13173w0003a Supporting Letter for Discharge of Conditions

Planning application approval number: F/YR21/0885/F

Site: 1-3 Hostmoor And 1 Martin Avenue, March, Cambridgeshire, PE15 0AX

Date: 29/02/24

Permission for the above planning application for the erection of a retail food store (Class E(a)) and accompanying car park was given subject conditions; this letter has been prepared to assist in the discharge of conditions 2,3 and 4, which relates to existing drainage and surface water drainage.

Responses from Craddys on how each requirement, has or will be achieved, is given below each recommendation.

The requirements of condition 2 are as follows:

> *Prior to any site works, a drainage survey of the retained existing drainage network should be carried out to confirm its presence and suitability for use within the proposed drainage strategy. This should demonstrate the existing pipe network is of suitable condition to continue accepting flows from the site and has a positive connection to the Anglian Water public sewer. If the flows cannot be accepted, then an alternative scheme shall be submitted to and approved by the LPA and the development shall be implemented in accordance with it.*

Please refer to Appendix A for the drainage CCTV survey, which shows existing drainage. The existing pipe network is of suitable condition to continue accepting flows from the site.

Please refer to Appendix B for the Proposed Drainage Design. The proposed surface water manhole, S10, will be installed, to connect into the existing Public Surface Water MH – 1052 via a 150Ø pipe. Existing pipe to be relaid, so that the gradient matches existing. The proposed foul water manhole, Fw04 will be installed, to connect into the existing Foul MH. It will be an indirect connection to the foul sewer via a 100Ø pipe.

The requirements of condition 3 are as follows:

> *No laying of services, creation of hard surfaces or erection of a building shall commence until a detailed surface water drainage scheme for the site, based on the agreed Sustainable Drainage Strategy, Stirling Maynard Consulting Engineers, 3272 313, November 2021 has been submitted to and approved in writing by the LPA. The scheme shall subsequently be implemented in full accordance with the approved details prior to first occupation.*

Please refer to Appendix B for the Proposed Drainage Design. Please refer to Appendix C for the Microdrainage Calculations.

The requirements of condition 4 are as follows:

> *No development, including preparatory works, shall commence until details of measures indicating how additional surface water run-off from the site will be avoided during the construction works have been submitted to and approved in writing by the Local Planning Authority. The applicant may be required to provide collection, balancing and/or settlement systems for these flows. The approved measures and systems shall be brought into operation before any works to create buildings or hard surfaces commence.*

This information will be provided in the contractor's method statement, following planning permission, but prior to start of construction, to discharge this condition.

Appendix A – Drainage CCTV Survey

CCTV Drainage Survey

Craddys
Aldi March
Peterbough, PE15 0BW

CCTV DRAINAGE SURVEY REPORT

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Sheffield
Tel: 0114 2513481
Fax:
Email: info@sewersurveysuk.co.uk

Project-information

Project name :	Project Number :	Contact :	Date :
ALDI MARCH			**02/11/2023**

Client:	**Craddys**
Contact Name:	**Rob Hunt**
Department:	**Principal Engineer**
Road:	**Suite 8, The Plex, 15 Margaret Street**
Town:	**Wakefield**
County:	**WF1 2DQ**
Telephone:	[redacted]
Fax:	
Mobile:	
E-mail:	[redacted]

Site:	**Aldi March**
Contact Name:	
Department:	
Road:	**Peterborough**
Town:	**PE15 0BW**
County:	
Telephone:	
Fax:	
Mobile:	
E-mail:	

Contractor	**Sewer Surveys UK Ltd**
Contact Name:	**Andrew Froggatt/Simon Bennett**
Department:	**Directors**
Road:	**14B Orgreave Close**
Town:	**Sheffield**
County:	**South Yorkshire, S13 9NP**
Telephone:	[redacted]
Fax:	
Mobile:	[redacted]
E-mail:	[redacted]

City : MARCH, PETERBOROUGH

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
Tel: 0114 2513481
Fax:
Email: info@sewersurveysuk.co.uk

Legend of Drawing:

	WATER FLOW 1		Tree_Winter
	Tree_Summer		CESS PIT
FS	SOAKAWAY: FOUL WATER		GNDFLWC
I	SURFACE WATER	Z	SYPHON INTERCEPTOR
	PETROL INTERCEPTOR		PIPE RUN
	RAINWATER PIPE		ROAD GULLY
	RODDING EYE		SEPTIC TANK
	SOIL & VENT PIPE		COMBINED
SS	SOAKAWAY: SURFACE WATER	G	GULLY
	W.C.		PUMP CH
	FOUL WATER		

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax:
[redacted]

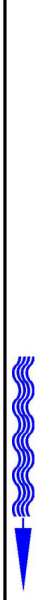
Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**1**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**MH1**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Other Pedestrian area**	Tape number :		D/S MH :	**MH2**
Inspection Direction	**MH1 (D/S) MH2**	Pipe Length	1.60 m	D/S Depth :	

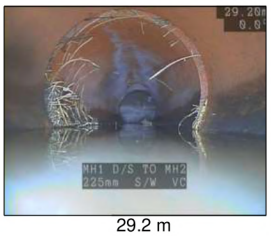
Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**225 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**30.58 m**	Lining :	

Comment :



1:252 Position	Code	Observation	Grade
MH1 0.00	MH	Start node type, manhole, reference number : MH1	0
0.00	WL	Water level 10 % height/diameter	0
4.68	JN	Junction at 09 o´clock dia 150 mm	0
5.10	JN	Junction at 02 o´clock dia 150 mm	0
13.07	JN	Junction at 10 o´clock dia 150 mm	0
15.36	JN	Junction at 02 o´clock dia 150 mm	0
20.39	JN	Junction at 01 o´clock dia 150 mm	0
25.12	RFJ	Fine Roots at joint	2
25.12	WL	Water level 20 % height/diameter	0
25.30	JN	Junction at 03 o´clock dia 150 mm	0
26.66	WL	Water level 30 % height/diameter	0
27.46	RFJ	Fine Roots at joint	2
29.20	RFJ	Fine Roots at joint	2

25.12 m



29.2 m

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Sheffield
[redacted]
Fax:
[redacted]

Inspection Report

Date :	Job number :	Weather :	Operator :	Section number :	PLR :
02/11/2023		**rain**	**SB**	**1**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Grade:
rain	**YJ65**				

1:252	Position	Code	Observation	Grade
MH2	30.05	RM	Mass Roots 10 % cross-sectional area loss	3
	30.05	WL	Water level 20 % height/diameter	0
	30.58	MHF	Finish node type, manhole	0

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**4**	**4**	**0.19**	**5.88**	**3**

ALDI MARCH

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
Tel: 0114 2515461
Fax:
[redacted]

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**2**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**MH3**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Other Pedestrian area**	Tape number :		D/S MH :	**MH4**
Inspection Direction	**MH3 (D/S) MH4**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Foul**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**6.01 m**	Lining :	

Comment :

1:56	Position	Code	Observation	Grade
MH3				
	0.00	MH	Start node type, manhole, reference number : MH3	0
	0.00	WL	Water level 10 % height/diameter	0
	0.00	DEX	Other settled deposits 10 % cross-sectional area loss	3
	1.00	DEX	Other settled deposits 10 % cross-sectional area loss	3
	2.60	WL	Water level 5 % height/diameter	0
	6.01	MHF	Finish node type, manhole	0
MH4				

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**2**	**2**	**0.67**	**4**	**3**

ALDI MARCH

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax: [redacted]

Inspection report

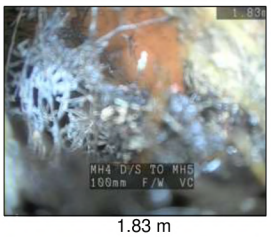
Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**3**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**MH4**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :		D/S MH :	**MH5**
Inspection Direction	**MH4 (D/S) MH5**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Foul**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**7.66 m**	Lining :	

Comment :

1:70	Position	Code	Observation	Grade
MH4				
	0.00	MH	Start node type, manhole, reference number : MH4	0
	0.00	WL	Water level 10 % height/diameter	0
	0.30	LR	Line of drain/sewer deviates right Remarks: SLIGHT	0
	1.06	RF	Fine Roots	2
	1.83	RM	Mass Roots 30 % cross-sectional area loss	5
	7.66	MHF	Finish node type, manhole	0
MH5				



1.83 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**2**	**10**	**1.44**	**11**	**5**

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax: [redacted]

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**4**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**MH5**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :		D/S MH :	**MAIN**
Inspection Direction	**MH5 (D/S) MAIN**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Foul**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**7.65 m**	Lining :	

Comment :

1:70	Position	Code	Observation	Grade
MH5	0.00	MH	Start node type, manhole, reference number : MH5	0
	0.00	WL	Water level 0 % height/diameter	0
	2.03	DES	Settled deposits fine 10 % cross-sectional area loss	3
	2.03	CL	Crack Longitudinal at 09 o´clock	2
	2.03	CL	Crack Longitudinal at 03 o´clock	2
	3.41	CC	Crack Circumferential from 01 to 05 o´clock	2
	6.96	LD	Line of drain/sewer deviates down Remarks: SLIGHT	0
	7.65	OCF	Finish node type, other special chamber	0
MAIN				

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
3	**20**	**0.04**	**30**	**2**	**1**	**2**	**0**	**2**	**3**

ALDI MARCH

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax:
[redacted]

Inspection report

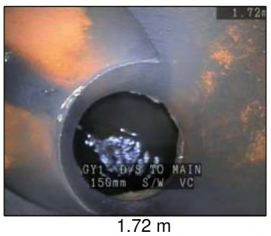
Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**5**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**GY1**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**MAIN**
Inspection Direction	**GY1 (D/S) MAIN**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**2.16 m**	Lining :	

Comment :

1:50	Position	Code	Observation	Grade
GY1	0.00	GY	Start node type, gully, reference number : GY1	0
	0.00	WL	Water level 0 % height/diameter	0
	0.62	LD	Line of drain/sewer deviates down Remarks: CRITICAL	0
	1.62	LD	Line of drain/sewer deviates down Remarks: CRITICAL	0
	1.72	JN	Junction at 09 o´clock dia 150 mm	0
MAIN	2.16	OCF	Finish node type, other special chamber	0



1.72 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax:
[redacted]

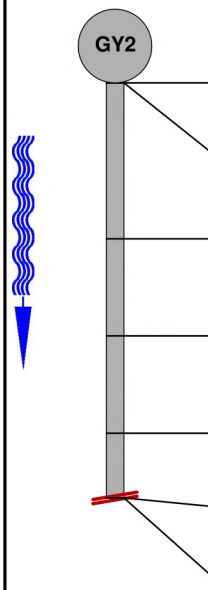
Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**6**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**GY2**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**MAIN**
Inspection Direction	**GY2 (D/S) MAIN**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**2.82 m**	Lining :	

Comment :



1:50	Position	Code	Observation	Grade
	0.00	OC	Start node type, other special chamber, reference number : GY2	0
	0.00	WL	Water level 5 % height/diameter	0
	1.06	WL	Water level 15 % height/diameter	0
	1.72	DES	Settled deposits fine 20 % cross-sectional area loss	3
	2.38	LL	Line of drain/sewer deviates left Remarks: MARGINAL	0
	2.82	DES	Settled deposits fine 70 % cross-sectional area loss	4
	2.82	SA	Survey abandoned Remarks: DUE TO DES	0

1.72 m

2.82 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**2**	**8**	**3.55**	**10**	**4**

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax:
[redacted]

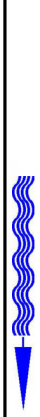
Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**7**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**GY4**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**MAIN**
Inspection Direction	**GY4 (D/S) MAIN**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**3.37 m**	Lining :	

Comment :



1:50	Position	Code	Observation	Grade
GY4				
	0.00	MH	Start node type, manhole, reference number : GY4	0
	0.00	WL	Water level 5 % height/diameter	0
	2.93	LD	Line of drain/sewer deviates down Remarks: SLIGHT	0
	3.37	OCF	Finish node type, other special chamber	0
MAIN				

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax: [redacted]

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**8**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**GY5**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**MAIN**
Inspection Direction	**GY5 (D/S) MAIN**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**2.49 m**	Lining :	

Comment :

1:50	Position	Code	Observation	Grade
GY5	0.00	OC	Start node type, other special chamber, reference number : GY5	0
	0.00	WL	Water level 0 % height/diameter	0
	2.49	OCF	Finish node type, other special chamber	0
MAIN				

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax:
[redacted]

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**9**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**GY6**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**MAIN**
Inspection Direction	**GY6 (D/S) MAIN**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**2.60 m**	Lining :	

Comment :

1:50	Position	Code	Observation	Grade
GY6	0.00	OC	Start node type, other special chamber, reference number : GY6	0
	0.00	WL	Water level 0 % height/diameter	0
	2.60	OCF	Finish node type, other special chamber	0
MAIN				

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax:
[redacted]

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**10**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**GY7**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**MAIN**
Inspection Direction	**GY7 (D/S) MAIN**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**6.67 m**	Lining :	

Comment :

1:56	Position	Code	Observation	Grade
GY7				
	0.00	OC	Start node type, other special chamber, reference number : GY7	0
	0.00	WL	Water level 5 % height/diameter	0
	6.01	LD	Line of drain/sewer deviates down Remarks: MARGINAL	0
	6.67	OCF	Finish node type, other special chamber	0
MAIN				

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax:
[redacted]

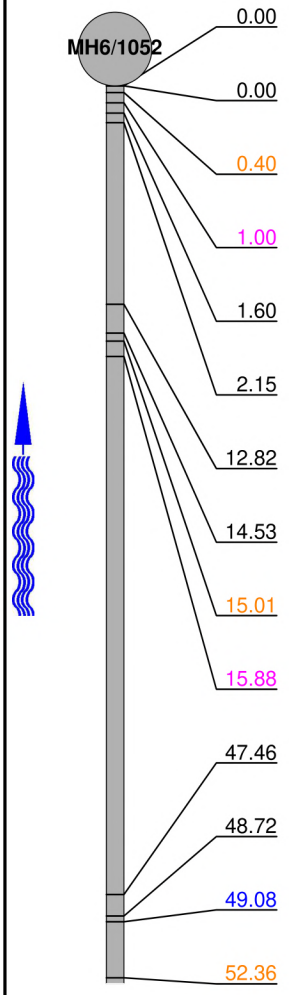
Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**11**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**MH7/1051**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**MH6/1052**
Inspection Direction	**MH6/1052 (U/S) MH7/1051**	Pipe Length	1.60 m	D/S Depth :	

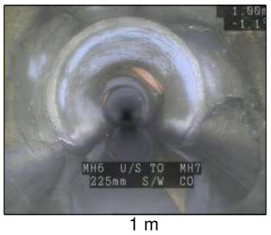
Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**225 mm**
Purpose :	**Investment planning**	Pipe material :	**Concrete**
Total length :	**58.15 m**	Lining :	

Comment :



1:432 Position	Code	Observation	Grade
0.00	MH	Start node type, manhole, reference number : MH6/10520	
0.00	WL	Water level 10 % height/diameter	0
0.40	CM	Multiple Cracks from 07 to 05 o´clock	3
1.00	B	Broken pipe from 03 to 05 o´clock	4
1.60	CN	Connection at 02 o´clock, dia 150 mm	0
2.15	CN	Connection at 10 o´clock, dia 150 mm	0
12.82	CN	Connection at 10 o´clock, dia 150 mm	0
14.53	CN	Connection at 02 o´clock, dia 150 mm	0
15.01	DES	Settled deposits fine 10 % cross-sectional area loss	3
15.88	DEX	Other settled deposits 20 % cross-sectional area loss	4
47.46	CN	Connection at 10 o´clock, dia 150 mm	0
48.72	CN	Connection at 02 o´clock, dia 150 mm	0
49.08	DES	Settled deposits fine 10 % cross-sectional area loss	2
52.36	DES	Settled deposits fine 10 % cross-sectional area loss	3

0.4 m



1 m

15.88 m

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Sheffield
[redacted]
Fax: [redacted]

Inspection Report

Date :	Job number :	Weather :	Operator :	Section number :	PLR :
02/11/2023		**rain**	**SB**	**11**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Grade:
rain	**YJ65**				

1:432	Position	Code	Observation	Grade
	57.00	DES	Settled deposits fine 10 % cross-sectional area loss	3
MH7/1051	58.15	MHF	Finish node type, manhole	0

