the Appendices of this report.

The Site

Historic Usage

The area of the proposed development has historically been developed and has been the site of the former Kangol factory. Elements of the factory remain and include elements of drainage and Infrastructure with limited maintenance being undertaken on the site.

Some elements of the factory have been demolished and investigations have taken place as to the remaining below ground services and drainage.

Existing Foul Network

A private sewer system is located on the site servicing the properties which discharges to the United Utilities foul drainage system located on the site boundary.

Existing Site Drainage

The site has natural drainage and has been tested during the planning phase on the site. A preliminary drainage strategy has been used as part of the planning application process and this detailed design follows the agreed strategy.

Hydraulic Design

Surface Water Drainage

Principally the surface water drainage has been calculated on the impermeable areas of the development.

Modelling has been conducted on the following rainfall events:

- 1 in 10 years
- 1 in 30 years
- 1 in 100 years plus 50 % increase due to climate change over a 6 hour period

An assessment of the proposed network has been undertaken to identify the requirements of each property and requirements for the natural percolation of water to soakaway on the site to ensure that runoff from the site does not flood.

The following parameters were adopted in the analysis. These were obtained from UK SUDS based on the site location and data held by HR Wallingford.

Simulation Settings																							
Rainfall Methodology		FSR		Summer CV		0.750		Drain Down Time (mins)		240													
FSR Region		England and Wales		Winter CV		0.840		Additional Storage (m³/ha)		0.0													
M5-60 (mm)		20.000		Analysis Speed		Normal		Check Discharge Rate(s)		x													
Ratio-R		0.300		Skip Steady State		x		Check Discharge Volume		x													
Storm Durations																							
15		30		60		120		180		240		360		480		600		720		960		1440	
Return Period (years)	Climate Change (CC %)	Additional Area (A %)		Additional Flow (Q %)		Return Period (years)	Climate Change (CC %)	Additional Area (A %)		Additional Flow (Q %)													
10	0	0		0		100	50	0		0													
30	0	0		0																			

The following rates and volumes have been calculated for the predevelopment discharge and volumes from the site.

Detailed Engineering

The detailed model presented in this report adopts the following engineering aspects specific to the site.

Stage 2 Interceptor

It is proposed that a stage 2 oil interceptor shall be placed to control runoff from the rear compound of the site and intercept oil on the outfall before entering the soakaway.

Soakaways

Soakways in the form of granular pits has been designed to accommodate peak flows from the development and , prevent flooding occurring within and outside the site.

Node 4a Soakaway Storage Structure

BRE-365: Volume (m ³)	0.320	Base Inf Coefficient (m/hr)	4.00000	Invert Level (m)	56.000	Depth (m)	1.200
BRE-365: Area (m ²)	0.800	Side Inf Coefficient (m/hr)	4.00000	Time to half empty (mins)	4	Inf Depth (m)	
BRE-365: Time (hrs)	0.100	Safety Factor	1.5	Pit Width (m)	14.000	Number Required	1
BRE-365: Inf Coef (m/hr)	4.00000	Porosity	0.40	Pit Length (m)	8.000		

Node 14a Soakaway Storage Structure

Base Inf Coefficient (m/hr)	4.00000	Porosity	0.40	Pit Width (m)	3.000	Inf Depth (m)	
Side Inf Coefficient (m/hr)	4.00000	Invert Level (m)	57.500	Pit Length (m)	3.000	Number Required	1
Safety Factor	1.5	Time to half empty (mins)	3	Depth (m)	1.200		

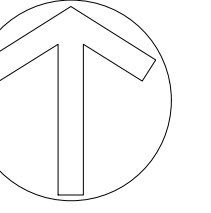
Appendices

Drawings

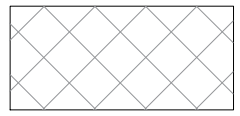
23-406 DWG100 - SITE LAYOUT

23-406 DWG101 - DRAINAGE PLAN

23-406 DWG103 - DRAINAGE MANHOLE AND PIPE SCHEDULE



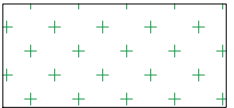
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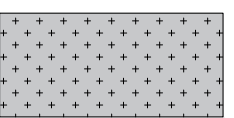
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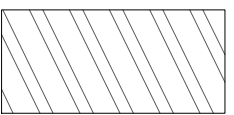
NEW CONCRETE YARD



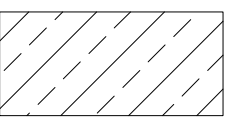
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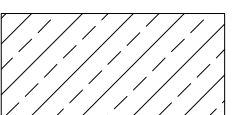
PRIVATE FOOTWAY



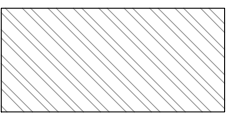
CAR PARKING



NEW ENTRANCE (HGV)



NEW ROAD CONSTRUCTION



PUBLIC FOOTWAY



SECURITY FENCE

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CLIENT

PROJECT
CLEATOR MILLS PHASE 1
CLEATOR MOOR, CA23 3FA

TITLE
OVERALL SITE LAYOUT

SCALE
AS NOTED

STATUS
FOR BUILDING CONTROL

PAPER SIZE
A1

DRAWN BY
J GEMMELL

CHECKED AND APPROVED
C AIMERS

PROJECT PHASE
BUILD

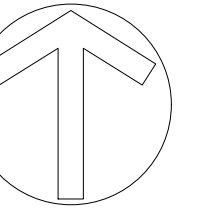
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NOVEMBER 2023

DATE
NOVEMBER 2023

DRAWING NUMBER
23-406-DWG100

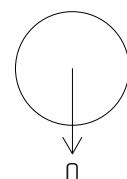
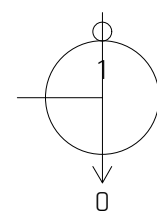
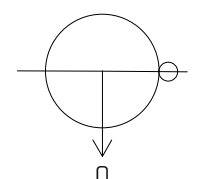
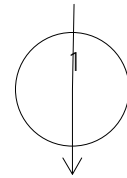
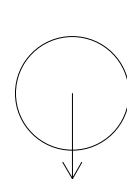
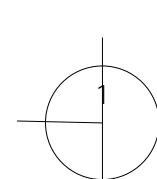
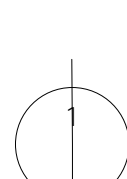
REVISION
B