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	**80**	**2.06**	**120**	**4**	**5**	**5**	**0.21**	**12**	**4**

ALDI MARCH

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax:
[redacted]

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**12**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**1053**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**1052**
Inspection Direction	**1052 (U/S) 1053**	Pipe Length	1.60 m	D/S Depth :	

Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**300 mm**
Purpose :	**Investment planning**	Pipe material :	**Concrete**
Total length :	**31.67 m**	Lining :	

Comment :

1:266	Position	Code	Observation	Grade
1052				
	0.00	MH	Start node type, manhole, reference number : 1052	0
	0.00	WL	Water level 5 % height/diameter	0
	31.67	MHF	Finish node type, manhole	0
1053				

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax: [redacted]

Inspection report

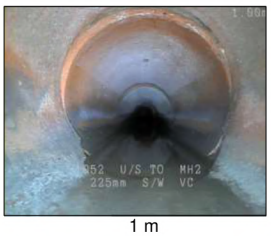
Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**13**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**MH2**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**1052**
Inspection Direction	**1052 (U/S) MH2**	Pipe Length	1.60 m	D/S Depth :	

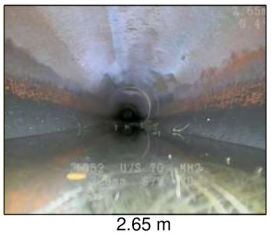
Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**225 mm**
Purpose :	**Investment planning**	Pipe material :	**Vitrified clay**
Total length :	**6.86 m**	Lining :	

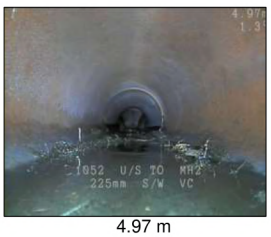
Comment :

1:70	Position		Code	Observation	Grade
1052					
	0.00		MH	Start node type, manhole, reference number : 1052	0
	0.00		WL	Water level 10 % height/diameter	0
	1.00		HJ	Hole in sewer at joint from 04 to 08 o´clock	5
	1.20		WL	Water level 20 % height/diameter	0
	2.65	S1	RM	Mass Roots 10 % cross-sectional area loss, Start	5
	4.97	C1	RM	Mass Roots 20 % cross-sectional area loss, Changed	5
	6.40	F1	RM	Mass Roots 20 % cross-sectional area loss, Finish	5
MH2	6.86		MHF	Finish node type, manhole	0



1 m


2.65 m



4.97 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	**103.12**	**15.03**	**103.12**	**4**	**2**	**10**	**5.54**	**38**	**5**

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Street : Sheffield
[redacted]
Fax: [redacted]

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
02/11/2023		**rain**	**SB**	**14**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
rain	**YJ65**				**SB**

Place :	**MARCH, PETERBOROUGH**	Location details:		U/S MH :	**2051**
Road :	**HOSTMOOR AVENUE**	Catchment:		U/S Depth :	
Location	**Road**	Tape number :		D/S MH :	**1052**
Inspection Direction	**1052 (U/S) 2051**	Pipe Length	2.50 m	D/S Depth :	

Use:	**Surface water**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**900 mm**
Purpose :	**Investment planning**	Pipe material :	**Concrete**
Total length :	**77.48 m**	Lining :	

Comment :

1:644 Position	Code	Observation	Grade
1052			
0.00	MH	Start node type, manhole, reference number : 1052	0
0.00	WL	Water level 10 % height/diameter	0
9.82	CN	Connection at 02 o´clock, dia 150 mm	0
11.08	CN	Connection at 10 o´clock, dia 150 mm	0
43.59	CN	Connection at 02 o´clock, dia 150 mm	0
44.35	CN	Connection at 10 o´clock, dia 150 mm	0
44.35	DER	Settled deposits coarse 10 % cross-sectional area loss	3
57.22	CN	Connection at 12 o´clock, dia 150 mm	0
61.07	CN	Connection at 02 o´clock, dia 150 mm	0
62.52	CN	Connection at 10 o´clock, dia 150 mm	0
62.52	DEC	Settled deposits hard or compacted 10 % cross-sectional area loss	3
77.48	MHF	Finish node type, manhole	0
2051			

62.52 m

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**2**	**2**	**0.05**	**4**	**3**

ALDI MARCH

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Sheffield
[redacted]
Fax:
[redacted]

∑∅ / Main sections

Project name :	Project number :	Contact :	Date :
ALDI MARCH			**02/11/2023**

Nr.	US MH	DS MH	Date	Road	Tape No.	Material	m	(m)
2	MH3	MH4	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	6.01	6.01
3	MH4	MH5	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	7.66	7.66
4	MH5	MAIN	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	7.65	7.65
Pipe size: CIRCULAR 100 = 21.32 m (21.32 m)								

Nr.	US MH	DS MH	Date	Road	Tape No.	Material	m	(m)
5	GY1	MAIN	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	2.16	2.16
6	GY2	MAIN	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	2.82	2.82
7	GY4	MAIN	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	3.37	3.37
8	GY5	MAIN	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	2.49	2.49
9	GY6	MAIN	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	2.60	2.60
10	GY7	MAIN	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	6.67	6.67
Pipe size: CIRCULAR 150 = 20.11 m (20.11 m)								

Nr.	US MH	DS MH	Date	Road	Tape No.	Material	m	(m)
1	MH1	MH2	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	30.58	30.58
11	MH7/1051	MH6/1052	02/11/2023	HOSTMOOR AVENUE		Concrete	58.15	58.15
13	MH2	1052	02/11/2023	HOSTMOOR AVENUE		Vitrified clay	6.86	6.86
Pipe size: CIRCULAR 225 = 95.59 m (95.59 m)								

Nr.	US MH	DS MH	Date	Road	Tape No.	Material	m	(m)
12	1053	1052	02/11/2023	HOSTMOOR AVENUE		Concrete	31.67	31.67
Pipe size: CIRCULAR 300 = 31.67 m (31.67 m)								

Nr.	US MH	DS MH	Date	Road	Tape No.	Material	m	(m)
14	2051	1052	02/11/2023	HOSTMOOR AVENUE		Concrete	77.48	77.48
Pipe size: CIRCULAR 900 = 77.48 m (77.48 m)								

All sections = 246.17 m (246.17 m)

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Sheffield
[redacted]
Fax:
[redacted]

Service / Operational Defects (SRM 4)

Project name :	Project Number :	Contact :	Date :
ALDI MARCH			**02/11/2023**

No.	PLR	Dir.	Use	Shape / Size	Date	Mat.	Total Length	Insp. Length	Peak HWG	Peak Score	Grade	Mean Score	Total Score
1	MH1X	D	S	C 225	02/11/2023	VC	30.58	30.58	5	4	3	0.19	5.88
2	MH3X	D	F	C 100	02/11/2023	VC	6.01	6.01	-	2	3	0.67	4
3	MH4X	D	F	C 100	02/11/2023	VC	7.66	7.66	5	10	5	1.44	11
4	MH5X	D	F	C 100	02/11/2023	VC	7.65	7.65	3	2	3	0	2
5	GY1X	D	S	C 150	02/11/2023	VC	2.16	2.16	-	0	1	0	0
6	GY2X	D	S	C 150	02/11/2023	VC	2.82	2.82	3	8	4	3.55	10
7	GY4X	D	S	C 150	02/11/2023	VC	3.37	3.37	-	0	1	0	0
8	GY5X	D	S	C 150	02/11/2023	VC	2.49	2.49	-	0	1	0	0
9	GY6X	D	S	C 150	02/11/2023	VC	2.60	2.60	-	0	1	0	0
10	GY7X	D	S	C 150	02/11/2023	VC	6.67	6.67	-	0	1	0	0
11	MH7/1051X	U	S	C 225	02/11/2023	CO	58.15	58.15	3	5	4	0.21	12
12	1053X	U	S	C 300	02/11/2023	CO	31.67	31.67	-	0	1	0	0
13	MH2X	U	S	C 225	02/11/2023	VC	6.86	6.86	5	10	5	5.54	38
14	2051X	U	S	C 900	02/11/2023	CO	77.48	77.48	3	2	3	0.05	4

Place :

Sewer Surveys UK Ltd
14B Orgreave Close
Sheffield
[redacted]
Fax: [redacted]

Structural Defects (SRM 4)

Project name :	Project Number :	Contact :	Date :
ALDI MARCH			**02/11/2023**

No.	PLR	Dir.	Use	Shape / Size	Date	Mat.	Total Length	Insp. Length	Peak HWG	Peak Score	Grade	Mean Score	Total Score
1	MH1X	D	S	C 225	02/11/2023	VC	30.58	30.58	-	0	1	0	0
2	MH3X	D	F	C 100	02/11/2023	VC	6.01	6.01	-	0	1	0	0
3	MH4X	D	F	C 100	02/11/2023	VC	7.66	7.66	-	0	1	0	0
4	MH5X	D	F	C 100	02/11/2023	VC	7.65	7.65	2	20	2	0.04	30
5	GY1X	D	S	C 150	02/11/2023	VC	2.16	2.16	-	0	1	0	0
6	GY2X	D	S	C 150	02/11/2023	VC	2.82	2.82	-	0	1	0	0
7	GY4X	D	S	C 150	02/11/2023	VC	3.37	3.37	-	0	1	0	0
8	GY5X	D	S	C 150	02/11/2023	VC	2.49	2.49	-	0	1	0	0
9	GY6X	D	S	C 150	02/11/2023	VC	2.60	2.60	-	0	1	0	0
10	GY7X	D	S	C 150	02/11/2023	VC	6.67	6.67	-	0	1	0	0
11	MH7/1051X	U	S	C 225	02/11/2023	CO	58.15	58.15	4	80	4	2.06	120
12	1053X	U	S	C 300	02/11/2023	CO	31.67	31.67	-	0	1	0	0
13	MH2X	U	S	C 225	02/11/2023	VC	6.86	6.86	4	103.12	4	15.03	103.12
14	2051X	U	S	C 900	02/11/2023	CO	77.48	77.48	-	0	1	0	0

Sewer Surveys UK LTD

Job Number:		Survey By: SB
Grid Ref:	Node Number: 1051	Cover Level:
Location: HOSTMOOR AVENUE		
Year Laid: Z	Status: PU	Function: SW	Node Type: MH	Survey Date:
Manufacturer:		Grating:

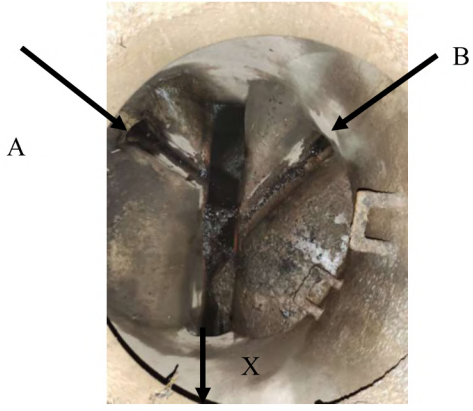
COVER	Shape: DT	Hinged:	Lockable:	Duty: H	Size:660/660	Toxic atmos:
SHAFT	Side Entry:	Regulating Courses:3	Depth:600	Size:600/600	Vermin:	
CHAMBER	Soffit Type:S	No. of Step Irons: 2	No. of Ladders:	No. of Landings:		
Size:1050/1050	Const'n Code: PC	Depth of Flow:	Depth of Silt:	H of S:		

	Pipe	U/S D/S node Reference		Shape	Pipe Size			Backdrop Diameter	Pipe Material	Lining Material	Depth from Cover (M)	Invert Level (M)
INCOMING PIPES	**A**	GY		C	150		150		VC		1.62	
	B	GY		C	150		150		VC		1.53	
	C											
	D											
	E											
	F											
OUTGOING PIPES	**X**	1052		C	225		225		VC		1.64	
	Y											

CONDITION INFORMATION Enter Y if attention required. Use Remarks to clarify

Cover		Irons/Ladders		Shaft		Chamber		Benching		Other	

Remarks:



Sewer Surveys UK LTD

Job Number:		Survey By: SB
Grid Ref:	Node Number: 1052	Cover Level:
Location: HOSTMOOR AVENUE		
Year Laid: Z	Status: PU	Function: SW	Node Type: MH	Survey Date:
Manufacturer:		Grating:

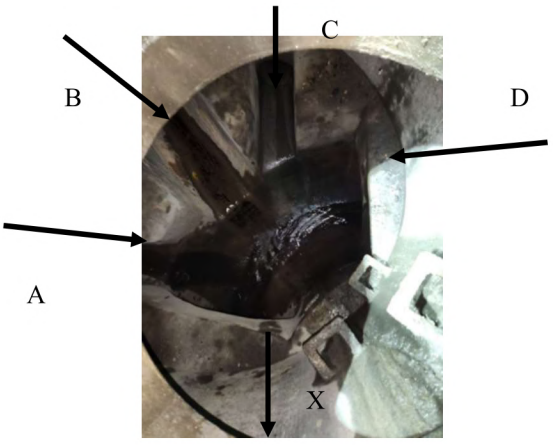
COVER	Shape: DT	Hinged:	Lockable:	Duty: H	Size:660/660	Toxic atmos:
SHAFT	Side Entry:	Regulating Courses:2	Depth:450	Size:620/620	Vermin:	
CHAMBER	Soffit Type:S	No. of Step Irons: 5	No. of Ladders:	No. of Landings:		
Size:1500/1500	Const'n Code: PC	Depth of Flow: 20MM	Depth of Silt:	H of S:		

	Pipe	U/S D/S node Reference		Shape	Pipe Size			Backdrop Diameter	Pipe Material	Lining Material	Depth from Cover (M)	Invert Level (M)
INCOMING PIPES	A	1051		C	225		225		CO		1.83	
	B	1053		C	300		300		CO		2.00	
	C	MH2		C	225		225		VC		1.85	
	D	2051		C	900		900		CO		2.38	
	E											
	F											
OUTGOING PIPES	X	OUTLET		C	900		900		CO		2.41	
	Y											

CONDITION INFORMATION Enter Y if attention required. Use Remarks to clarify

Cover		Irons/Ladders		Shaft		Chamber		Benching		Other	

Remarks:



Sewer Surveys UK LTD

Job Number:		Survey By: SB
Grid Ref:	Node Number: 2051	Cover Level:
Location: HOSTMOOR AVENUE		
Year Laid: Z	Status: PU	Function: SW	Node Type: MH	Survey Date:
Manufacturer:		Grating:

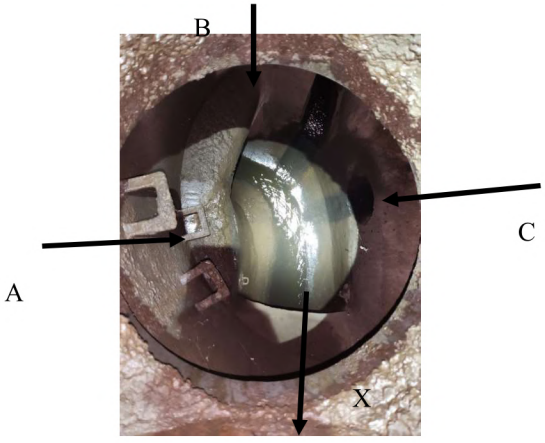
COVER	Shape: DT	Hinged:	Lockable:	Duty: H	Size:600/600	Toxic atmos:
SHAFT	Side Entry:	Regulating Courses:4	Depth:680	Size:600/600	Vermin:	
CHAMBER	Soffit Type:S	No. of Step Irons: 5	No. of Ladders:	No. of Landings:		
Size:1500/1500	Const'n Code: PC	Depth of Flow: 10MM	Depth of Silt:	H of S:		

	Pipe	U/S D/S node Reference		Shape	Pipe Size			Backdrop Diameter	Pipe Material	Lining Material	Depth from Cover (M)	Invert Level (M)
INCOMING PIPES	A			C	900		900		CO		2.54	
	B			C	225		225		VC		1.98	
	C			C	300		300		CO		2.05	
	D											
	E											
	F											
OUTGOING PIPES	X	1052		C	900		900		CO		2.57	
	Y											

CONDITION INFORMATION Enter Y if attention required. Use Remarks to clarify

Cover		Irons/Ladders		Shaft		Chamber		Benching		Other	

Remarks:



Sewer Surveys UK LTD

Job Number:		Survey By: SB
Grid Ref:	Node Number: MH1	Cover Level:
Location: HOSTMOOR AVENUE		
Year Laid: Z	Status: PU	Function: SW	Node Type: MH	Survey Date:
Manufacturer:		Grating:

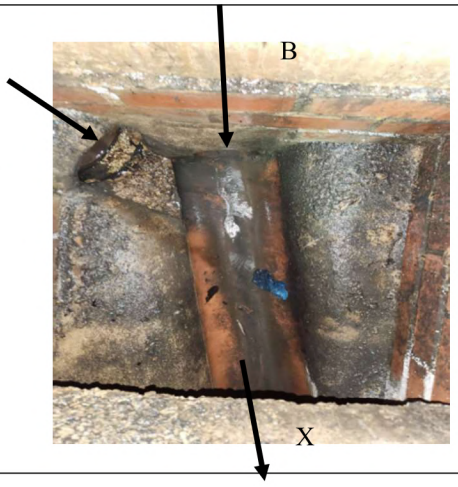
COVER	Shape: DT	Hinged:	Lockable:	Duty: H	Size:600/600	Toxic atmos:
SHAFT	Side Entry:	Regulating Courses:	Depth: 320	Size:600/450	Vermin:	
CHAMBER	Soffit Type:S	No. of Step Irons:	No. of Ladders:	No. of Landings:		
Size:920/600	Const'n Code: BR	Depth of Flow: 10MM	Depth of Silt:	H of S:		

	Pipe	U/S D/S node Reference		Shape	Pipe Size			Backdrop Diameter	Pipe Material	Lining Material	Depth from Cover (M)	Invert Level (M)
INCOMING PIPES	**A**	?		C	150		150		VC		0.67	
	B	?		C	150		150		VC		0.84	
	C											
	D											
	E											
	F											
OUTGOING PIPES	**X**	MH2		C	225		225		VC		0.86	
	Y											

CONDITION INFORMATION Enter Y if attention required. Use Remarks to clarify

Cover		Irons/Ladders		Shaft		Chamber		Benching		Other	

Remarks:



Sewer Surveys UK LTD

Job Number:		Survey By: SB
Grid Ref:	Node Number: MH2	Cover Level:
Location: HOSTMOOR AVENUE		
Year Laid: Z	Status: PU	Function: SW	Node Type: MH	Survey Date:
Manufacturer:		Grating:

COVER	Shape:	Hinged:	Lockable:	Duty:	Size:	Toxic atmos:
SHAFT	Side Entry:	Regulating Courses:	Depth:	Size:	Vermin:	
CHAMBER	Soffit Type:	No. of Step Irons:	No. of Ladders:	No. of Landings:		
Size:	Const'n Code: PC	Depth of Flow:	Depth of Silt:	H of S:		

	Pipe	U/S D/S node Reference		Shape	Pipe Size		Backdrop Diameter	Pipe Material	Lining Material	Depth from Cover (M)	Invert Level (M)
INCOMING PIPES	A										
	B										
	C										
	D										
	E										
	F										
OUTGOING PIPES	X										
	Y										

CONDITION INFORMATION Enter Y if attention required. Use Remarks to clarify

Cover		Irons/Ladders		Shaft		Chamber		Benching		Other	

Remarks: U.T.R REQUIRES DIGGING UP (TREE ROUTES)

Sewer Surveys UK LTD

Job Number:		Survey By: SB
Grid Ref:	Node Number: MH3	Cover Level:
Location: HOSTMOOR AVENUE		
Year Laid: Z	Status: PU	Function: FW	Node Type: MH	Survey Date:
Manufacturer:		Grating:

COVER	Shape: C	Hinged:	Lockable:	Duty: H	Size:660/660	Toxic atmos:
SHAFT	Side Entry:	Regulating Courses: 1	Depth: 360	Size:600/600	Vermin:	
CHAMBER	Soffit Type:S	No. of Step Irons: 5	No. of Ladders:	No. of Landings:		
Size:1200/1200	Const'n Code: PC	Depth of Flow:	Depth of Silt:	H of S:		

	Pipe	U/S D/S node Reference		Shape	Pipe Size			Backdrop Diameter	Pipe Material	Lining Material	Depth from Cover (M)	Invert Level (M)
INCOMING PIPES	A	?		C	100		100		VC		1.78	
	B	?		C	100		100		VC		1.72	
	C	?		C	100		100		VC		1.73	
	D	?		C	100		100		VC		1.73	
	E											
	F											
OUTGOING PIPES	X	MH4		C	100		100		VC		1.82	
	Y											

CONDITION INFORMATION Enter Y if attention required. Use Remarks to clarify

Cover		Irons/Ladders		Shaft		Chamber		Benching		Other	

Remarks:

Sewer Surveys UK LTD

Job Number:					Survey By: SB
Grid Ref:		Node Number: MH4			Cover Level:
Location: HOSTMOOR AVENUE					
Year Laid: Z	Status: PU	Function: FW	Node Type: MH		Survey Date:
Manufacturer:					Grating:

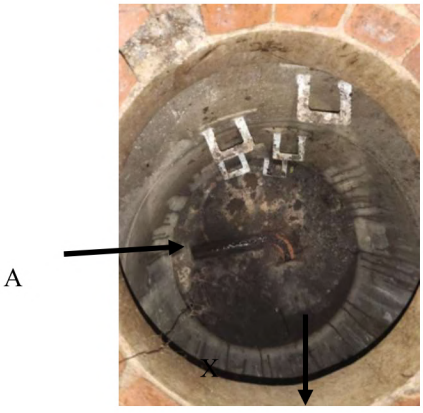
COVER	Shape: C	Hinged:	Lockable:	Duty: H	Size:660/660	Toxic atmos:
SHAFT	Side Entry:	Regulating Courses:2	Depth:440	Size:600/600	Vermin:	
CHAMBER	Soffit Type:S	No. of Step Irons: 5	No. of Ladders:	No. of Landings:		
Size:1200/1200	Const'n Code: PC	Depth of Flow:	Depth of Silt:	H of S:		

	Pipe	U/S D/S node Reference		Shape	Pipe Size		Backdrop Diameter	Pipe Material	Lining Material	Depth from Cover (M)	Invert Level (M)
INCOMING PIPES	A	MH3		C	100	100		VC		1.83	
	B										
	C										
	D										
	E										
	F										
OUTGOING PIPES	X	MH5		C	100	100		VC		1.85	
	Y										

CONDITION INFORMATION Enter Y if attention required. Use Remarks to clarify

Cover		Irons/Ladders		Shaft		Chamber		Benching		Other	

Remarks:



Sewer Surveys UK LTD

Job Number:		Survey By: SB
Grid Ref:	Node Number: MH5	Cover Level:
Location: HOSTMOOR AVENUE		
Year Laid: Z	Status: PU	Function: FW	Node Type: MH	Survey Date:
Manufacturer:		Grating:

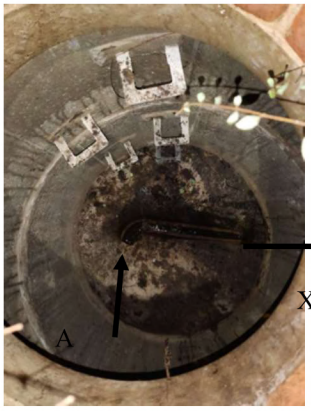
COVER	Shape: C	Hinged:	Lockable:	Duty: H	Size:660/660	Toxic atmos:
SHAFT	Side Entry:	Regulating Courses:3	Depth:510	Size:600/600	Vermin:	
CHAMBER	Soffit Type:S	No. of Step Irons: 5	No. of Ladders:	No. of Landings:		
Size:1200/1200	Const'n Code: PC	Depth of Flow:	Depth of Silt:	H of S:		

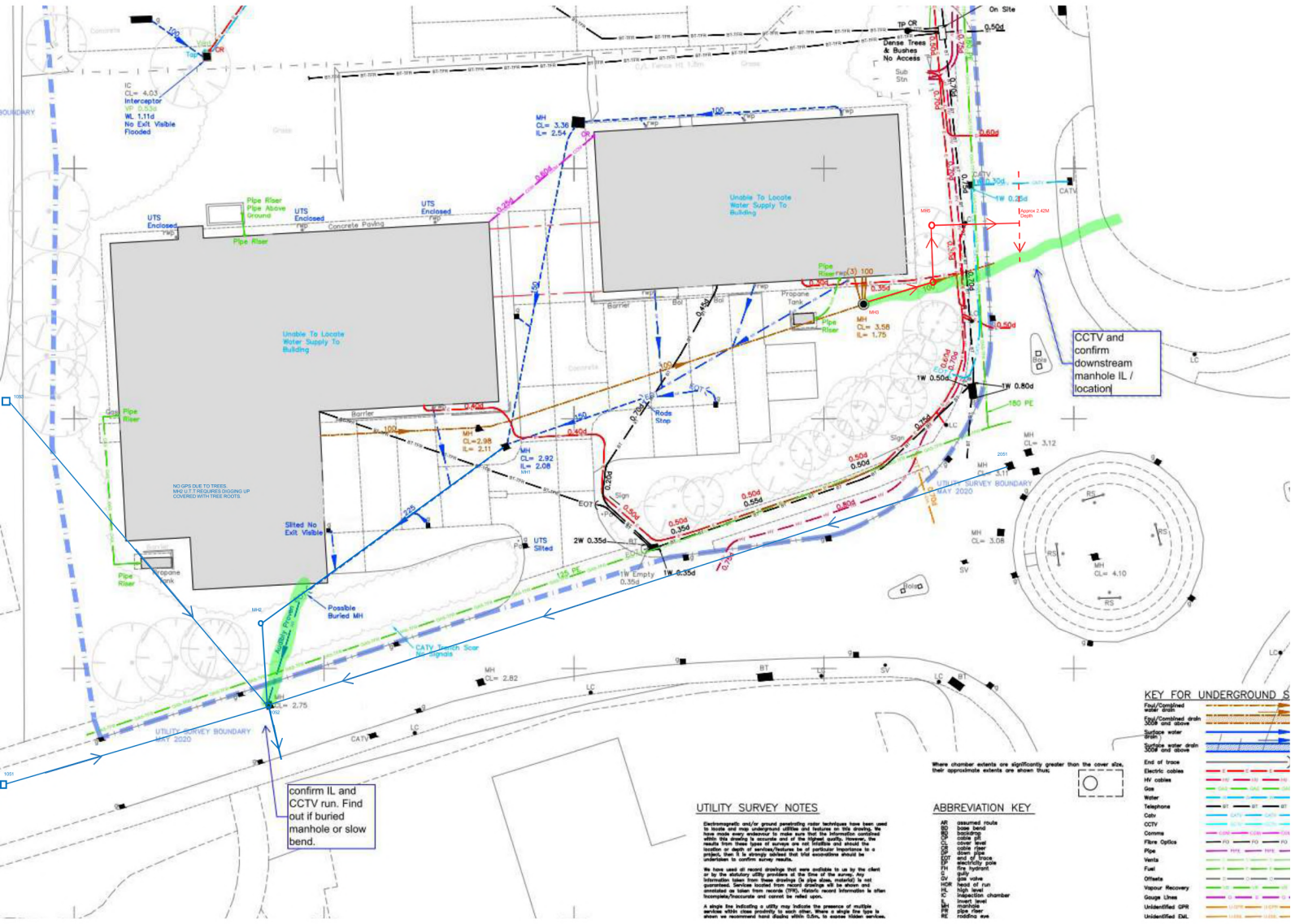
	Pipe	U/S D/S node Reference		Shape	Pipe Size		Backdrop Diameter	Pipe Material	Lining Material	Depth from Cover (M)	Invert Level (M)
INCOMING PIPES	A	MH4		C	100	100		VC		1.87	
	B										
	C										
	D										
	E										
	F										
OUTGOING PIPES	X	MAIN		C	100	100		VC		1.90	
	Y										

CONDITION INFORMATION Enter Y if attention required. Use Remarks to clarify

Cover		Irons/Ladders		Shaft		Chamber		Benching		Other	

Remarks:

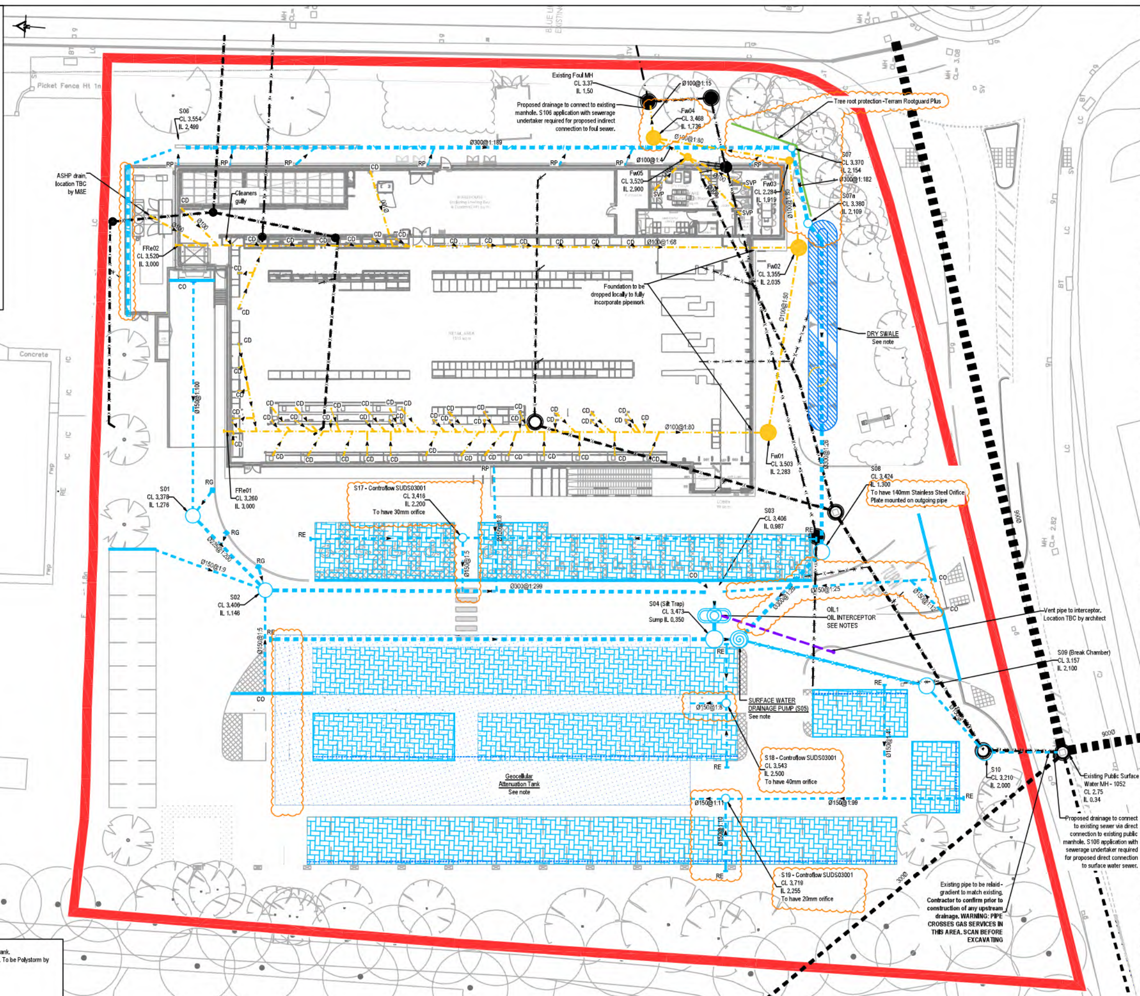



CCTV and confirm downstream manhole IL / location
confirm IL and CCTV run. Find out if buried manhole or slow bend.
Unable To Locate Water Supply To Building
Slited No Exit Visible
Possible Buried MH
Dense Trees & Bushes No Access
IC CL= 4.03 Interceptor WL 1.11d No Exit Visible Flooded
MH CL= 3.36 IL= 2.54
MH CL= 3.58 IL= 1.75
MH CL=2.98 IL= 2.11
MH CL= 2.92 IL= 2.08
MH CL= 3.12
MH CL= 3.08
MH CL= 4.10
MH CL= 2.82
MH CL= 2.75
UTILITY SURVEY BOUNDARY MAY 2020
UTILITY SURVEY NOTES
ABBREVIATION KEY
KEY FOR UNDERGROUND S

Sewer Surveys UK LTD

Unit 14b, Orgreave Close, Sheffield, S13 9NP.
[redacted]

Appendix B – Proposed Drainage Design



KEY

- Site Boundary
- Proposed Private Surface Water Drain
- Proposed Private Surface Water Rising Main
- Proposed Private Foul Drain
- Proposed Perforated Pipe
- Proposed Vent Pipe
- Existing Surface Water Drainage
- Existing Foul Drainage
- Drainage to be abandoned
- Proposed Access Chamber - See Schedules
- Existing Public Access Chambers
- Proposed Cellular Attenuation Tank (See Notes)
- Proposed Permeable Parking Bays
- Proposed Foul Pop-Up Connection (Soil Vent Pipe)
- Proposed Condensate Drain (To Foul)
- Proposed Rain Water Downpipe (With Rodding Access at Ground Level)
- Proposed Road Gully
- Proposed Rodding Eye (To Foul)
- Proposed Rodding Eye (To Surface Water)
- Proposed Filter Drain
- Proposed Surface Water Pump
- Proposed Channel Drain
- Proposed Dry Swale
- Indicative Root Protection - Terram Rootguard Plus

HIGH GROUND WATER LEVEL
Ground water level has been recorded as high in this area, refer to site investigation. Contractor to allow for dewatering during construction of drainage and below grown structures.