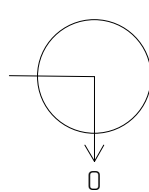
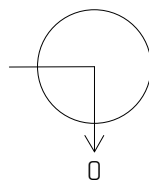
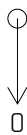
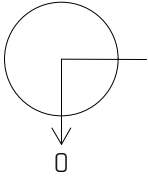
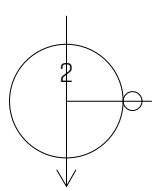
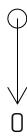
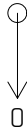
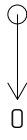
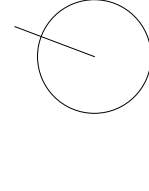
PLAN
SCALE 1:200



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PROJECT CLEATOR MILLS PHASE 1 CLEATOR MOOR, CA23 3FA			
TITLE SITE LAYOUT OVERALL DRAINAGE PLAN			
SCALE AS NOTED		STATUS FOR BUILDING CONTROL	
PAPER SIZE A1		DRAWN BY J GEMMELL	CHECKED AND APPROVED C AIMERS
PROJECT PHASE BUILD		DATE NOVEMBER 2023	DATE NOVEMBER 2023
DRAWING NUMBER 23-406-DWG101			REVISION B

Manhole Number	Cover Level	Connections	Pipe				Manhole Size	Types	
	Depth To Soffit		Code		Inverts	Diams		Manhole	Cover
S1	59.600		0	4.000	58.850	150	1050	Unknown	B125
E. 513480.974 N. 302164.263	0.600								
S2	59.800		1 2	3.005 3.005	57.728 57.983	150 150	1050	Unknown	D400
E. 513464.653 N. 302170.355	1.667								
S3			1 0	3.004 3.005	58.022 58.022	150 150		JUNCTION	
E. 513466.002 N. 302173.949									
S4	59.900		1 2	3.005 1.002	57.771 57.138	150 150	1050	Unknown	D400
E. 513461.173 N. 302171.651	2.612								
S5			1 0	3.003 3.004	58.293 58.293	150 150		JUNCTION	
E. 513471.663 N. 302189.043									
S6			1 0	3.002 3.003	58.574 58.574	150 150		JUNCTION	
E. 513477.530 N. 302204.682									
S7			1 0	3.001 3.002	58.800 58.800	150 150		JUNCTION	
E. 513482.240 N. 302217.239									
S8	59.930		1 0	3.000 3.001	58.860 58.860	150 150	1050	Unknown	D400
E. 513483.471 N. 302220.571	0.920								
S9	59.920		0	6.000	59.170	150	1050	Unknown	C250
E. 513501.218 N. 302186.955	0.600								
S10	59.900		1 2	5.001 6.000	58.903 58.903	150 150	1050	Unknown	C250
E. 513492.780 N. 302190.337	0.847								
S11			1 0	5.002 5.003	58.798 58.798	150 150		JUNCTION	
E. 513496.501 N. 302200.175									
S12			1 0	5.003 5.004	58.687 58.687	150 150		JUNCTION	
E. 513500.454 N. 302210.594									
S13	60.000		1 0	5.004 5.005	58.653 58.653	150 150	1050	Unknown	C250
E. 513501.664 N. 302213.750	1.197								

Manhole Number		Cover Level	Connections	Pipe			Manhole Size	Types			
Coordinates		Depth To Soffit		Code	Inverts	Diams		Manhole	Cover		
S14		60.000 1.275			1	5.005	58.575	150	1050	Unknown	C250
E.	513504.502		0	5.006	58.575	150					
N.	302221.018										
S15		59.920 0.707			1	5.000	59.063	150	1050	Unknown	C250
E.	513489.402		0	5.001	59.063	150					
N.	302181.435										
S16										JUNCTION	
E.	513458.355		0	1.000	59.050	150					
N.	302258.608										
S17		59.800 1.953			1	1.000	57.697	150	1050	Unknown	D400
E.	513430.055		0	1.001	57.697	150					
N.	302183.243										
S18		59.800 2.341			1 2	2.002 1.001	57.945 57.309	150 150	1050	Unknown	D400
E.	513451.686		0	1.002	57.309	150					
N.	302175.185										
S19					1	2.001	58.212	150		JUNCTION	
E.	513457.227		0	2.002	58.212	150					
N.	302190.059										
S20										JUNCTION	
E.	513476.409		0	2.000	59.180	150					
N.	302244.262										
S21					1	2.000	58.590	150		JUNCTION	
E.	513465.382		0	2.001	58.590	150					
N.	302210.977										
S22										JUNCTION	
E.	513490.431		0	3.000	59.180	150					
N.	302238.272										
S23										JUNCTION	
E.	513495.356		0	5.000	59.170	150					
N.	302179.212										
S14a		60.000 1.295			1	5.006	58.555	150	300	Unknown	Unspec
E.	513506.361										
N.	302220.316										
S4a					1	1.003	57.084	150		JUNCTION	
E.	513459.331										
N.	302166.603										

STORM Network 1									
Pipe Code	Diameter (mm)	Gradient (1:)	Pipe Length	Number	Upstream Manhole Invert	Cover	Number	Downstream Manhole Invert	Cover
1.000	150	59	80.503	S16	59.050		S17	57.697	59.800
1.001	150	59	23.083	S17	57.697	59.800	S18	57.309	59.800
1.002	150	59	10.124	S18	57.309	59.800	S4	57.138	59.900
1.003	150	100	5.374	S4	57.138	59.900	S4a	57.084	
2.000	150	59	35.064	S20	59.180		S21	58.590	
2.001	150	59	22.451	S21	58.590		S19	58.212	
2.002	150	59	15.873	S19	58.212		S18	57.945	59.800
3.000	150	59	19.020	S22	59.180		S8	58.860	59.930
3.001	150	59	3.552	S8	58.860	59.930	S7	58.800	
3.002	150	59	13.411	S7	58.800		S6	58.574	
3.003	150	59	16.703	S6	58.574		S5	58.293	
3.004	150	59	16.121	S5	58.293		S3	58.022	
3.005	150	98	3.899	S3	58.022		S2	57.983	59.800
3.006	150	18	3.713	S2	57.983	59.800	S4	57.771	59.900
4.000	150	143	17.421	S1	58.850	59.600	S2	58.728	59.800
5.000	150	59	6.355	S23	59.170		S15	59.063	59.920
5.001	150	60	9.521	S15	59.063	59.920	S10	58.903	59.900
5.002	150	100	10.518	S10	58.903	59.900	S11	58.798	
5.003	150	100	11.144	S11	58.798		S12	58.687	
5.004	150	99	3.380	S12	58.687		S13	58.653	60.000
5.005	150	100	7.802	S13	58.653	60.000	S14	58.575	60.000
5.006	150	99	1.987	S14	58.575	60.000	S14a	58.555	60.000
6.000	150	34	9.091	S9	59.170	59.920	S10	58.903	59.900

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PROJECT

CLEATOR MILLS PHASE 1
CLEATOR MOOR CA23 3FA

TITLE

MANHOLE AND DRAINAGE
SCHEDULE

SCALE

AS NOTED

STATUS

FOR BUILDING CONTROL

PAPER SIZE

A1

DRAWN BY

J GEMMELL

CHECKED AND APPROVED

C AIMERS

PROJECT PHASE

BUILD

DATE

NOV 2023

DATE

NOV 2023

DRAWING NUMBER

23-406-DWG103

REVISION

B

Design Report

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	0.600
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.006	4.00	59.600	1050	513480.974	302164.263	0.750
2			59.800	1050	513464.653	302170.355	1.817
3			59.850	1050	513466.002	302173.949	1.828
4			59.900		513461.173	302171.651	2.762
4a	59.900	513459.331	302166.603		2.816		
5	0.012	4.00	59.930		513471.663	302189.043	1.637
6	0.013	4.00	59.940		513477.530	302204.682	1.366
7	0.007	4.00	59.940		513482.240	302217.239	1.140
8	0.005	4.00	59.930	1050	513483.471	302220.571	1.070
9	0.007	4.00	59.920	1050	513501.218	302186.955	0.750
10	0.035	4.00	59.900	1050	513492.780	302190.337	0.997
11			59.930	513496.501	302200.175	1.132	
12			59.930	513500.454	302210.594	1.243	
13			60.000	1050	513501.664	302213.750	1.347
14	0.012	4.00	60.000	1050	513504.502	302221.018	1.425
14a			60.000	300	513506.361	302220.316	1.445
15			59.920	1050	513489.402	302181.435	0.857
16			59.800	513458.355	302258.608	0.750	
17	0.005	4.00	59.800	1050	513430.055	302183.243	2.103
18	0.005	4.00	59.800	1050	513451.686	302175.185	2.491
19	0.010	4.00	59.800	1050	513457.227	302190.059	1.588
20			59.930		513476.409	302244.262	0.750
21			59.930		513465.382	302210.977	1.340
22			4.00		59.930	513490.431	302238.272
23		4.00	59.920		513495.356	302179.212	0.750

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
4.000	1	2	17.421	0.600	58.850	58.728	0.122	142.8	150	4.35	50.0
3.006	2	4	3.713	0.600	57.983	57.771	0.212	17.5	150	4.97	50.0
3.001	8	7	3.552	0.600	58.860	58.800	0.060	59.2	150	4.29	50.0
3.002	7	6	13.411	0.600	58.800	58.574	0.226	59.3	150	4.46	50.0
3.003	6	5	16.703	0.600	58.574	58.293	0.281	59.4	150	4.67	50.0
3.004	5	3	16.121	0.600	58.293	58.022	0.271	59.5	150	4.88	50.0
3.005	3	2	3.839	0.600	58.022	57.983	0.039	98.4	150	4.94	50.0
6.000	9	10	9.091	0.600	59.170	58.903	0.267	34.0	150	4.09	50.0
5.002	10	11	10.518	0.600	58.903	58.798	0.105	100.2	150	4.38	50.0
5.003	11	12	11.144	0.600	58.798	58.687	0.111	100.4	150	4.56	50.0
5.004	12	13	3.380	0.600	58.687	58.653	0.034	99.4	150	4.62	50.0
5.005	13	14	7.802	0.600	58.653	58.575	0.078	100.0	150	4.75	50.0
1.003	4	4a	5.374	0.600	57.138	57.084	0.054	99.5	150	5.54	50.0
5.006	14	14a	1.987	0.600	58.575	58.555	0.020	99.4	150	4.78	50.0
5.000	23	15	6.355	0.600	59.170	59.063	0.107	59.4	150	4.08	50.0
5.001	15	10	9.521	0.600	59.063	58.903	0.160	59.5	150	4.20	50.0
1.000	16	17	80.503	0.600	59.050	57.697	1.353	59.5	150	5.03	50.0
1.001	17	18	23.083	0.600	57.697	57.309	0.388	59.5	150	5.32	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	0.839	14.8	1.1	0.600	0.922	0.006	0.0	28	0.499
3.006	2.418	42.7	9.7	1.667	1.979	0.051	0.0	48	1.959
3.001	1.309	23.1	0.9	0.920	0.990	0.005	0.0	21	0.644
3.002	1.308	23.1	2.3	0.990	1.216	0.012	0.0	32	0.837
3.003	1.307	23.1	4.7	1.216	1.487	0.025	0.0	46	1.030
3.004	1.306	23.1	7.0	1.487	1.678	0.037	0.0	57	1.147
3.005	1.013	17.9	8.5	1.678	1.667	0.045	0.0	73	1.001
6.000	1.731	30.6	1.3	0.600	0.847	0.007	0.0	21	0.868
5.002	1.004	17.7	8.0	0.847	0.982	0.042	0.0	71	0.978
5.003	1.003	17.7	8.0	0.982	1.093	0.042	0.0	71	0.977
5.004	1.008	17.8	8.0	1.093	1.197	0.042	0.0	70	0.978
5.005	1.004	17.7	8.0	1.197	1.275	0.042	0.0	71	0.979
1.003	1.007	17.8	15.7	2.612	2.666	0.083	0.0	110	1.134
5.006	1.008	17.8	8.0	1.275	1.295	0.042	0.0	70	0.979
5.000	1.307	23.1	0.0	0.600	0.707	0.000	0.0	0	0.000
5.001	1.306	23.1	0.0	0.707	0.847	0.000	0.0	0	0.000
1.000	1.306	23.1	2.3	0.600	1.953	0.012	0.0	32	0.836
1.001	1.306	23.1	3.2	1.953	2.341	0.017	0.0	38	0.923

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.002	18	4	10.124	0.600	57.309	57.138	0.171	59.2	150	5.45	50.0
2.000	20	21	35.064	0.600	59.180	58.590	0.590	59.4	150	4.45	50.0
2.001	21	19	22.451	0.600	58.590	58.212	0.378	59.4	150	4.73	50.0
2.002	19	18	15.873	0.600	58.212	57.945	0.267	59.4	150	4.94	50.0
3.000	22	8	19.020	0.600	59.180	58.860	0.320	59.4	150	4.24	50.0

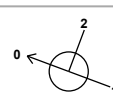
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.002	1.309	23.1	6.1	2.341	2.612	0.032	0.0	52	1.106
2.000	1.307	23.1	0.0	0.600	1.190	0.000	0.0	0	0.000
2.001	1.307	23.1	0.0	1.190	1.438	0.000	0.0	0	0.000
2.002	1.307	23.1	1.9	1.438	1.705	0.010	0.0	29	0.790
3.000	1.307	23.1	0.0	0.600	0.920	0.000	0.0	0	0.000