Permeable Parking Bays
All permeable paving surfaces indicated are to be tanked (i.e. do not infiltrate to ground) and drain via collector drain as indicated.
Permeable sub base depth as per details.

Bypass Separator - OIL01
Class 1 Bypass separator, SPEL 210 C1/SC.
Tank to be 'super heavy' specification, compatible for installation in groundwater zone.
Complete with alarm system and vent. Invert levels fall 100mm between inlet and outlet. Vent location to be positioned next to nearest lighting column; alarm to sound in manager's office - refer to M&E engineer's drawings & specification

Surface Water Drainage Pump
Vertical Pump Chamber (BY TT Pumps or similar and approved).
- Installation detail as per manufacturer's requirements.
- To be fitted with alarm. Alarm to sound in manager's office - refer to M&E engineer's drawings & specification (in the event of pump failure)
- To pump at fixed rate of 5.0L/s maximum

Dry Swale

Top Level	3.40m
Base Level	3.11m
Top Width	3.00m
Base Width	1.00m
Side Slopes	1:3

1000mm wide underdrain required with perforated pipe, depth varies. See detail.

Inlet IL	2.1m
Outlet IL	1.9m

Underdrain and swale to be lined with impermeable membrane, see detail drawings

Cellular Attenuation Tank - Design Notes
Surface water from impermeable areas in the development to be attenuated via cellular attenuation tank.
Tank formed with geocellular attenuation crates, with full access channels provided for maintenance. To be Polystorm by Polypipe or similar and approved.

Plan dimensions	44 m x 18 m
Tank unit depth	0.50m
Tank volume	396m3
Porosity	95%
Effective storage	376.2m3
Cover level (Varies)	3.77m to 3.41m
Top of tank level	2.0m (1.20m Minimum Cover Required)
Tank base level	1.5m

- Specialist tank supplier to confirm backfill/installation requirements for cover level and loading conditions.
- High ground water level is expected, concrete encasement to tank required.
- Contractor to allow for dewatering during excavations.

REV	DATE	DESCRIPTION	DRW	CHK
C01	18.12.23	First Issue	SI	AJP
C02	13.02.23	S07a & drainage to back of store arrangment amended. Orifice plate added to S06. Controflow inspection chambers added (S17,S18,S19). Interceptor reduced to 010 model, super heavy / groundwater compatible requirements note added for clarity. Attenuation tank manufacturer changed to Polypipe (Versavoid discontinued). Unit height now 0.5m (Volume unchanged).	AJP	RH

GENERAL NOTES

DRAWINGS AND SPECIFICATIONS: This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialists drawings together with the specification.

BUILDING REGULATIONS AND WARRANTY PROVIDER APPROVALS: Please note that it is the responsibility of the Client/Main Contractor to ensure that Building Regulations and warranty provider (e.g. NHBC) approval of all design and construction details is achieved prior to construction on site.

DRAINAGE NOTES

DRAINAGE STANDARDS: All private drainage works shall be in accordance with Building Regulations Document Part H. All adoptable drainage works shall be in accordance with Sewerage Sector Guidance Appendix C : Design and Construction Guidance and statutory undertaker's requirements.

ABOVE GROUND DRAINAGE: RWP/SVP drainage positions shown on Craddys drawings, upon which the below ground drainage is designed, are based upon the positions provided to us by the Architect and these are to be set out on the Architect's floor plans unless agreed otherwise. If above ground drainage positions change then Craddys will need to be informed of these changes in writing and the changes in position clearly noted or highlighted on a drawing, i.e. using revision clouds, with relevant CAD files provided to Craddys below ground drainage drawings to be updated. Note that should these changes occur following Craddys issue of Construction status drawings then there is a risk of the contractor undertaking abortive works.

LAYING DRAINAGE. It is recommended that all drains be laid starting from the downstream connection to the existing network and working upstream to and through the new development.

DRAINAGE PIPE SIZES: All foul water drains to be 100mm diameter unless noted otherwise. All surface water drains to be 150mm U.N.O.

MANHOLE COVER LEVELS: All manhole & inspection chamber cover levels are to be adjusted to suit the Architect's proposed finished surface levels. If the cover levels proposed in the drainage schedules vary from proposed surface level by more than 100mm, Contractor to notify Craddys.

PIPE LENGTHS: Pipe to be laid in 3m lengths.

PPIC: All PPIC's to be orientated such that the main discharge passes through the main/middle branch. Additionally all foul PPIC's to be orientated such that a toilet or bathroom soil stack connects to the middle/main branch.

CHANNEL DRAIN: Drainage channel to be RECYFIX MONOTEC 100 by Hauraton with Grated covers to be D400 grade or similar approved. To be installed with manufacturer's details. Channels to be type 380, except for lorry ramp channel which is to be type 230.

C D M : SIGNIFICANT HAZARDS

THE FOLLOWING HEALTH AND SAFETY HAZARDS ARE IDENTIFIED BY THE DESIGNER AS ABNORMAL IN PURSUANCE OF THE CURRENT CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS.

RISKS DURING CONSTRUCTION:
- High groundwater level
- Deep excavations
- Existing Services: SCAN BEFORE EXCAVATING, REFER TO SITE UTILITIES DRAWING.

OPERATION / MAINTENANCE RISKS:
- PUMP STATION
- INTERCEPTOR
- GULLIES / CHANNEL DRAINS / CONTROFLOW UNITS
- SWALES / FILTER DRAINS

RISKS DURING DEMOLITION/DECOMMISSIONING/DISMANTLING/ALTERATIONS:
- No abnormal risks have been identified relating to this design element.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) TO SAFE SYSTEMS OF WORK.

Client
ALDI - Aldi Stores Ltd.

Project Title
ALDI STORE

Project Address
HOSTMOOR AVENUE
MARCH

Drawing Title
PROPOSED DRAINAGE LAYOUT

Job No.	Originator	Zone	Level	Type	Role
13173	CDY	XX	XX	DR	C

System Classification	Drawing No.	Suitability	Revision
Ss_50_35_00	0050	A4	C02

Drawn	Checked	Date	Scale	Size
SI	AJP	18.12.23	1:200	A1

Approved	Craddys Job#
RAG	13173

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CRADDYS
Consulting Civil and Structural Engineers
www.craddys.co.uk

REV	DATE	DESCRIPTION	DRW	CHK
C01	18.12.23	FIRST ISSUE	SI	AJP
C02	13.02.24	S07a & drainage to back of store arrangment amended. Orifice plate added to S06. Controflow inspection chambers added (S17,S18,S19).	AJP	RH

Private Foul Access Chamber Schedule												
MH Ref.	Cover & Invert Level (m)	Depth (m)	Pipes In Dia. (mm)	Pipes In Invert Level (m)	Pipes Out Dia. (mm)	Pipes Out Invert Level (m)	MH Size (mm)	MH Type	Cover Size (mm)	Cover Grade	Eastings	Northings
Fw01	CL = 3,503 IL = 2,283	1,220	Ø100	2,283	∅100	2,283	Ø1350	C	1200x675	D400	540201,096	298079,891
Fw02	CL = 3,355 IL = 2,035	1,320	Ø100 Ø100	2,035 2,035	∅100	2,035	Ø1350	C	1200x675	D400	540220,854	298078,047
Fw04	CL = 3,468 IL = 1,736	1,732	Ø100 Ø100	1,736 1,736	∅100	1,736	Ø1200	B	675x675	D400	540231,352	298094,249

Private Foul Inspection Chamber Schedule								
MH Ref.	Cover & Invert Level (m)	Depth (m)	MH Size (mm)	MH Type	Cover Size (mm)	Cover Grade	Eastings	Northings
Fw03	CL = 2,284 IL = 1,919	0.365	Ø450	D	450Ø or 450x450	B125	540229.992	298079.712
Fw05	CL = 3.520 IL = 2,900	0.620	Ø450	D	450Ø or 450x450	B125	540229.597	298090.486

Note: Vented covers to be pedestrian safe mesh grating

Private Surface Water Access Chamber Schedule													
MH Ref.	Cover & Invert Level (m)	Depth (m)	Sump (m)	Pipes In Dia. (mm)	Pipes In Invert Level (m)	Pipes Out Dia. (mm)	Pipes Out Invert Level (m)	MH Size (mm)	MH Type	Cover Size (mm)	Cover Grade	Eastings	Northings
OIL1	CL = 3.439 IL VARIES	2.569 (To outlet IL)	0.000	∅300	0.970	∅300	0.870	OIL SEPARATOR		675x675	D400	540181.324	298084.181
S01	CL = 3,378 IL = 1.276	2,102	0,000	∅150 ∅150	1,351 1,351	∅225	1,276	Ø1200	B	675x675	D400	540187,911	298140,084
S02	CL = 3,406 IL = 1.146	2,260	0,000	∅225 ∅150 ∅150 ∅150	1,221 1,296 1,296 1,296	∅300	1,146	Ø1200	B	675x675	D400	540180,601	298131,855
S03	CL = 3.406 IL = 0,987	2.419	0.000	∅150 ∅300 ∅150	1,137 0.987 1.137	∅300	0.987	Ø1500	B	675x675	D400	540183.818	298084.353
S04	CL = 3,473 IL = 0.350	3,123	0,500	∅300 ∅300	0,850 0.850	∅300	0,850	Ø1500	B+Silt Trap	1200x675	D400	540178,830	298084,008
S05 - Pump	CL = 3,466 IL VARIES	Depth to Wet Well TBC	0.000	∅300 ∅300	0.840 0.850	TO BE CONFIRMED BY SPECIALIST DESIGNER		PUMP STATION		TBC	D400	540179.003	298081.371
S06	CL = 3,554 IL = 2,499	1,055	0,000	∅150 ∅150	2,644 2,644	∅300	2,499	Ø1350	C	1200x675	D400	540226,756	298144,417
S07	CL = 3,370 IL = 2,154	1.216	0.000	∅300	2.154	∅300	2.154	Ø600	D	600Ø or 600x600	B125	540231.379	298079.539
S07a	CL = 3.380 IL = 2.109	1,271	0,000	∅300	2.109	∅300	2,109	Ø600	D	600Ø or 600x600	B125	540223,508	298077,249
S08	CL = 3,424 IL = 1,300	2.124	0,000	∅300	1,300	∅300	1,300	Ø1350	B +ORIFICE PLATE	675x675	D400	540188,883	298073.323
S09	CL = 3.157 IL = 2,100	1.057	0.000	∅150	2.100	∅150	2.100	Ø1350	C	1200x675	D400	540175.513	298061.200
S10	CL = 3,210 IL = 2,000	1.210	0,000	∅150	2,000	∅150	2,000	Ø1350	C	1200x675	D400 Vented	540168,921	298054,574
S17	CL = 3,416 IL = 2,200	1.216	0,000	∅150 ∅150	2,400 2,400	∅150	2,200	Ø600	D (Controflow)	600Ø or 600x600	D400	540187,641	298111,379
S18	CL = 3,543 IL = 2,500	1,043	0,000	∅150 ∅150	2,700 2,700	∅150	2,500	Ø600	D (Controflow)	600Ø or 600x600	D400	540172,166	298082,264
S19	CL = 3,719 IL = 2,255	1,464	0,000	∅150 ∅150	2,550 2,550	∅150	2,255	Ø600	D (Controflow)	600Ø or 600x600	D400	540162,066	298081,602

GENERAL NOTES

DRAWINGS AND SPECIFICATIONS: This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialists drawings together with the specification.

BUILDING REGULATIONS AND WARRANTY PROVIDER APPROVALS: Please note that it is the responsibility of the Client/Main Contractor to ensure that Building Regulations and warranty provider (e.g. NHBC) approval of all design and construction details is achieved prior to construction on site.

DRAINAGE NOTES

Refer to drainage general arrangement drawings

C D M : SIGNIFICANT HAZARDS

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RISKS DURING CONSTRUCTION:
- High groundwater level
- Deep excavations
- Existing Services

OPERATION / MAINTENANCE RISKS:
- PUMP STATION
- INTERCEPTOR
- GULLIES / CHANNEL DRAINS / CONTROFLOW UNITS
- SWALES / FILTER DRAINS

RISKS DURING DEMOLITION/DECOMMISSIONING/DISMANTLING/ALTERATIONS:
- No abnormal risks have been identified relating to this design element.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) TO SAFE SYSTEMS OF WORK.

Client
ALDI - Aldi Stores Ltd.

Project Title
ALDI STORE

Project Address
HOSTMOOR AVENUE
MARCH

Drawing Title
PROPOSED DRAINAGE SCHEDULE

Job No.	Originator	Zone	Level	Type	Role
13173	CDY	XX	XX	DR	C

System Classification	Drawing No.	Suitability	Revision
Ss_50_35_00	0055	A4	C02

Drawn	Checked	Date	Scale	Size
SI	AJP	18.12.23	NTS	A1

Approved	Craddys Job#
RAG	13173

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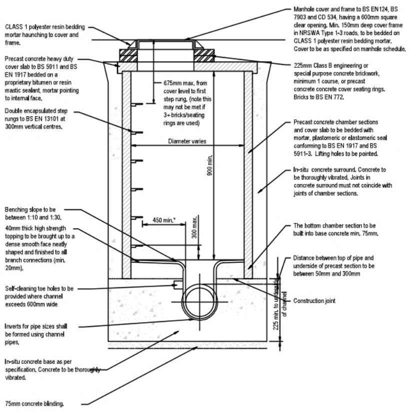
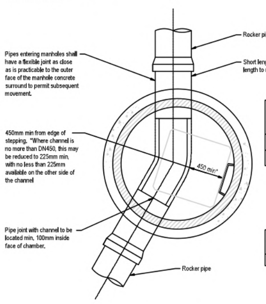
REV	DATE	DESCRIPTION	DRW	CHK
C01	18.12.23	First Issue	SI	AJP
C02	13.02.24	Silt trap added	AJP	RH



CLASS 1 polyester resin bedding mortar haunching to cover and frame.
Precast concrete heavy duty cover slab to BS 5911 and BS EN 1917 bedded on a proprietary bitumen or resin mastic sealant, mortar pointing to internal face.
Double encapsulated step rungs to BS EN 13101 at 300mm vertical centres.
675mm max. from cover level to first step rung. (note this may not be met if 3+ bricks/seating rings are used)
Diameter varies
900 min.
450 min.*
300 max.
Benching slope to be between 1:10 and 1:30.
40mm thick high strength topping to be brought up to a dense smooth face neatly shaped and finished to all branch connections (min. 20mm).
Self-cleaning toe holes to be provided where channel exceeds 600mm wide
Inverts for pipe sizes shall be formed using channel pipes.
In-situ concrete base as per specification. Concrete to be thoroughly vibrated.
75mm concrete blinding.
Manhole cover and frame to BS EN124, BS 7903 and CD 534, having a 600mm square clear opening. Min. 150mm deep cover frame in NRSWA Type 1-3 roads, to be bedded on CLASS 1 polyester resin bedding mortar. Cover to be as specified on manhole schedule.
225mm Class B engineering or special purpose concrete brickwork, minimum 1 course, or precast concrete concrete cover seating rings. Bricks to BS EN 772.
Precast concrete chamber sections and cover slab to be bedded with mortar, plastomeric or elastomeric seal conforming to BS EN 1917 and BS 5911-3. Lifting holes to be pointed.
In-situ concrete surround. Concrete to be thoroughly vibrated. Joints in concrete surround must not coincide with joints of chamber sections.
The bottom chamber section to be built into base concrete min. 75mm.
Distance between top of pipe and underside of precast section to be between 50mm and 300mm
Construction joint
225 min. to underside of channel