Pipeline Schedule

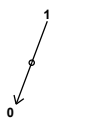
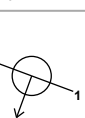
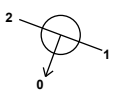
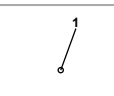
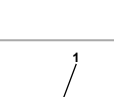
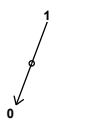
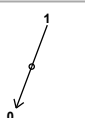
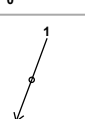
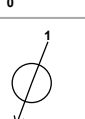
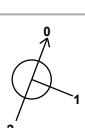
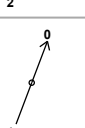
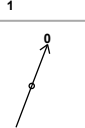
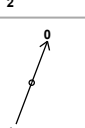
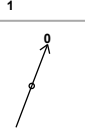
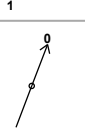
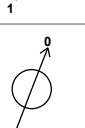
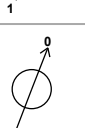
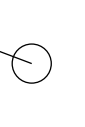
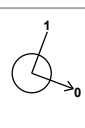
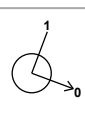
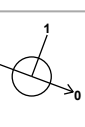
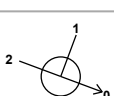
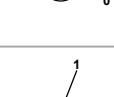
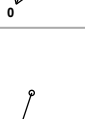
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.000	17.421	142.8	150	Circular	59.600	58.850	0.600	59.800	58.728	0.922
3.006	3.713	17.5	150	Circular	59.800	57.983	1.667	59.900	57.771	1.979
3.001	3.552	59.2	150	Circular	59.930	58.860	0.920	59.940	58.800	0.990
3.002	13.411	59.3	150	Circular	59.940	58.800	0.990	59.940	58.574	1.216
3.003	16.703	59.4	150	Circular	59.940	58.574	1.216	59.930	58.293	1.487
3.004	16.121	59.5	150	Circular	59.930	58.293	1.487	59.850	58.022	1.678
3.005	3.839	98.4	150	Circular	59.850	58.022	1.678	59.800	57.983	1.667
6.000	9.091	34.0	150	Circular	59.920	59.170	0.600	59.900	58.903	0.847
5.002	10.518	100.2	150	Circular	59.900	58.903	0.847	59.930	58.798	0.982
5.003	11.144	100.4	150	Circular	59.930	58.798	0.982	59.930	58.687	1.093
5.004	3.380	99.4	150	Circular	59.930	58.687	1.093	60.000	58.653	1.197
5.005	7.802	100.0	150	Circular	60.000	58.653	1.197	60.000	58.575	1.275
1.003	5.374	99.5	150	Circular	59.900	57.138	2.612	59.900	57.084	2.666
5.006	1.987	99.4	150	Circular	60.000	58.575	1.275	60.000	58.555	1.295
5.000	6.355	59.4	150	Circular	59.920	59.170	0.600	59.920	59.063	0.707
5.001	9.521	59.5	150	Circular	59.920	59.063	0.707	59.900	58.903	0.847
1.000	80.503	59.5	150	Circular	59.800	59.050	0.600	59.800	57.697	1.953
1.001	23.083	59.5	150	Circular	59.800	57.697	1.953	59.800	57.309	2.341
1.002	10.124	59.2	150	Circular	59.800	57.309	2.341	59.900	57.138	2.612
2.000	35.064	59.4	150	Circular	59.930	59.180	0.600	59.930	58.590	1.190
2.001	22.451	59.4	150	Circular	59.930	58.590	1.190	59.800	58.212	1.438
2.002	15.873	59.4	150	Circular	59.800	58.212	1.438	59.800	57.945	1.705
3.000	19.020	59.4	150	Circular	59.930	59.180	0.600	59.930	58.860	0.920

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.000	1	1050	Manhole	Adoptable	2	1050	Manhole	Adoptable
3.006	2	1050	Manhole	Adoptable	4	1050	Manhole	Adoptable
3.001	8	1050	Manhole	Adoptable	7		Junction	
3.002	7		Junction		6		Junction	
3.003	6		Junction		5		Junction	
3.004	5		Junction		3		Junction	
3.005	3		Junction		2	1050	Manhole	Adoptable
6.000	9	1050	Manhole	Adoptable	10	1050	Manhole	Adoptable
5.002	10	1050	Manhole	Adoptable	11		Junction	
5.003	11		Junction		12		Junction	
5.004	12		Junction		13	1050	Manhole	Adoptable
5.005	13	1050	Manhole	Adoptable	14	1050	Manhole	Adoptable
1.003	4	1050	Manhole	Adoptable	4a		Junction	
5.006	14	1050	Manhole	Adoptable	14a	300	Manhole	Adoptable
5.000	23		Junction		15	1050	Manhole	Adoptable
5.001	15	1050	Manhole	Adoptable	10	1050	Manhole	Adoptable
1.000	16		Junction		17	1050	Manhole	Adoptable
1.001	17	1050	Manhole	Adoptable	18	1050	Manhole	Adoptable
1.002	18	1050	Manhole	Adoptable	4	1050	Manhole	Adoptable
2.000	20		Junction		21		Junction	
2.001	21		Junction		19		Junction	
2.002	19		Junction		18	1050	Manhole	Adoptable
3.000	22		Junction		8	1050	Manhole	Adoptable