Rocker pipe
Short length pipe to be similar length to rocker pipe.
Pipes entering manholes shall have a flexible joint as close as is practicable to the outer face of the manhole concrete surround to permit subsequent movement.
450mm min from edge of stepping. *Where channel is no more than DN450, this may be reduced to 225mm min, with no less than 225mm available on the other side of the channel
450 min*
Pipe joint with channel to be located min. 100mm inside face of chamber.
Rocker pipe

Manhole Chamber Sizes

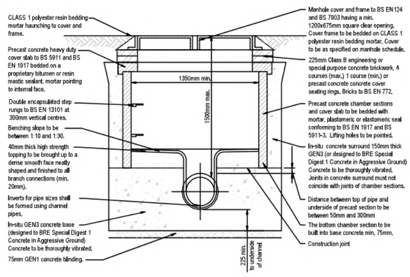
Diameter of Largest pipe in Manhole (mm)	Internal Diameter of Manhole (mm)
Less than 375	1200
375 - 450	1350

Rocker Pipe Lengths

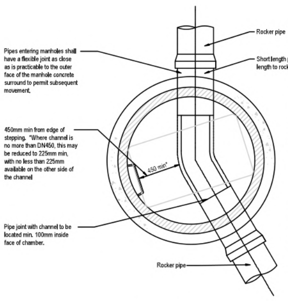
Pipe dia.	Rocker pipe length
100 - 600	0.6m

MANHOLE - TYPE B - RIGID MATERIAL WITH CONCRETE SURROUND

Depth to soffit = 1.5 - 3.0m



CLASS 1 polyester resin bedding mortar haunching to cover and frame.
Precast concrete heavy duty cover slab to BS 5911 and BS EN 1917 bedded on a proprietary bitumen or resin mastic sealant, mortar pointing to internal face.
Double encapsulated step rungs to BS EN 13101 at 300mm vertical centres.
Benching slope to be between 1:10 and 1:30.
40mm thick high strength topping to be brought up to a dense smooth face neatly shaped and finished to all branch connections (min. 20mm).
Inverts for pipe sizes shall be formed using channel pipes.
In-situ GEN3 concrete base (designed to BRE Special Digest 1 Concrete in Aggressive Ground) Concrete to be thoroughly vibrated.
75mm GEN1 concrete blinding.
1350mm min.
1500mm max.
Manhole cover and frame to BS EN124 and BS 7903 having a min. 1200x675mm square clear opening. Cover frame to be bedded on CLASS 1 polyester resin bedding mortar. Cover to be as specified on manhole schedule.
225mm Class B engineering or special purpose concrete brickwork, 4 courses (max.) 1 course (min.) or precast concrete concrete cover seating rings. Bricks to BS EN 772.
Precast concrete chamber sections and cover slab to be bedded with mortar, plastomeric or elastomeric seal conforming to BS EN 1917 and BS 5911-3. Lifting holes to be pointed.
In-situ concrete surround 150mm thick GEN3 (or designed to BRE Special Digest 1 Concrete in Aggressive Ground) Concrete to be thoroughly vibrated. Joints in concrete surround must not coincide with joints of chamber sections.
Distance between top of pipe and underside of precast section to be between 50mm and 300mm
The bottom chamber section to be built into base concrete min. 75mm.
Construction joint
225 min. to underside of channel



Rocker pipe
Short length pipe to be similar length to rocker pipe.
Pipes entering manholes shall have a flexible joint as close as is practicable to the outer face of the manhole concrete surround to permit subsequent movement.
450mm min from edge of stepping. *Where channel is no more than DN450, this may be reduced to 225mm min, with no less than 225mm available on the other side of the channel
450 min*
Pipe joint with channel to be located min. 100mm inside face of chamber.
Rocker pipe

Manhole Chamber Sizes

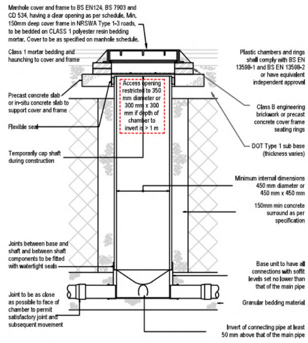
Diameter of Largest pipe in Manhole (mm)	Internal Diameter of Manhole (mm)
Less than 450	1350

Rocker Pipe Lengths

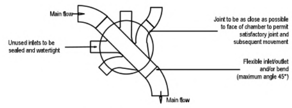
Pipe dia.	Rocker pipe length
100 - 600	0.6m

MANHOLE - TYPE C - RIGID MATERIAL WITH CONCRETE SURROUND

Depth to soffit of pipe less than 1.5m



Manhole cover and frame to BS EN124, BS 7903 and CD 534, having a clear opening as per schedule. Min. 150mm deep cover frame in NRSWA Type 1-3 roads, to be bedded on CLASS 1 polyester resin bedding mortar. Cover to be as specified on manhole schedule.
Class 1 mortar bedding and haunching to cover and frame
Precast concrete slab or in-situ concrete slab to support cover and frame
Flexible seal
Temporarily cap shaft during construction
Access opening restricted to 350 mm diameter or 300 mm x 300 mm if depth of chamber to invert is > 1 m
Joints between base and shaft and between shaft components to be fitted with watertight seals
Joint to be as close as possible to face of chamber to permit satisfactory joint and subsequent movement
Plastic chambers and rings shall comply with BS EN 13598-1 and BS EN 13598-2 or have equivalent independent approval
Class B engineering brickwork or precast concrete cover frame seating rings
DOT Type 1 sub base (thickness varies)
Minimum internal dimensions 450 mm diameter or 450 mm x 450 mm
150mm min concrete surround as per specification
Base unit to have all connections with soffit levels set no lower than that of the main pipe
Granular bedding material
Invert of connecting pipe at least 50 mm above that of the main pipe

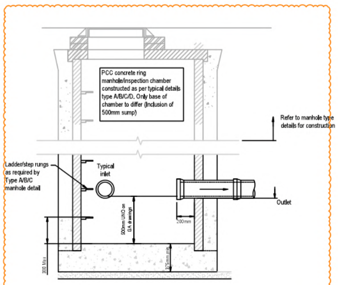


Note: Where chambers are positioned on 90° corners, always use the main channel by fitting a 45° bend on the inlet and outlet
Where a bend is used immediately outside the manhole, this may be used as the rocker pipe.

TYPICAL INSPECTION CHAMBER DETAIL - TYPE D PPIC (CIRCULAR)

Depth to soffit = 2.0m max.

Scale 1:20



PCC concrete ring manhole/inspection chamber constructed as per typical details type A/B/C/D. Only base of chamber to differ (Inclusion of 500mm sump)
Refer to manhole type details for construction
Ladder/step rungs as required by Type A/B/C manhole detail
Typical inlet
Outlet
500mm U.N.O on G.A drawings
200mm
375mm min
300 Max

TYPICAL SILT TRAP DETAIL

NTS

GENERAL NOTES

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DRAINAGE NOTES

Refer to general arrangement drawings for drainage notes.

C D M : SIGNIFICANT HAZARDS

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RISKS DURING CONSTRUCTION:
- Refer to general arrangement drawings

OPERATION / MAINTENANCE RISKS:
- Refer to general arrangement drawings

RISKS DURING DEMOLITION/DECOMMISSIONING/DISMANTLING/ALTERATIONS:
- Refer to general arrangement drawings

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) TO SAFE SYSTEMS OF WORK.

Client: ALDI - Aldi Stores Ltd.

Project Title: ALDI STORE

Project Address: HOSTMOOR AVENUE MARCH

Drawing Title: PROPOSED DRAINAGE DETAILS SHEET 1

Job No.	Originator	Zone	Level	Type	Role
13173	CDY	XX	XX	DR	C

System Classification	Drawing No.	Suitability	Revision
Ss_50_35_00	0060	A4	C02

Drawn	Checked	Date	Scale	Size
SI	AJP	18.12.23	AS SHOWN	A1

Approved	Craddys Job#
RAG	13173

IF YOU HAVE A QUERY CALL US
SCALING FROM THIS DRAWING OR OBTAINING DIMENSIONS ELECTRONICALLY MAY NOT PROVIDE ACCURATE INFORMATION & SHOULD BE AVOIDED. WORK ONLY FROM FIGURED DIMENSIONS.

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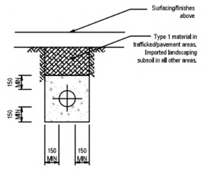
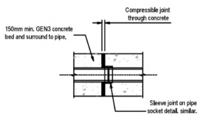
REV	DATE	DESCRIPTION	DRW	CHK
C01	18.12.23	FIRST ISSUE	SI	AJP





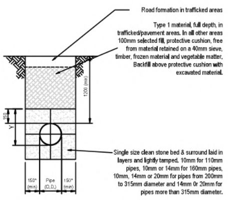
NOTE: Where sewers have a concrete bed and surround, flexibility of all joints is to be maintained by providing a flexible joint through concrete using a compressible board. Board to be pre-cut to pipe diameter and to provide a complete break between the concrete surrounds. The compressible board is to be 18mm thick for pipe sizes up to 450mm and 36mm thick for larger diameters.

Notes for class 'Z':

1. Bedding beneath and at sides of pipe to be well compacted.
2. Geotextiles may be used where directed or approved by the engineer to contain bedding material in certain soils e.g. running sand.
3. In very wet conditions, where directed or approved by the engineer a temporary land drain may be laid within the granular bed.
4. Where rigid pipes with flexible joints are used, the concrete protection is to be interrupted over its full cross section at intervals not exceeding 5m (or as indicated by the engineer) by a shaped former of bitumen impregnated compressible filler. These interuptions shall coincide with pipe joints.
5. Concrete to be GEN3 concrete.
6. Where flexible pipes are used care must be taken to prevent the pipes from floating.

CLASS Z BEDDING WHERE COVER TO SOFFIT IS LESS THAN 600mm (1200mm IN TRAFFICKED AREAS) OR WHERE PIPE CLEARANCE BETWEEN PIPES IS LESS THAN 300mm

Not to scale.



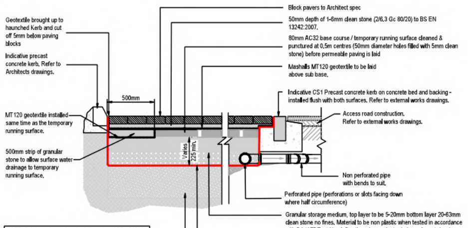
Road formation in trafficked areas
Type 1 material, full depth, in trafficked/pavement areas. In all other areas 100mm selected fill, protective cushion, free from material retained on a 40mm sieve, timber, frozen material and vegetable matter. Backfill above protective cushion with excavated material.
1200 (min)
150
Y
Single size clean stone bed & surround laid in layers and lightly tamped. 10mm for 110mm pipes, 10mm or 14mm for 160mm pipes, 10mm, 14mm or 20mm for pipes from 200mm to 315mm diameter and 14mm 0r 20mm for pipes more than 315mm diameter.
150* (min)
Pipe (O.D.)
150* (min)

Notes for class 'S':

1. Bedding beneath and at sides of pipe to be well compacted.
2. The first 300mm of fill above the crown of the pipe is to be lightly tamped by hand. Mechanical compaction may be used only above this level.
3. Geotextiles may be used where directed or approved by the engineer to contain bedding material in certain soils e.g. running sand.
4. In very wet conditions, where directed or approved by the engineer a temporary land drain may be laid within the granular bed.
5. * = 150mm for 300mm diameter pipes or less.
6. * = 200mm for pipe diameters over 300mm.
7. Y = 100mm for 100mm diameter pipes or less.
8. Y = 150mm for pipe diameters more than 100mm.
9. Y = 200mm for pipe trenches in rock.

CLASS S BEDDING FOR DRAINS (WHERE COVER TO SOFFIT IS MORE THAN 1200mm IN TRAFFICKED AREAS OR 600mm ELSEWHERE)

Scale 1:20



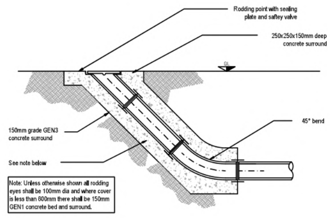
Block pavers to Architect spec
50mm depth of 1-6mm clean stone (2/6.3 Gc 80/20) to BS EN 13242:2007.
80mm AC32 base course / temporary running surface cleaned & punctured at 0.5m centres (50mm diameter holes filled with 5mm clean stone) before permeable paving is laid
Mashalls MT120 geotextile to be laid above sub base.
Geotextile brought up to haunched Kerb and cut off 5mm below paving blocks
Indicative precast concrete kerb. Refer to Architects drawings.
500mm
Indicative CS1 Precast concrete kerb on concrete bed and backing - installed flush with both surfaces. Refer to external works drawings.
MT120 geotextile installed same time as the temporary running surface.
Access road construction. Refer to external works drawings.
500mm strip of granular stone to allow surface water drainage to temporary running surface.
Varies
225 min.
Non perforated pipe with bends to suit.
Perforated pipe (perforations or slots facing down where half circumference)
Granular storage medium, top layer to be 5-20mm bottom layer 20-63mm clean stone no fines. Material to be non plastic when tested in accordance with BS1377 Test No. 4. Depth varies - refer to drainage layout drawing
Tanking membrane, Marshalls MM380, to be wrapped around entire sub base layer in accordance with manufacturer's recommendations
Capping layer to provide 15%CBR at surface in accordance with external works details

NOTE: Sub base & capping depth based on CBR of 15% In-situ testing to be undertaken at formation level (as per remainder of car park) to determine whether additional thickness is required

NOTE: All block paving works to be in accordance with BS 7533 (part 13 and other relevant sections)

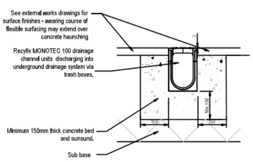
TANKED (NO INFILTRATION) PERMEABLE PAVEMENT (BLOCK PAVING)

Scale 1:20



Note: Unless otherwise shown all rodding eyes shall be 100mm dia and where cover is less than 600mm there shall be 150mm GEN1 concrete bed and surround.

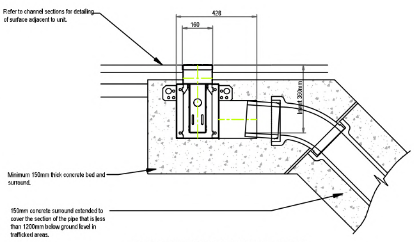
TYPICAL RODDING EYE DETAIL



See external works drawings for surface finishes - wearing course of flexible surfacing may extend over concrete haunching
Recyfix MONOTEC 100 drainage channel units discharging into underground drainage system via trash boxes.
Min 150
Minimum 150mm thick concrete bed and surround.
Sub base

CAR PARK DRAINAGE CHANNEL

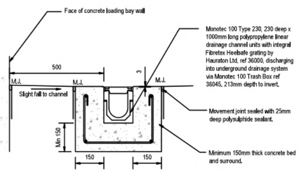
Scale 1:10



Refer to channel sections for detailing of surface adjacent to unit.
428
160
Invert 360mm
Minimum 150mm thick concrete bed and surround.
150mm concrete surround extended to cover the section of the pipe that is less than 1200mm below ground level in trafficked areas.

HAURATON "TRASH BOX" OUTFALL DETAIL

Scale 1:10



Face of concrete loading bay wall
500
3
M.J.
M.J.
M.J.
Slight fall to channel
Monotec 100 Type 230, 230 deep x 1000mm long polypropylene linear drainage channel units with integral Fibretex Heelsafe grating by Hauraton Ltd, ref 36000, discharging into underground drainage system via Monotec 100 Trash Box ref 36045, 213mm depth to invert.
Movement joint sealed with 25mm deep polysulphide sealant.
Min 150
150
150
Minimum 150mm thick concrete bed and surround.

LOADING BAY RAMP DRAINAGE CHANNEL

Scale 1:10

GENERAL NOTES

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DRAINAGE NOTES

Refer to general arrangement drawings for drainage notes.