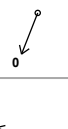
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	513480.974	302164.263	59.600	0.750	1050				
						0	4.000	58.850	150
2	513464.653	302170.355	59.800	1.817	1050		1	4.000	58.728
						2	3.005	57.983	150
						0	3.006	57.983	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
3	513466.002	302173.949	59.850	1.828			1	3.004	58.022	150
							0	3.005	58.022	150
4	513461.173	302171.651	59.900	2.762	1050		1	3.006	57.771	150
							2	1.002	57.138	150
							0	1.003	57.138	150
4a	513459.331	302166.603	59.900	2.816			1	1.003	57.084	150
5	513471.663	302189.043	59.930	1.637			1	3.003	58.293	150
							0	3.004	58.293	150
6	513477.530	302204.682	59.940	1.366			1	3.002	58.574	150
							0	3.003	58.574	150
7	513482.240	302217.239	59.940	1.140			1	3.001	58.800	150
							0	3.002	58.800	150
8	513483.471	302220.571	59.930	1.070	1050		1	3.000	58.860	150
							0	3.001	58.860	150
9	513501.218	302186.955	59.920	0.750	1050					
							0	6.000	59.170	150
10	513492.780	302190.337	59.900	0.997	1050		1	6.000	58.903	150
							2	5.001	58.903	150
							0	5.002	58.903	150
11	513496.501	302200.175	59.930	1.132			1	5.002	58.798	150
							0	5.003	58.798	150
12	513500.454	302210.594	59.930	1.243			1	5.003	58.687	150
							0	5.004	58.687	150
13	513501.664	302213.750	60.000	1.347	1050		1	5.004	58.653	150
							0	5.005	58.653	150
14	513504.502	302221.018	60.000	1.425	1050		1	5.005	58.575	150
							0	5.006	58.575	150
14a	513506.361	302220.316	60.000	1.445	300		1	5.006	58.555	150
15	513489.402	302181.435	59.920	0.857	1050		1	5.000	59.063	150
							0	5.001	59.063	150
16	513458.355	302258.608	59.800	0.750						
							0	1.000	59.050	150
17	513430.055	302183.243	59.800	2.103	1050		1	1.000	57.697	150
							0	1.001	57.697	150
18	513451.686	302175.185	59.800	2.491	1050		1	2.002	57.945	150
							2	1.001	57.309	150
							0	1.002	57.309	150
19	513457.227	302190.059	59.800	1.588			1	2.001	58.212	150
							0	2.002	58.212	150
20	513476.409	302244.262	59.930	0.750						
							0	2.000	59.180	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
21	513465.382	302210.977	59.930	1.340			1	2.000	58.590	150
22	513490.431	302238.272	59.930	0.750			0	2.001	58.590	150
23	513495.356	302179.212	59.920	0.750			0	3.000	59.180	150
							0	5.000	59.170	150

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Drain Down Time (mins)	240
FSR Region	England and Wales	Winter CV	0.840	Additional Storage (m³/ha)	0.0
M5-60 (mm)	20.000	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.300	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0	100	50	0	0
30	0	0	0				

Node 4a Soakaway Storage Structure

BRE-365: Volume (m³)	0.320	Base Inf Coefficient (m/hr)	4.00000	Invert Level (m)	56.000	Depth (m)	1.200
BRE-365: Area (m²)	0.800	Side Inf Coefficient (m/hr)	4.00000	Time to half empty (mins)	4	Inf Depth (m)	
BRE-365: Time (hrs)	0.100	Safety Factor	1.5	Pit Width (m)	14.000	Number Required	1
BRE-365: Inf Coef (m/hr)	4.00000	Porosity	0.40	Pit Length (m)	8.000		

Node 14a Soakaway Storage Structure

Base Inf Coefficient (m/hr)	4.00000	Porosity	0.40	Pit Width (m)	3.000	Inf Depth (m)	
Side Inf Coefficient (m/hr)	4.00000	Invert Level (m)	57.500	Pit Length (m)	3.000	Number Required	1
Safety Factor	1.5	Time to half empty (mins)	3	Depth (m)	1.200		

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Approval Settings

Node Size	✓	Maximum Cover Depth (m)	3.000	Surcharged Depth	✓
Node Losses	✓	Backdrops	✓	Return Period (years)	
Link Size	✓	Minimum Backdrop Height (m)		Maximum Surcharged Depth (m)	0.100
Minimum Diameter (mm)	150	Maximum Backdrop Height (m)	1.500	Flooding	✓
Link Length	✓	Full Bore Velocity	✓	Return Period (years)	30
Maximum Length (m)	100.000	Minimum Full Bore Velocity (m/s)		Time to Half Empty	x
Coordinates	✓	Maximum Full Bore Velocity (m/s)	3.000	Discharge Rates	✓
Accuracy (m)	1.000	Proportional Velocity	✓	Discharge Volume	✓
Crossings	✓	Return Period (years)		100 year 360 minute (m³)	
Cover Depth	✓	Minimum Proportional Velocity (m/s)	0.750		
Minimum Cover Depth (m)		Maximum Proportional Velocity (m/s)	3.000		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year 15 minute summer	192.806	54.557	10 year 600 minute winter	12.608	5.047
10 year 15 minute winter	135.303	54.557	10 year 720 minute summer	16.587	4.446
10 year 30 minute summer	130.321	36.876	10 year 720 minute winter	11.148	4.446
10 year 30 minute winter	91.453	36.876	10 year 960 minute summer	13.811	3.637
10 year 60 minute summer	90.826	24.003	10 year 960 minute winter	9.149	3.637
10 year 60 minute winter	60.342	24.003	10 year 1440 minute summer	10.216	2.738
10 year 120 minute summer	57.664	15.239	10 year 1440 minute winter	6.866	2.738
10 year 120 minute winter	38.311	15.239	30 year 15 minute summer	243.818	68.992
10 year 180 minute summer	44.990	11.577	30 year 15 minute winter	171.101	68.992
10 year 180 minute winter	29.245	11.577	30 year 30 minute summer	166.387	47.082
10 year 240 minute summer	35.975	9.507	30 year 30 minute winter	116.763	47.082
10 year 240 minute winter	23.901	9.507	30 year 60 minute summer	116.589	30.811
10 year 360 minute summer	27.947	7.192	30 year 60 minute winter	77.459	30.811
10 year 360 minute winter	18.166	7.192	30 year 120 minute summer	73.902	19.530
10 year 480 minute summer	22.300	5.893	30 year 120 minute winter	49.099	19.530
10 year 480 minute winter	14.816	5.893	30 year 180 minute summer	57.313	14.749
10 year 600 minute summer	18.452	5.047	30 year 180 minute winter	37.255	14.749

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 240 minute summer	45.598	12.050	100 year +50% CC 60 minute winter	152.761	60.764
30 year 240 minute winter	30.295	12.050	100 year +50% CC 120 minute summer	145.490	38.449
30 year 360 minute summer	35.178	9.053	100 year +50% CC 120 minute winter	96.660	38.449
30 year 360 minute winter	22.867	9.053	100 year +50% CC 180 minute summer	112.088	28.844
30 year 480 minute summer	27.920	7.379	100 year +50% CC 180 minute winter	72.860	28.844
30 year 480 minute winter	18.550	7.379	100 year +50% CC 240 minute summer	88.689	23.438
30 year 600 minute summer	23.001	6.291	100 year +50% CC 240 minute winter	58.923	23.438
30 year 600 minute winter	15.716	6.291	100 year +50% CC 360 minute summer	67.904	17.474
30 year 720 minute summer	20.598	5.520	100 year +50% CC 360 minute winter	44.139	17.474
30 year 720 minute winter	13.843	5.520	100 year +50% CC 480 minute summer	53.578	14.159
30 year 960 minute summer	17.043	4.488	100 year +50% CC 480 minute winter	35.596	14.159
30 year 960 minute winter	11.289	4.488	100 year +50% CC 600 minute summer	43.925	12.014
30 year 1440 minute summer	12.485	3.346	100 year +50% CC 600 minute winter	30.012	12.014
30 year 1440 minute winter	8.390	3.346	100 year +50% CC 720 minute summer	39.172	10.498
100 year +50% CC 15 minute summer	473.020	133.848	100 year +50% CC 720 minute winter	26.326	10.498
100 year +50% CC 15 minute winter	331.944	133.848	100 year +50% CC 960 minute summer	32.187	8.476
100 year +50% CC 30 minute summer	326.207	92.305	100 year +50% CC 960 minute winter	21.321	8.476
100 year +50% CC 30 minute winter	228.917	92.305	100 year +50% CC 1440 minute summer	23.330	6.253
100 year +50% CC 60 minute summer	229.932	60.764	100 year +50% CC 1440 minute winter	15.679	6.253

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	58.884	0.034	1.6	0.0291	0.0000	OK
15 minute winter	2	10	58.050	0.067	13.3	0.0578	0.0000	OK
15 minute winter	3	10	58.113	0.091	11.7	0.0000	0.0000	OK
15 minute winter	4	11	57.310	0.172	21.1	0.1489	0.0000	SURCHARGED
15 minute winter	4a	11	56.012	-1.072	20.8	0.5514	0.0000	OK
15 minute winter	5	10	58.360	0.067	9.7	0.0000	0.0000	OK
15 minute winter	6	10	58.628	0.054	6.5	0.0000	0.0000	OK
15 minute winter	7	10	58.837	0.037	3.1	0.0000	0.0000	OK
15 minute winter	8	10	58.884	0.024	1.3	0.0211	0.0000	OK
15 minute winter	9	10	59.195	0.025	1.8	0.0214	0.0000	OK
15 minute winter	10	10	58.992	0.089	11.0	0.0767	0.0000	OK
15 minute winter	11	10	58.884	0.086	11.0	0.0000	0.0000	OK
15 minute winter	12	10	58.783	0.096	11.0	0.0000	0.0000	OK
15 minute winter	13	10	58.748	0.095	10.9	0.0823	0.0000	OK
15 minute winter	14	11	58.674	0.099	10.8	0.0858	0.0000	OK
15 minute winter	14a	13	57.687	-0.868	10.8	0.6721	0.0000	OK
15 minute summer	15	1	59.063	0.000	0.0	0.0000	0.0000	OK
15 minute winter	16	10	59.087	0.037	3.2	0.0000	0.0000	OK
15 minute winter	17	11	57.740	0.043	4.4	0.0375	0.0000	OK
15 minute winter	18	10	57.369	0.060	8.0	0.0521	0.0000	OK
15 minute winter	19	10	58.246	0.034	2.6	0.0000	0.0000	OK
15 minute summer	20	1	59.180	0.000	0.0	0.0000	0.0000	OK
15 minute summer	21	1	58.590	0.000	0.0	0.0000	0.0000	OK
15 minute summer	22	1	59.180	0.000	0.0	0.0000	0.0000	OK
15 minute summer	23	1	59.170	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	1	4.000	2	1.6	0.544	0.106	0.0505
15 minute winter	2	3.006	4	13.2	1.923	0.309	0.0255
15 minute winter	3	3.005	2	11.7	1.248	0.653	0.0359
15 minute winter	4	1.003	4a	20.8	1.186	1.171	0.0912
15 minute winter	4a	Infiltration		20.8			
15 minute winter	5	3.004	3	9.6	1.023	0.417	0.1517
15 minute winter	6	3.003	5	6.5	0.966	0.280	0.1121
15 minute winter	7	3.002	6	3.1	0.683	0.134	0.0612
15 minute winter	8	3.001	7	1.3	0.501	0.056	0.0093
15 minute winter	9	6.000	10	1.8	0.297	0.059	0.0578
15 minute winter	10	5.002	11	11.0	1.035	0.620	0.1117
15 minute winter	11	5.003	12	11.0	0.986	0.620	0.1240
15 minute winter	12	5.004	13	10.9	0.925	0.613	0.0399
15 minute winter	13	5.005	14	10.8	0.902	0.610	0.0936
15 minute winter	14	5.006	14a	10.8	0.961	0.608	0.0224
15 minute winter	14a	Infiltration		8.3			
15 minute summer	15	5.001	10	0.0	0.000	0.000	0.0515
15 minute winter	16	1.000	17	3.1	0.829	0.135	0.3044
15 minute winter	17	1.001	18	4.2	0.783	0.182	0.1244
15 minute winter	18	1.002	4	7.9	0.587	0.339	0.1225
15 minute winter	19	2.002	18	2.6	0.861	0.112	0.0476
15 minute summer	20	2.000	21	0.0	0.000	0.000	0.0000
15 minute summer	21	2.001	19	0.0	0.000	0.000	0.0339
15 minute summer	22	3.000	8	0.0	0.000	0.000	0.0177
15 minute summer	23	5.000	15	0.0	0.000	0.000	0.0000