C.D.M.: SIGNIFICANT HAZARDS

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RISKS DURING CONSTRUCTION:
- Refer to general arrangement drawings

OPERATION / MAINTENANCE RISKS:
- Refer to general arrangement drawings

RISKS DURING DEMOLITION/DECOMMISSIONING/DISMANTLING/ALTERATIONS:
- Refer to general arrangement drawings

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Client: **ALDI - Aldi Stores Ltd.**

Project Title: **ALDI STORE**

Project Address: **HOSTMOOR AVENUE MARCH**

Drawing Title: **PROPOSED DRAINAGE DETAILS SHEET 2**

Job No.	Originator	Zone	Level	Type	Role
13173	CDY	XX	XX	DR	C

System Classification	Drawing No.	Suitability	Revision
Ss_50_35_00	0061	A4	C01

Drawn	Checked	Date	Scale	Size
SI	AJP	18.12.23	AS SHOWN	A1

Approved	Craddys Job#
RAG	13173

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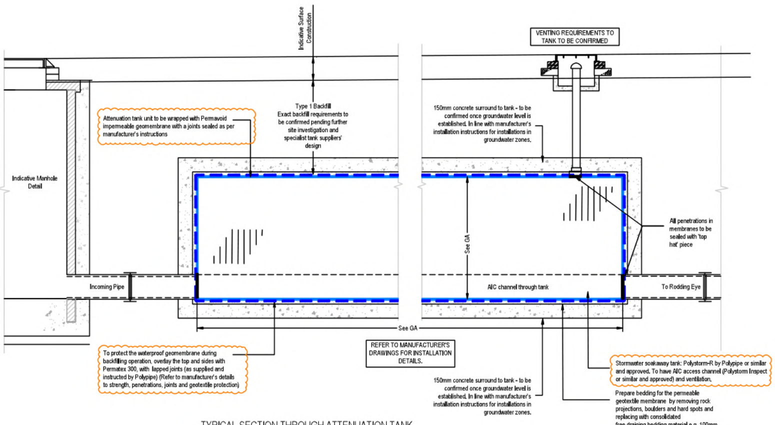
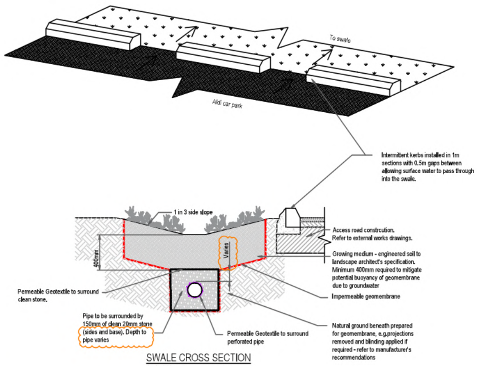
REV	DATE	DESCRIPTION	DRW	CHK
C01	18.12.23	First Issue	SI	AJP
C02	13.02.24	Attenuation tank amended to polystorm - Versavoid discontinued	AJP	RH



Indicative Surface Construction
VENTING REQUIREMENTS TO TANK TO BE CONFIRMED
Attenuation tank unit to be wrapped with Permavoid impermeable geomembrane with a joints sealed as per manufacturer's instructions
Type 1 Backfill
Exact backfill requirements to be confirmed pending further site investigation and specialist tank suppliers' design
150mm concrete surround to tank - to be confirmed once groundwater level is established. In line with manufacturer's installation instructions for installations in groundwater zones.
Indicative Manhole Detail
See GA
All penetrations in membranes to be sealed with 'top hat' piece
Incoming Pipe
AIC channel through tank
To Rodding Eye
See GA
REFER TO MANUFACTURER'S DRAWINGS FOR INSTALLATION DETAILS.
To protect the waterproof geomembrane during backfilling operation, overlay the top and sides with Permatex 300, with lapped joints (as supplied and instructed by Polypipe) (Refer to manufacturer's details to strength, penetrations, joints and geotextile protection)
150mm concrete surround to tank - to be confirmed once groundwater level is established. In line with manufacturer's installation instructions for installations in groundwater zones.
Stormwater soakaway tank: Polystorm-R by Polypipe or similar and approved. To have AIC access channel (Polystorm Inspect or similar and approved) and ventilation.
Prepare bedding for the permeable geotextile membrane by removing rock projections, boulders and hard spots and replacing with consolidated free draining bedding material e.g. 100mm sand.

TYPICAL SECTION THROUGH ATTENUATION TANK.

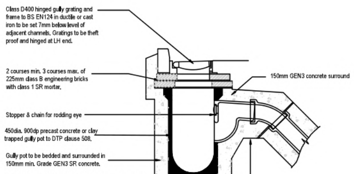
Scale 1:20



To swale
Aldi car park
Intermittent kerbs installed in 1m sections with 0.5m gaps between allowing surface water to pass through into the swale.
1 in 3 side slope
Access road constrcution.
Refer to external works drawings.
Growing medium - engineered soil to landscape architect's specification. Minimum 400mm required to mitigate potential buoyancy of geomembrane due to groundwater
400mm
Varies
Impermeable geomembrane
Permeable Geotextile to surround clean stone.
Pipe to be surrounded by 150mm of clean 20mm stone (sides and base). Depth to pipe varies
Permeable Geotextile to surround perforated pipe
Natural ground beneath prepared for geomembrane, e.g.projections removed and blinding applied if required - refer to manufacturer's recommendations

SWALE CROSS SECTION

Scale 1:20

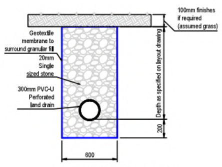


Class D400 hinged gully grating and frame to BS EN124 in ductile or cast iron to be set 7mm below level of adjacent channels. Gratings to be theft proof and hinged at LH end.
2 courses min. 3 courses max. of 225mm class B engineering bricks with class 1 SR mortar.
150mm GEN3 concrete surround
Stopper & chain for rodding eye
450dia. 900dp precast concrete or clay trapped gully pot to DTP clause 508.
Gully pot to be bedded and surrounded in 150mm min. Grade GEN3 SR concrete.
Gully orientation dependent upon discharge point

1. Where plastic pots are used as permanent void formers, these should be surrounded by min. 200mm concrete. Care should be taken to avoid flotation of the pot
2. Unless otherwise stated all concrete to have class II resistance to sulphates.
2. Excavation for gully under paved areas to be backfilled in accordance with DTP specification clause 508.
3. All pipes to gully connections shall be bedded on and surrounded with minimum 150mm concrete with flexible joints formed by a shaped form of compressive fillerl.

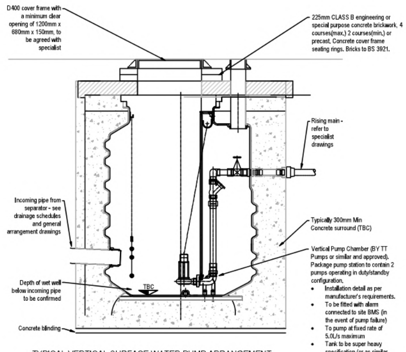
TRAPPED ROAD GULLY

Scale: 1:20



TYPICAL LAND DRAIN DETAIL

Depth to invert as specified on drawing



D400 cover frame with a minimum clear opening of 1200mm x 680mm x 150mm, to be agreed with specialist
225mm CLASS B engineering or special purpose concrete brickwork, 4 courses(max.) 2 courses(min.) or precast. Concrete cover frame seating rings. Bricks to BS 3921.
Rising main - refer to specialist drawings
Incoming pipe from separator - see drainage schedules and general arrangement drawings
Typically 300mm Min Concrete surround (TBC)
Depth of wet well below incoming pipe to be confirmed
TBC
Concrete blinding

Vertical Pump Chamber (BY TT Pumps or similar and approved). Package pump station to contain 2 pumps operating in duty/standby configuration.
- Installation detail as per manufacturer's requirements.
- To be fitted with alarm connected to site BMS (in the event of pump failure)
- To pump at fixed rate of 5.0L/s maximum
- Tank to be super heavy specification (or as similar and approved by supplier) to deal with possible groundwater

TYPICAL VERTICAL SURFACE WATER PUMP ARRANGEMENT
TO BE CONFIRMED BY SPECIALIST

NOT TO SCALE

GENERAL NOTES

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DRAINAGE NOTES

Refer to general arrangement drawings for drainage notes.

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RISKS DURING CONSTRUCTION:
- Refer to general arrangement drawings

OPERATION / MAINTENANCE RISKS:
- Refer to general arrangement drawings

RISKS DURING DEMOLITION/DECOMMISSIONING/DISMANTLING/ALTERATIONS:
- Refer to general arrangement drawings

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) TO SAFE SYSTEMS OF WORK.

Client: ALDI - Aldi Stores Ltd.

Project Title: ALDI STORE

Project Address: HOSTMOOR AVENUE
MARCH

Drawing Title: **PROPOSED DRAINAGE DETAILS SHEET 3**

Job No.	Originator	Zone	Level	Type	Role
13173	CDY	XX	XX	DR	C

System Classification	Drawing No.	Suitability	Revision
Ss_50_35_00	0062	A4	C02

Drawn	Checked	Date	Scale	Size
SI	AJP	18.12.23	AS SHOWN	A1

Approved	Craddys Job#	
RAG	13173	IF YOU HAVE A QUERY CALL US. SCALING FROM THIS DRAWING OR OBTAINING DIMENSIONS ELECTRONICALLY MAY NOT PROVIDE ACCURATE INFORMATION & SHOULD BE AVOIDED. WORK ONLY FROM FIGURED DIMENSIONS

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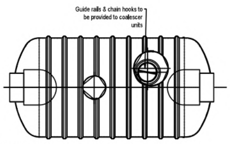
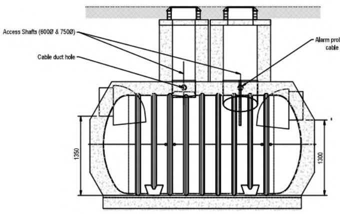
REV	DATE	DESCRIPTION	DRW	CHK
C01	18.12.23	First Issue	SI	AJP
C02	13.02.24	Controflow and orifice detail added. Separator reduced to 010 nominal size model, changed to SPEL tank due to groundwater.	AJP	RH

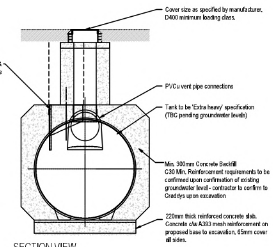


PLAN VIEW
Not To Scale

BYPASS SEPARATORS TO BE FITTED WITH:
- COALESCER GUIDE RAILS
- LIFTING CHAINS
- LIFTING SYSTEMS
- ALL OTHER SAFETY DEVICES REQUIRED FOR REQUIRED MODELS AT SPECIFIED DEPTH OF UNIT.

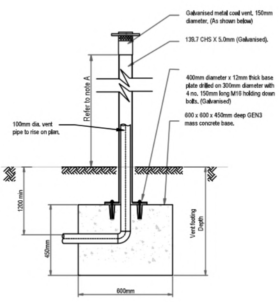


SPEL 210 C1/SC BY-PASS SEPARATOR DETAIL
Not To Scale



Cover size as specified by manufacturer, D400 minimum loading class.
PVCu vent pipe connections
Tank to be 'Extra heavy' specification (TBC pending groundwater levels)
Min. 300mm Concrete Backfill C30 Min. Reinforcement requirements to be confirmed upon confirmation of existing groundwater level - contractor to confirm to Craddys upon excavation
220mm thick reinforced concrete slab. Concrete c/w A393 mesh reinforcement on proposed base to excavation, 65mm cover all sides.

SECTION VIEW
Not To Scale

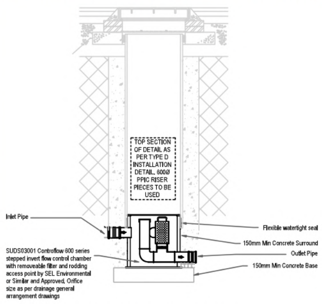


Galvanised metal cowl vent, 150mm diameter, (As shown below)
139.7 CHS X 5.0mm (Galvanised).
400mm diameter x 12mm thick base plate drilled on 300mm diameter with 4 no. 150mm long M16 holding down bolts. (Galvanised)
600 x 600 x 450mm deep GEN3 mass concrete base.
Refer to note A
100mm dia. vent pipe to rise on plan.
1200 min
450mm
Vent footing Depth
600mm

INTERCEPTOR VENTILATION PIPES
Not To Scale

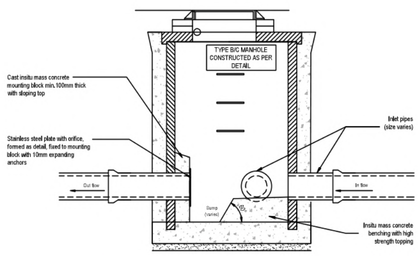
NOTE A:
The ventilating pipe should be as short as practicable and be terminated not less than 2.5 m above paving level nor less than 1 m above the head of an openable window or other opening into a building within a horizontal distance of 3 m.

Galvanised metal cowl vent



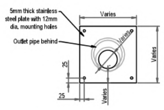
TOP SECTION OF DETAIL AS PER TYPE D INSTALLATION DETAIL, 600Ø PPIC RISER PIECES TO BE USED
Inlet Pipe
Flexible watertight seal
150mm Min Concrete Surround
Outlet Pipe
150mm Min Concrete Base
SUDS03001 Controflow 600 series stepped invert flow control chamber with removeable filter and rodding access point by SEL Environmental or Similar and Approved. Orifice size as per drainage general arrangement drawings

CONTROFLOW LOW FLOW RATE INSPECTION CHAMBER TYPICAL DETAIL
Scale: 1:20

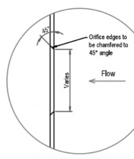


TYPE B/C MANHOLE CONSTRUCTED AS PER DETAIL
Cast insitu mass concrete mounting block min.100mm thick with sloping top
Stainless steel plate with orifice, formed as detail, fixed to mounting block with 10mm expanding anchors
Inlet pipes (size varies)
Out flow
In flow
Sump (varies)
60°
Insitu mass concrete benching with high strength topping

TYPICAL ORIFICE CHAMBER DETAIL.
Scale: 1:20



ORIFICE PLATE DETAIL
Scale 1:10



ORIFICE SECTION
Scale 1:5

GENERAL NOTES

DRAWINGS AND SPECIFICATIONS: This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialists drawings together with the specification.

BUILDING REGULATIONS AND WARRANTY PROVIDER APPROVALS: Please note that it is the responsibility of the Client/Main Contractor to ensure that Building Regulations and warranty provider (e.g. NHBC) approval of all design and construction details is achieved prior to construction on site.

DRAINAGE NOTES

Refer to general arrangement drawings for drainage notes.

C D M : SIGNIFICANT HAZARDS

THE FOLLOWING HEALTH AND SAFETY HAZARDS ARE IDENTIFIED BY THE DESIGNER AS ABNORMAL IN PURSUANCE OF THE CURRENT CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS.

RISKS DURING CONSTRUCTION:
- Refer to general arrangement drawings

OPERATION / MAINTENANCE RISKS:
- Refer to general arrangement drawings

RISKS DURING DEMOLITION/DECOMMISSIONING/DISMANTLING/ALTERATIONS:
- Refer to general arrangement drawings

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) TO SAFE SYSTEMS OF WORK.

Client
ALDI - Aldi Stores Ltd.