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	58.888	0.038	2.0	0.0327	0.0000	OK
15 minute winter	2	10	58.061	0.078	16.8	0.0674	0.0000	OK
15 minute winter	3	10	58.128	0.106	14.9	0.0000	0.0000	OK
15 minute winter	4	11	57.374	0.236	25.9	0.2044	0.0000	SURCHARGED
15 minute winter	4a	11	56.015	-1.069	26.1	0.6852	0.0000	OK
15 minute winter	5	10	58.370	0.077	12.3	0.0000	0.0000	OK
15 minute winter	6	10	58.636	0.062	8.3	0.0000	0.0000	OK
15 minute winter	7	10	58.842	0.042	4.0	0.0000	0.0000	OK
15 minute winter	8	10	58.888	0.028	1.7	0.0245	0.0000	OK
15 minute winter	9	10	59.198	0.028	2.3	0.0241	0.0000	OK
15 minute winter	10	10	59.007	0.104	13.9	0.0904	0.0000	OK
15 minute winter	11	10	58.899	0.101	13.9	0.0000	0.0000	OK
15 minute winter	12	10	58.801	0.114	13.8	0.0000	0.0000	OK
15 minute winter	13	10	58.766	0.113	13.7	0.0980	0.0000	OK
15 minute winter	14	11	58.691	0.116	13.6	0.1008	0.0000	OK
15 minute winter	14a	13	57.835	-0.720	13.7	1.2077	0.0000	OK
15 minute summer	15	1	59.063	0.000	0.0	0.0000	0.0000	OK
15 minute winter	16	10	59.092	0.042	4.0	0.0000	0.0000	OK
15 minute winter	17	11	57.746	0.049	5.6	0.0424	0.0000	OK
15 minute winter	18	11	57.400	0.091	10.3	0.0790	0.0000	OK
15 minute winter	19	10	58.251	0.039	3.3	0.0000	0.0000	OK
15 minute summer	20	1	59.180	0.000	0.0	0.0000	0.0000	OK
15 minute summer	21	1	58.590	0.000	0.0	0.0000	0.0000	OK
15 minute summer	22	1	59.180	0.000	0.0	0.0000	0.0000	OK
15 minute summer	23	1	59.170	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	1	4.000	2	2.0	0.580	0.134	0.0595
15 minute winter	2	3.006	4	16.8	2.025	0.393	0.0308
15 minute winter	3	3.005	2	14.9	1.316	0.830	0.0432
15 minute winter	4	1.003	4a	26.1	1.480	1.464	0.0933
15 minute winter	4a	Infiltration		25.9			
15 minute winter	5	3.004	3	12.2	1.085	0.530	0.1809
15 minute winter	6	3.003	5	8.3	1.032	0.358	0.1339
15 minute winter	7	3.002	6	4.0	0.736	0.173	0.0732
15 minute winter	8	3.001	7	1.7	0.540	0.073	0.0113
15 minute winter	9	6.000	10	2.3	0.311	0.075	0.0697
15 minute winter	10	5.002	11	13.9	1.079	0.783	0.1355
15 minute winter	11	5.003	12	13.8	1.024	0.781	0.1510
15 minute winter	12	5.004	13	13.7	0.957	0.771	0.0485
15 minute winter	13	5.005	14	13.6	0.945	0.765	0.1124
15 minute winter	14	5.006	14a	13.7	1.014	0.767	0.0267
15 minute winter	14a	Infiltration		9.6			
15 minute summer	15	5.001	10	0.0	0.000	0.000	0.0623
15 minute winter	16	1.000	17	3.9	0.879	0.170	0.3618
15 minute winter	17	1.001	18	5.3	0.779	0.231	0.1870
15 minute winter	18	1.002	4	10.0	0.667	0.430	0.1459
15 minute winter	19	2.002	18	3.3	0.922	0.142	0.0565
15 minute summer	20	2.000	21	0.0	0.000	0.000	0.0000
15 minute summer	21	2.001	19	0.0	0.000	0.000	0.0403
15 minute summer	22	3.000	8	0.0	0.000	0.000	0.0219
15 minute summer	23	5.000	15	0.0	0.000	0.000	0.0000

Results for 100 year +50% CC Critical Storm Duration. Lowest mass balance: 99.83%

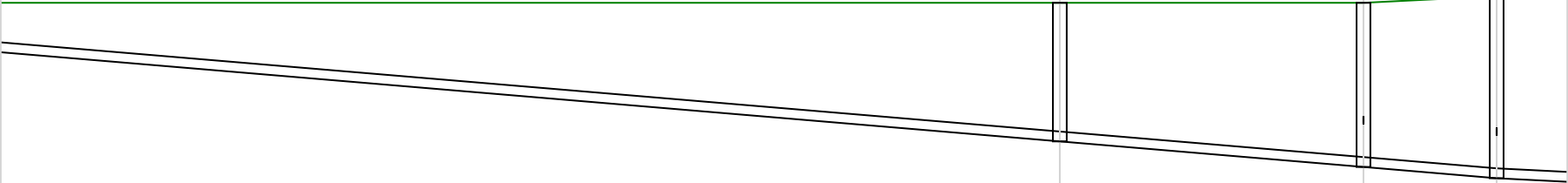
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	58.904	0.054	3.9	0.0466	0.0000	OK
15 minute winter	2	11	58.106	0.123	30.6	0.1066	0.0000	OK
15 minute winter	3	11	58.238	0.216	27.1	0.0000	0.0000	SURCHARGED
15 minute winter	4	11	57.684	0.546	45.6	0.4725	0.0000	SURCHARGED
15 minute winter	4a	11	56.027	-1.057	45.6	1.1961	0.0000	OK
15 minute winter	5	11	58.508	0.215	23.8	0.0000	0.0000	SURCHARGED
15 minute winter	6	10	58.666	0.092	16.1	0.0000	0.0000	OK
15 minute winter	7	10	58.860	0.060	7.7	0.0000	0.0000	OK
15 minute winter	8	10	58.901	0.041	3.2	0.0354	0.0000	OK
15 minute winter	9	11	59.287	0.117	4.5	0.1014	0.0000	OK
15 minute winter	10	11	59.284	0.381	26.9	0.3297	0.0000	SURCHARGED
15 minute winter	11	12	59.117	0.319	20.9	0.0000	0.0000	SURCHARGED
15 minute winter	12	12	58.961	0.274	20.5	0.0000	0.0000	SURCHARGED
15 minute winter	13	12	58.897	0.244	20.3	0.2114	0.0000	SURCHARGED
15 minute winter	14	12	58.754	0.179	20.3	0.1549	0.0000	SURCHARGED
15 minute winter	14a	16	58.446	-0.109	20.3	3.4062	0.0000	OK
15 minute winter	15	11	59.287	0.224	4.5	0.1936	0.0000	SURCHARGED
15 minute winter	16	10	59.109	0.059	7.7	0.0000	0.0000	OK
15 minute winter	17	12	57.819	0.122	10.8	0.1061	0.0000	OK
15 minute winter	18	11	57.779	0.470	18.4	0.4067	0.0000	SURCHARGED
15 minute winter	19	10	58.267	0.055	6.4	0.0000	0.0000	OK
15 minute summer	20	1	59.180	0.000	0.0	0.0000	0.0000	OK
15 minute summer	21	1	58.590	0.000	0.0	0.0000	0.0000	OK
15 minute summer	22	1	59.180	0.000	0.0	0.0000	0.0000	OK
15 minute winter	23	11	59.288	0.118	1.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	1	4.000	2	3.9	0.699	0.262	0.0969
15 minute winter	2	3.006	4	30.7	2.250	0.719	0.0503
15 minute winter	3	3.005	2	27.0	1.554	1.509	0.0635
15 minute winter	4	1.003	4a	45.6	2.593	2.564	0.0937
15 minute winter	4a	Infiltration		45.2			
15 minute winter	5	3.004	3	22.3	1.266	0.965	0.2838
15 minute winter	6	3.003	5	16.1	1.157	0.696	0.2415
15 minute winter	7	3.002	6	7.7	0.863	0.333	0.1195
15 minute winter	8	3.001	7	3.2	0.620	0.138	0.0184
15 minute winter	9	6.000	10	4.4	0.347	0.144	0.1471
15 minute winter	10	5.002	11	20.9	1.187	1.178	0.1852
15 minute winter	11	5.003	12	20.5	1.165	1.157	0.1962
15 minute winter	12	5.004	13	20.3	1.153	1.140	0.0595
15 minute winter	13	5.005	14	20.3	1.152	1.143	0.1374
15 minute winter	14	5.006	14a	20.3	1.155	1.137	0.0336
15 minute winter	14a	Infiltration		15.1			
15 minute winter	15	5.001	10	-4.5	0.309	-0.195	0.1676
15 minute winter	16	1.000	17	7.6	1.050	0.330	0.8295
15 minute winter	17	1.001	18	11.1	0.770	0.481	0.3809
15 minute winter	18	1.002	4	18.3	1.041	0.792	0.1782
15 minute winter	19	2.002	18	6.4	1.109	0.277	0.0914
15 minute summer	20	2.000	21	0.0	0.000	0.000	0.0000
15 minute summer	21	2.001	19	0.0	0.000	0.000	0.0655
15 minute summer	22	3.000	8	0.0	0.000	0.000	0.0369
15 minute winter	23	5.000	15	1.7	0.127	0.074	0.1032

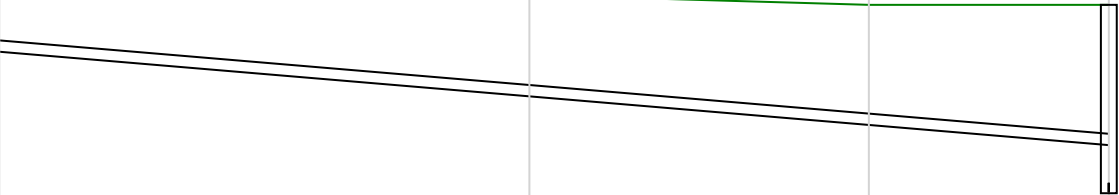


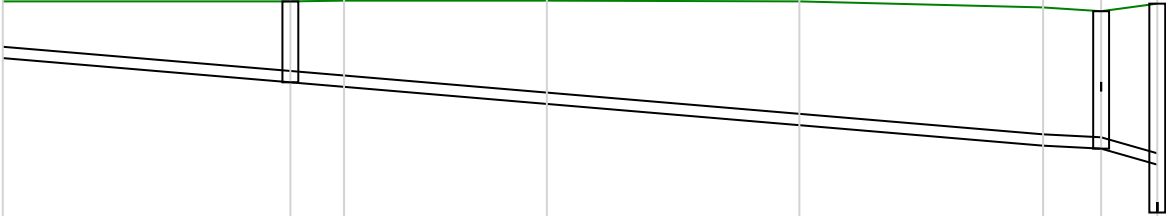
Kingmoor Consulting Ltd
Suite 4, Atlantic House
Parkhouse Business Park
Carlisle, CA3 0LJ

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Network: Storm Network
Colin Aimers
09/12/2023

Node Name	16	17	18	4	4a
A3 drawing Hor Scale 500 Ver Scale 100 Datum (m) 48.000					
Link Name	1.000	1.001	1.002	1.003	
Section Type	150mm	150mm	150mm	150mm	
Slope (1:X)	59.5	59.5	59.2	99.5	
Cover Level (m)	59.800	59.800	59.800	59.900	59.900
Invert Level (m)	59.050	57.697 57.697	57.309 57.309	57.138 57.138 57.084	
Length (m)	80.503	23.083	10.124	5.374	



Node Name	20	21	19	18
A3 drawing Hor Scale 500 Ver Scale 100 Datum (m) 49.000				
Link Name	2.000	2.001	2.002	
Section Type	150mm	150mm	150mm	
Slope (1:X)	59.4	59.4	59.4	
Cover Level (m)	59.930	59.930	59.800	59.800
Invert Level (m)	59.180	58.590 58.590	58.212 58.212	57.945
Length (m)	35.064	22.451	15.873	

Node Name	22	8	7	6	5	3	2	4
A3 drawing Hor Scale 500 Ver Scale 100 Datum (m) 48.000 								
Link Name	3.000	3.001	3.002	3.003	3.004	3.005	3.006	
Section Type	150mm	150mm	150mm	150mm	150mm	150mm	150mm	
Slope (1:X)	59.4	59.2	59.3	59.4	59.5	98.4	17.5	
Cover Level (m)	59.930	59.930 59.940	59.940	59.940	59.930	59.850	59.800	59.900
Invert Level (m)	59.180	58.860 58.860 58.800	58.800	58.574 58.574	58.293 58.293	58.022 58.022 57.983	57.983 57.771	
Length (m)	19.020	3.552	13.411	16.703	16.121	3.839	3.713	



Node Name	1	2
A3 drawing Hor Scale 500 Ver Scale 100 Datum (m) 49.000 		
Link Name	4.000	
Section Type	150mm	
Slope (1:X)	142.8	
Cover Level (m)	59.600	59.800
Invert Level (m)	58.850	58.728
Length (m)	17.421	



Node Name	23	15	10	11	12	13	14	14a
A3 drawing Hor Scale 500 Ver Scale 100 Datum (m) 49.000								
Link Name	5.000	5.001	5.002	5.003	5.004	5.005	5.006	5.007
Section Type	150mm	150mm	150mm	150mm	150mm	150mm	150mm	150mm
Slope (1:X)	59.4	59.5	100.2	100.4	99.4	100.0	99.4	100.0
Cover Level (m)	59.920	59.920	59.900	59.930	59.930	60.000	60.000	60.000
Invert Level (m)	59.170 59.063 59.063	58.903 58.903	58.798 58.798	58.687 58.687 58.653	58.653 58.575	58.575 58.575	58.575 58.575	58.575 58.575
Length (m)	6.355	9.521	10.518	11.144	3.381	7.802	1.900	1.900



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Parkhouse Business Park
Carlisle, CA3 0LJ

File: 23-406 - FLOW.pfd
Network: Storm Network
Colin Aimers
09/12/2023

Node Name	9	10
A3 drawing Hor Scale 500 Ver Scale 100 Datum (m) 49.000		
Link Name	6.000	
Section Type	150mm	
Slope (1:X)	34.0	
Cover Level (m)	59.920	59.900
Invert Level (m)	59.170	58.903
Length (m)	9.091	