Project Title
ALDI STORE

Project Address
HOSTMOOR AVENUE
MARCH

Drawing Title
PROPOSED DRAINAGE DETAILS SHEET 4

Job No.	Originator	Zone	Level	Type	Role
13173	CDY	XX	XX	DR	C

System Classification	Drawing No.	Suitability	Revision
Ss_50_35_00	0063	A4	C02

Drawn	Checked	Date	Scale	Size
SI	AJP	18.12.23	AS SHOWN	A1

Approved	Craddys Job#
RAG	13173

IF YOU HAVE A QUERY CALL US
SCALING FROM THIS DRAWING OR OBTAINING DIMENSIONS ELECTRONICALLY MAY NOT PROVIDE ACCURATE INFORMATION & SHOULD BE AVOIDED. WORK ONLY FROM FIGURED DIMENSIONS

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Appendix C – Microdrainage Calculations

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Sw

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years) 100 Maximum Rainfall (mm/hr) 50 Volumetric Runoff Coeff. 0.750 Minimum Backdrop Height (m) 0.200 Min Vel for Auto Design only (m/s) 1.00
M5-60 (mm) 19.000 Maximum Time of Concentration (mins) 30 PIMP (%) 100 Maximum Backdrop Height (m) 1.500 Min Slope for Optimisation (1:X) 500
Ratio R 0.436 Foul Sewage (l/s/ha) 0.000 Add Flow / Climate Change (%) 0 Min Design Depth for Optimisation (m) 1.200

Designed with Level Soffits

Time Area Diagram for Sw

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.001	4-8	0.394	8-12	0.196

Total Area Contributing (ha) = 0.592

Total Pipe Volume (m³) = 15.677

Network Design Table for Sw

\# - 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	24.851	0.249	99.8	0.019	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	11.006	0.055	200.1	0.026	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	25.698	1.400	18.4	0.015	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	47.611	0.159	299.4	0.057	0.00	0.0	0.600	o	300	Pipe/Conduit	
3.000	15.492	1.000	15.5	0.028	5.00	0.0	0.600	o	225	Pipe/Conduit	
4.000	5.700	0.057	100.0	0.050	5.00	0.0	0.600	o	150	Pipe/Conduit	
4.001	5.700	0.200	28.5	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)
1.000	50.00	5.41	1.600	0.019	0.0	0.0	0.0	1.01	17.8	2.6
1.001	50.00	5.61	1.276	0.045	0.0	0.0	0.0	0.92	36.6	6.1
2.000	50.00	5.18	2.700	0.015	0.0	0.0	0.0	2.36	41.7	2.0
1.002	50.00	6.49	1.146	0.117	0.0	0.0	0.0	0.90	63.9	15.8
3.000	50.00	5.08	2.064	0.028	0.0	0.0	0.0	3.34	132.9	3.8
4.000	50.00	5.09	2.257	0.050	0.0	0.0	0.0	1.00	17.8	6.8
4.001	50.00	5.14	2.200	0.050	0.0	0.0	0.0	1.89	33.5	6.8

Network Design Table for Sw

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
1.003	5.000	0.037	135.1	0.050	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	2.643	0.010	264.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.000	69.798	0.345	202.3	0.200	5.00	0.0	0.600	o	300	Pipe/Conduit	
5.001	8.200#	0.045	182.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.002	21.000#	0.021	1000.0	0.012	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.003	12.830	0.490	26.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.004	12.137	0.460	26.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
6.000	3.800	0.038	100.0	0.053	5.00	0.0	0.600	o	150	Pipe/Conduit	
6.001	3.800	0.255	14.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
7.000	3.800	0.038	100.0	0.082	5.00	0.0	0.600	o	150	Pipe/Conduit	
7.001	3.800	0.500	7.6	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	20.471	-1.260	-16.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.006	9.347	0.100	93.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.007	8.286	1.100	7.5	0.000	0.00	0.0	0.600	o	100	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)
1.003	50.00	6.55	0.987	0.245	0.0	0.0	0.0	1.35	95.5	33.2
1.004	50.00	6.60	0.850	0.245	0.0	0.0	0.0	0.96	68.0	33.2
5.000	50.00	6.06	2.499	0.200	0.0	0.0	0.0	1.10	77.9	27.1
5.001	50.00	6.17	2.154	0.200	0.0	0.0	0.0	1.16	82.1	27.1
5.002	50.00	6.89	2.109	0.212	0.0	0.0	0.0	0.49	34.6	28.7
5.003	50.00	6.96	1.790	0.212	0.0	0.0	0.0	3.08	218.1	28.7
5.004	50.00	7.02	1.300	0.212	0.0	0.0	0.0	3.07	217.2	28.7
6.000	50.00	5.06	2.263	0.053	0.0	0.0	0.0	1.00	17.8	7.2
6.001	50.00	5.09	2.255	0.053	0.0	0.0	0.0	2.62	46.4	7.2
7.000	50.00	5.06	2.538	0.082	0.0	0.0	0.0	1.00	17.8	11.1
7.001	50.00	5.08	2.500	0.082	0.0	0.0	0.0	3.68	65.0	11.1
1.005	50.00	10.71	0.840	0.592	0.0	0.0	0.0	0.09	1.6«	80.2
1.006	50.00	10.86	2.100	0.592	0.0	0.0	0.0	1.04	18.4«	80.2
1.007	50.00	10.90	2.000	0.592	0.0	0.0	0.0	2.83	22.3«	80.2

Manhole Schedules for Sw

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)	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)
Structure - (514)	2.220	0.620	Open Manhole	1200	1.000	1.600	150					S07a+Swale	3.400	1.291	Open Manhole	600	5.002	2.109	300	5.001	2.109	300	
S01	3.344	2.068	Open Manhole	1200	1.001	1.276	225	1.000	1.351	150		Swale End	3.400	1.610	Open Manhole	1200	5.003	1.790	300	5.002	2.088	300	298
Structure - (515)	3.400	0.700	Open Manhole	1200	2.000	2.700	150					S08	3.420	2.120	Open Manhole	1350	5.004	1.300	300	5.003	1.300	300	
S02	3.400	2.254	Open Manhole	1200	1.002	1.146	300	1.001	1.221	225		13	3.700	1.437	Open Manhole	1200	6.000	2.263	150				
								2.000	1.300	150	4	14	3.700	1.475	Open Manhole	1200	6.001	2.255	150	6.000	2.225	150	
Structure - (506)	2.950	0.886	Open Manhole	1200	3.000	2.064	225					14	3.540	1.002	Open Manhole	1200	7.000	2.538	150				
6	3.400	1.143	Open Manhole	1200	4.000	2.257	150					16	3.540	1.040	Open Manhole	1200	7.001	2.500	150	7.000	2.500	150	
7	3.400	1.200	Open Manhole	1200	4.001	2.200	150	4.000	2.200	150		S05	3.400	2.560	Open Manhole	1350	1.005	0.840	150	1.004	0.840	300	
S03	3.400	2.413	Open Manhole	1350	1.003	0.987	300	1.002	0.987	300										5.004	0.840	300	
								3.000	1.064	225	2									6.001	2.000	150	1160
								4.001	2.000	150	863									7.001	2.000	150	1160
TANK S04	3.400	2.550	Open Manhole	1350	1.004	0.850	300	1.003	0.950	300	100	S09	3.200	1.100	Open Manhole	1350	1.006	2.100	150	1.005	2.100	150	
S06	3.513	1.014	Open Manhole	1350	5.000	2.499	300					S10	3.200	1.200	Open Manhole	1350	1.007	2.000	100	1.006	2.000	150	
S07	3.400	1.246	Open Manhole	600	5.001	2.154	300	5.000	2.154	300		16	2.700	1.800	Open Manhole	1200		OUTFALL		1.007	0.900	100	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
Structure - (514)	540212.701	298141.813	540212.701	298141.813	Required	
S01	540187.910	298140.084	540187.910	298140.084	Required	
Structure - (515)	540156.885	298141.752	540156.885	298141.752	Required	
S02	540180.601	298131.855	540180.601	298131.855	Required	
Structure - (506)	540185.081	298068.913	540185.081	298068.913	Required	
S03	540183.818	298084.353	540183.818	298084.353	Required	
TANK S04	540178.830	298084.008	540178.830	298084.008	Required	
S06	540222.405	298144.855	540222.405	298144.855	Required	
S07	540227.187	298075.221	540227.187	298075.221	Required	
Swale End	540196.868	298071.212	540196.868	298071.212	Required	
S08	540184.068	298070.341	540184.068	298070.341	Required	

Manhole Schedules for Sw

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S05	540179.003	298081.371	540179.003	298081.371	Required	
S09	540175.513	298061.200	540175.513	298061.200	Required	
S10	540168.921	298054.574	540168.921	298054.574	Required	
16	540169.524	298046.310			No Entry	

PIPELINE SCHEDULES for Sw

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	150	Structure - (514)	2.220	1.600	0.470	Open Manhole	1200
1.001	o	225	S01	3.344	1.276	1.843	Open Manhole	1200
2.000	o	150	Structure - (515)	3.400	2.700	0.550	Open Manhole	1200
1.002	o	300	S02	3.400	1.146	1.954	Open Manhole	1200
3.000	o	225	Structure - (506)	2.950	2.064	0.661	Open Manhole	1200
4.000	o	150	6	3.400	2.257	0.993	Open Manhole	1200
4.001	o	150	7	3.400	2.200	1.050	Open Manhole	1200
1.003	o	300	S03	3.400	0.987	2.113	Open Manhole	1350
1.004	o	300	TANK S04	3.400	0.850	2.250	Open Manhole	1350
5.000	o	300	S06	3.513	2.499	0.714	Open Manhole	1350
5.001	o	300	S07	3.400	2.154	0.946	Open Manhole	600
5.002	o	300	S07a+Swale	3.400	2.109	0.991	Open Manhole	600
5.003	o	300	Swale End	3.400	1.790	1.310	Open Manhole	1200
5.004	o	300	S08	3.420	1.300	1.820	Open Manhole	1350
6.000	o	150	13	3.700	2.263	1.287	Open Manhole	1200
6.001	o	150	14	3.700	2.255	1.295	Open Manhole	1200
7.000	o	150	14	3.540	2.538	0.852	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)
1.000	24.851	99.8	S01	3.344	1.351	1.843	Open Manhole	1200
1.001	11.006	200.1	S02	3.400	1.221	1.954	Open Manhole	1200
2.000	25.698	18.4	S02	3.400	1.300	1.950	Open Manhole	1200
1.002	47.611	299.4	S03	3.400	0.987	2.113	Open Manhole	1350
3.000	15.492	15.5	S03	3.400	1.064	2.111	Open Manhole	1350
4.000	5.700	100.0	7	3.400	2.200	1.050	Open Manhole	1200
4.001	5.700	28.5	S03	3.400	2.000	1.250	Open Manhole	1350
1.003	5.000	135.1	TANK S04	3.400	0.950	2.150	Open Manhole	1350
1.004	2.643	264.3	S05	3.400	0.840	2.260	Open Manhole	1350
5.000	69.798	202.3	S07	3.400	2.154	0.946	Open Manhole	600
5.001	8.200#	182.2	S07a+Swale	3.400	2.109	0.991	Open Manhole	600
5.002	21.000#	1000.0	Swale End	3.400	2.088	1.012	Open Manhole	1200
5.003	12.830	26.2	S08	3.420	1.300	1.820	Open Manhole	1350
5.004	12.137	26.4	S05	3.400	0.840	2.260	Open Manhole	1350
6.000	3.800	100.0	14	3.700	2.225	1.325	Open Manhole	1200
6.001	3.800	14.9	S05	3.400	2.000	1.250	Open Manhole	1350
7.000	3.800	100.0	16	3.540	2.500	0.890	Open Manhole	1200

PIPELINE SCHEDULES for Sw

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)
7.001	o	150	16	3.540	2.500	0.890	Open Manhole	1200
1.005	o	150	S05	3.400	0.840	2.410	Open Manhole	1350
1.006	o	150	S09	3.200	2.100	0.950	Open Manhole	1350
1.007	o	100	S10	3.200	2.000	1.100	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)
7.001	3.800	7.6	S05	3.400	2.000	1.250	Open Manhole	1350
1.005	20.471	-16.2	S09	3.200	2.100	0.950	Open Manhole	1350
1.006	9.347	93.5	S10	3.200	2.000	1.050	Open Manhole	1350
1.007	8.286	7.5	16	2.700	0.900	1.700	Open Manhole	1200

Free Flowing Outfall Details for Sw

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.007	16	2.700	0.900	0.000	1200	0

Simulation Criteria for Sw

Volumetric Runoff Coeff 0.750 Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000
Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.200 Run Time (mins) 60
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coefficient 0.800 Output Interval (mins) 1

Number of Input Hydrographs 0 Number of Online Controls 5 Number of Offline Controls 0 Number of Storage Structures 6 Number of Time/Area Diagrams 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Region England and Wales Ratio R 0.436 Cv (Summer) 0.750 Storm Duration (mins) 30
Return Period (years) 100 M5-60 (mm) 19.000 Profile Type Summer Cv (Winter) 0.840

Online Controls for Sw

Orifice Manhole: 7, DS/PN: 4.001, Volume (m³): 1.4

Diameter (m) 0.030 Discharge Coefficient 0.600 Invert Level (m) 2.200

Orifice Manhole: S08, DS/PN: 5.004, Volume (m³): 3.9

Diameter (m) 0.140 Discharge Coefficient 0.600 Invert Level (m) 1.300

Orifice Manhole: 14, DS/PN: 6.001, Volume (m³): 1.7

Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 2.255

Orifice Manhole: 16, DS/PN: 7.001, Volume (m³): 1.2

Diameter (m) 0.040 Discharge Coefficient 0.600 Invert Level (m) 2.500

Pump Manhole: S05, DS/PN: 1.005, Volume (m³): 4.6

Invert Level (m) 0.840

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)	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)
0.200	5.0000	0.800	5.0000	1.400	5.0000	2.000	5.0000	2.600	5.0000	3.200	5.0000	3.800	5.0000	4.400	5.0000	5.000	5.0000	5.600	5.0000
0.400	5.0000	1.000	5.0000	1.600	5.0000	2.200	5.0000	2.800	5.0000	3.400	5.0000	4.000	5.0000	4.600	5.0000	5.200	5.0000	5.800	5.0000
0.600	5.0000	1.200	5.0000	1.800	5.0000	2.400	5.0000	3.000	5.0000	3.600	5.0000	4.200	5.0000	4.800	5.0000	5.400	5.0000	6.000	5.0000

Storage Structures for Sw

Porous Car Park Manhole: 6, DS/PN: 4.000

Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0 Width (m) 5.0 Depression Storage (mm) 5
Membrane Percolation (mm/hr) 1000 Porosity 0.30 Length (m) 55.0 Evaporation (mm/day) 3
Max Percolation (l/s) 76.4 Invert Level (m) 2.700 Slope (1:X) 0.0 Cap Volume Depth (m) 0.350

Cellular Storage Manhole: S06, DS/PN: 5.000

Invert Level (m) 2.499 Infiltration Coefficient Base (m/hr) 0.00000 Infiltration Coefficient Side (m/hr) 0.00000 Safety Factor 2.0 Porosity 0.30

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	42.0	0.0	1.000	42.0	0.0	1.001	0.0	0.0

Complex Manhole: Swale End, DS/PN: 5.003

Cellular Storage

Invert Level (m) 1.790 Infiltration Coefficient Base (m/hr) 0.00000 Infiltration Coefficient Side (m/hr) 0.00000 Safety Factor 2.0 Porosity 0.30

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	20.0	0.0	1.100	20.0	0.0	1.101	0.0	0.0

Tank or Pond

Invert Level (m) 3.060

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	20.0	0.331	60.0

Porous Car Park Manhole: 13, DS/PN: 6.000

Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0 Width (m) 5.0 Depression Storage (mm) 5
Membrane Percolation (mm/hr) 1000 Porosity 0.30 Length (m) 80.0 Evaporation (mm/day) 3
Max Percolation (l/s) 111.1 Invert Level (m) 2.900 Slope (1:X) 0.0 Cap Volume Depth (m) 0.350

Porous Car Park Manhole: 14, DS/PN: 7.000

Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0 Width (m) 5.0 Depression Storage (mm) 5
Membrane Percolation (mm/hr) 1000 Porosity 0.30 Length (m) 87.4 Evaporation (mm/day) 3
Max Percolation (l/s) 121.4 Invert Level (m) 2.900 Slope (1:X) 0.0 Cap Volume Depth (m) 0.350

Cellular Storage Manhole: S05, DS/PN: 1.005

Invert Level (m) 1.500 Infiltration Coefficient Base (m/hr) 0.00000 Infiltration Coefficient Side (m/hr) 0.00000 Safety Factor 2.0 Porosity 0.95

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	792.0	0.0	0.500	792.0	0.0	0.510	0.0	0.0

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

Simulation Criteria

Areal Reduction Factor 1.000 Hot Start Level (mm) 0 Foul Sewage per hectare (l/s) 0.000 MADD Factor * 10m³/ha Storage 2.200 Flow per Person per Day (l/per/day) 0.000
Hot Start (mins) 0 Manhole Headloss Coeff (Global) 0.500 Additional Flow - % of Total Flow 0.000 Inlet Coeffiecient 0.800

Number of Input Hydrographs 0 Number of Online Controls 5 Number of Offline Controls 0 Number of Storage Structures 6 Number of Time/Area Diagrams 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 540254 298056 TL 40254 98056 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 120, 240, 360, 480, 960, 1440, 2880, 7200, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 25, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	Structure - (514)	120 Summer	2	+0%	30/120 Summer	100/360 Winter			1.629	-0.121	0.000	0.08			1.4	OK	3
1.001	S01	240 Winter	2	+0%	2/120 Summer				1.563	0.062	0.000	0.06			1.7	SURCHARGED	
2.000	Structure - (515)	120 Summer	2	+0%					2.717	-0.133	0.000	0.03			1.1	OK	
1.002	S02	240 Winter	2	+0%	2/120 Summer				1.562	0.116	0.000	0.07			4.1	SURCHARGED	
3.000	Structure - (506)	120 Summer	2	+0%	100/360 Winter				2.083	-0.206	0.000	0.02			2.1	OK	
4.000	6	120 Winter	2	+0%	2/120 Summer				2.712	0.305	0.000	0.12		25	1.8	SURCHARGED	
4.001	7	120 Winter	2	+0%	2/120 Summer				2.709	0.359	0.000	0.05			1.3	SURCHARGED	
1.003	S03	240 Winter	2	+0%	2/120 Summer				1.561	0.274	0.000	0.13			8.1	SURCHARGED	
1.004	TANK S04	240 Winter	2	+0%	2/120 Summer				1.561	0.411	0.000	0.16			8.1	SURCHARGED	
5.000	S06	120 Summer	2	+0%	100/120 Summer				2.589	-0.210	0.000	0.19		20	14.5	OK	
5.001	S07	120 Summer	2	+0%	30/120 Summer				2.314	-0.140	0.000	0.23			14.2	OK	
5.002	S07a+Swale	120 Summer	2	+0%	30/120 Summer				2.306	-0.103	0.000	0.76			15.0	OK	
5.003	Swale End	120 Summer	2	+0%	30/120 Summer				1.849	-0.241	0.000	0.09		22	15.0	OK	
5.004	S08	120 Summer	2	+0%	2/120 Summer				1.652	0.052	0.000	0.09			14.8	SURCHARGED	
6.000	13	240 Winter	2	+0%	2/120 Summer				2.919	0.506	0.000	0.09		76	1.1	SURCHARGED	
6.001	14	120 Winter	2	+0%	2/120 Summer				2.931	0.526	0.000	0.02			0.7	SURCHARGED	
7.000	14	120 Winter	2	+0%	2/120 Summer				2.920	0.232	0.000	0.21		29	2.5	SURCHARGED	
7.001	16	120 Winter	2	+0%	2/120 Summer				2.933	0.283	0.000	0.05			2.1	SURCHARGED	
1.005	S05	240 Winter	2	+0%	2/120 Summer				1.560	0.570	0.000	1.21		122	5.0	SURCHARGED	
1.006	S09	360 Winter	2	+0%					2.157	-0.093	0.000	0.31			5.0	OK	
1.007	S10	240 Winter	2	+0%					2.033	-0.067	0.000	0.24			5.0	OK	

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

Simulation Criteria

Areal Reduction Factor 1.000 Hot Start Level (mm) 0 Foul Sewage per hectare (l/s) 0.000 MADD Factor * 10m³/ha Storage 2.200 Flow per Person per Day (l/per/day) 0.000
Hot Start (mins) 0 Manhole Headloss Coeff (Global) 0.500 Additional Flow - % of Total Flow 0.000 Inlet Coeffiecient 0.800

Number of Input Hydrographs 0 Number of Online Controls 5 Number of Offline Controls 0 Number of Storage Structures 6 Number of Time/Area Diagrams 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 540254 298056 TL 40254 98056 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 120, 240, 360, 480, 960, 1440, 2880, 7200, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 25, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	Structure - (514)	120 Summer	30	+25%	30/120 Summer	100/360 Winter			1.848	0.098	0.000	0.26			4.4	SURCHARGED	3
1.001	S01	120 Winter	30	+25%	2/120 Summer				1.829	0.328	0.000	0.25			7.7	SURCHARGED	
2.000	Structure - (515)	120 Summer	30	+25%					2.730	-0.120	0.000	0.09			3.5	OK	
1.002	S02	120 Winter	30	+25%	2/120 Summer				1.821	0.375	0.000	0.34			20.2	SURCHARGED	
3.000	Structure - (506)	120 Summer	30	+25%	100/360 Winter				2.098	-0.191	0.000	0.06			6.5	OK	
4.000	6	120 Winter	30	+25%	2/120 Summer				2.870	0.463	0.000	0.14		95	2.0	SURCHARGED	
4.001	7	120 Winter	30	+25%	2/120 Summer				2.867	0.517	0.000	0.05			1.5	SURCHARGED	
1.003	S03	480 Winter	30	+25%	2/120 Summer				1.817	0.530	0.000	0.22			13.1	SURCHARGED	
1.004	TANK S04	480 Winter	30	+25%	2/120 Summer				1.816	0.666	0.000	0.26			13.3	SURCHARGED	
5.000	S06	120 Summer	30	+25%	100/120 Summer				2.671	-0.128	0.000	0.62		18	45.9	OK	
5.001	S07	120 Summer	30	+25%	30/120 Summer				2.590	0.136	0.000	0.74			45.6	SURCHARGED	
5.002	S07a+Swale	120 Summer	30	+25%	30/120 Summer				2.511	0.102	0.000	2.45			48.2	SURCHARGED	
5.003	Swale End	120 Summer	30	+25%	30/120 Summer				2.473	0.383	0.000	0.21		13	36.4	SURCHARGED	
5.004	S08	120 Summer	30	+25%	2/120 Summer				2.401	0.801	0.000	0.21			36.1	SURCHARGED	
6.000	13	240 Winter	30	+25%	2/120 Summer				3.070	0.657	0.000	0.10			1.2	SURCHARGED	
6.001	14	240 Winter	30	+25%	2/120 Summer				3.072	0.667	0.000	0.02			0.7	SURCHARGED	
7.000	14	120 Winter	30	+25%	2/120 Summer				3.083	0.395	0.000	0.24		96	2.9	SURCHARGED	
7.001	16	120 Winter	30	+25%	2/120 Summer				3.091	0.441	0.000	0.06			2.5	SURCHARGED	
1.005	S05	480 Winter	30	+25%	2/120 Summer				1.816	0.826	0.000	1.21			5.0	SURCHARGED	
1.006	S09	360 Winter	30	+25%					2.157	-0.093	0.000	0.31			5.0	OK	
1.007	S10	360 Winter	30	+25%					2.033	-0.067	0.000	0.24			5.0	OK	

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

Simulation Criteria

Areal Reduction Factor 1.000 Hot Start Level (mm) 0 Foul Sewage per hectare (l/s) 0.000 MADD Factor * 10m³/ha Storage 2.200 Flow per Person per Day (l/per/day) 0.000
Hot Start (mins) 0 Manhole Headloss Coeff (Global) 0.500 Additional Flow - % of Total Flow 0.000 Inlet Coeffiecient 0.800

Number of Input Hydrographs 0 Number of Online Controls 5 Number of Offline Controls 0 Number of Storage Structures 6 Number of Time/Area Diagrams 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 540254 298056 TL 40254 98056 Cv (Summer) 0.750
FEH Rainfall Version 2013 Data Type Point Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 120, 240, 360, 480, 960, 1440, 2880, 7200, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 25, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	Structure - (514)	480 Winter	100	+40%	30/120 Summer	100/360 Winter			2.248	0.498	28.094	0.24			4.1	FLOOD	3
1.001	S01	480 Winter	100	+40%	2/120 Summer				2.305	0.804	0.000	0.14			4.3	SURCHARGED	
2.000	Structure - (515)	120 Summer	100	+40%					2.737	-0.113	0.000	0.14			5.4	OK	
1.002	S02	480 Winter	100	+40%	2/120 Summer				2.322	0.876	0.000	0.19			11.3	SURCHARGED	
3.000	Structure - (506)	480 Winter	100	+40%	100/360 Winter				2.336	0.047	0.000	0.02			2.8	SURCHARGED	
4.000	6	240 Winter	100	+40%	2/120 Summer				3.023	0.616	0.000	0.12		188	1.7	SURCHARGED	
4.001	7	240 Winter	100	+40%	2/120 Summer				3.019	0.669	0.000	0.06			1.7	SURCHARGED	
1.003	S03	480 Winter	100	+40%	2/120 Summer				2.335	1.048	0.000	0.33			20.3	SURCHARGED	
1.004	TANK S04	480 Winter	100	+40%	2/120 Summer				2.337	1.187	0.000	0.39			20.2	SURCHARGED	
5.000	S06	120 Summer	100	+40%	100/120 Summer				3.256	0.457	0.000	0.73		13	54.1	FLOOD RISK	
5.001	S07	120 Summer	100	+40%	30/120 Summer				3.155	0.701	0.000	0.82			50.3	FLOOD RISK	
5.002	S07a+Swale	120 Summer	100	+40%	30/120 Summer				3.075	0.666	0.000	2.69			52.8	SURCHARGED	
5.003	Swale End	120 Summer	100	+40%	30/120 Summer				3.028	0.938	0.000	0.26		25	45.9	SURCHARGED	
5.004	S08	120 Summer	100	+40%	2/120 Summer				2.921	1.321	0.000	0.26			44.8	SURCHARGED	
6.000	13	360 Winter	100	+40%	2/120 Summer				3.216	0.803	0.000	0.08			1.0	SURCHARGED	
6.001	14	360 Winter	100	+40%	2/120 Summer				3.217	0.812	0.000	0.03			0.8	SURCHARGED	
7.000	14	240 Winter	100	+40%	2/120 Summer				3.240	0.552	0.000	0.26		188	3.1	FLOOD RISK	
7.001	16	240 Winter	100	+40%	2/120 Summer				3.252	0.602	0.000	0.06			2.8	FLOOD RISK	
1.005	S05	480 Winter	100	+40%	2/120 Summer				2.339	1.349	0.000	1.21			5.0	SURCHARGED	
1.006	S09	960 Winter	100	+40%					2.157	-0.093	0.000	0.31			5.0	OK	
1.007	S10	960 Winter	100	+40%					2.033	-0.067	0.000	0.24			5.0	OK	

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

Simulation Criteria

Areal Reduction Factor 1.000 Hot Start Level (mm) 0 Foul Sewage per hectare (l/s) 0.000 MADD Factor * 10m³/ha Storage 2.200 Flow per Person per Day (l/per/day) 0.000
Hot Start (mins) 0 Manhole Headloss Coeff (Global) 0.500 Additional Flow - % of Total Flow 0.000 Inlet Coeffiecient 0.800

Number of Input Hydrographs 0 Number of Online Controls 5 Number of Offline Controls 0 Number of Storage Structures 6 Number of Time/Area Diagrams 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Region England and Wales M5-60 (mm) 19.000 Ratio R 0.437 Cv (Summer) 0.750 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 25, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	Structure - (514)	15 Winter	2	+0%	30/15 Summer	100/15 Winter			1.645	-0.105	0.000	0.19			3.3	OK	1
1.001	S01	30 Winter	2	+0%	2/15 Summer				1.604	0.103	0.000	0.17			5.2	SURCHARGED	
2.000	Structure - (515)	15 Winter	2	+0%					2.725	-0.125	0.000	0.07			2.6	OK	
1.002	S02	30 Winter	2	+0%	2/15 Summer				1.597	0.151	0.000	0.20			12.2	SURCHARGED	
3.000	Structure - (506)	15 Winter	2	+0%					2.094	-0.195	0.000	0.04			4.9	OK	
4.000	6	60 Winter	2	+0%	2/15 Summer				2.714	0.307	0.000	0.15		22	2.3	SURCHARGED	
4.001	7	60 Winter	2	+0%	2/15 Summer				2.711	0.361	0.000	0.05			1.3	SURCHARGED	
1.003	S03	30 Winter	2	+0%	2/15 Summer				1.578	0.291	0.000	0.35			21.6	SURCHARGED	
1.004	TANK S04	60 Winter	2	+0%	2/15 Summer				1.546	0.396	0.000	0.34			17.5	SURCHARGED	
5.000	S06	15 Winter	2	+0%	30/15 Summer				2.641	-0.158	0.000	0.43		7	32.2	OK	
5.001	S07	15 Winter	2	+0%	2/15 Summer				2.489	0.035	0.000	0.44			26.8	SURCHARGED	
5.002	S07a+Swale	15 Summer	2	+0%	30/15 Summer				2.409	0.000	0.000	1.27			25.0	OK	
5.003	Swale End	15 Winter	2	+0%	30/15 Summer				1.900	-0.190	0.000	0.15		6	26.6	OK	
5.004	S08	15 Winter	2	+0%	2/15 Summer				1.880	0.280	0.000	0.14			24.5	SURCHARGED	
6.000	13	60 Winter	2	+0%	2/15 Summer				2.912	0.499	0.000	0.21		32	2.5	SURCHARGED	
6.001	14	60 Winter	2	+0%	2/15 Summer				2.914	0.509	0.000	0.02			0.7	SURCHARGED	
7.000	14	60 Winter	2	+0%	2/15 Summer				2.922	0.234	0.000	0.26		25	3.2	SURCHARGED	
7.001	16	60 Winter	2	+0%	2/15 Summer				2.919	0.269	0.000	0.05			2.1	SURCHARGED	
1.005	S05	60 Winter	2	+0%	2/15 Summer				1.546	0.556	0.000	1.21			5.0	SURCHARGED	
1.006	S09	30 Summer	2	+0%					2.157	-0.093	0.000	0.31			5.0	OK	
1.007	S10	60 Winter	2	+0%					2.033	-0.067	0.000	0.24			5.0	OK	

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

Simulation Criteria

Areal Reduction Factor 1.000 Hot Start Level (mm) 0 Foul Sewage per hectare (l/s) 0.000 MADD Factor * 10m³/ha Storage 2.200 Flow per Person per Day (l/per/day) 0.000
Hot Start (mins) 0 Manhole Headloss Coeff (Global) 0.500 Additional Flow - % of Total Flow 0.000 Inlet Coeffiecient 0.800

Number of Input Hydrographs 0 Number of Online Controls 5 Number of Offline Controls 0 Number of Storage Structures 6 Number of Time/Area Diagrams 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Region England and Wales M5-60 (mm) 19.000 Ratio R 0.437 Cv (Summer) 0.750 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 25, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	Structure - (514)	15 Winter	30	+25%	30/15 Summer	100/15 Winter			1.898	0.148	0.000	0.49			8.3	SURCHARGED	1
1.001	S01	15 Summer	30	+25%	2/15 Summer				1.859	0.358	0.000	0.59			18.4	SURCHARGED	
2.000	Structure - (515)	15 Winter	30	+25%					2.740	-0.110	0.000	0.16			6.2	OK	
1.002	S02	15 Summer	30	+25%	2/15 Summer				1.833	0.387	0.000	0.71			42.5	SURCHARGED	
3.000	Structure - (506)	15 Winter	30	+25%					2.112	-0.177	0.000	0.10			11.7	OK	
4.000	6	60 Winter	30	+25%	2/15 Summer				2.803	0.396	0.000	0.19		59	2.8	SURCHARGED	
4.001	7	60 Winter	30	+25%	2/15 Summer				2.800	0.450	0.000	0.05			1.4	SURCHARGED	
1.003	S03	60 Winter	30	+25%	2/15 Summer				1.730	0.443	0.000	0.67			41.1	SURCHARGED	
1.004	TANK S04	60 Winter	30	+25%	2/15 Summer				1.652	0.502	0.000	0.79			41.0	SURCHARGED	
5.000	S06	15 Winter	30	+25%	30/15 Summer				2.852	0.053	0.000	0.89		8	66.6	SURCHARGED	
5.001	S07	15 Winter	30	+25%	2/15 Summer				2.737	0.283	0.000	1.05			64.2	SURCHARGED	
5.002	S07a+Swale	15 Winter	30	+25%	30/15 Summer				2.665	0.256	0.000	3.39			66.6	SURCHARGED	
5.003	Swale End	15 Winter	30	+25%	30/15 Summer				2.630	0.540	0.000	0.24		10	41.6	SURCHARGED	
5.004	S08	15 Winter	30	+25%	2/15 Summer				2.542	0.942	0.000	0.24			40.3	SURCHARGED	
6.000	13	60 Winter	30	+25%	2/15 Summer				2.985	0.572	0.000	0.23			2.8	SURCHARGED	
6.001	14	60 Winter	30	+25%	2/15 Summer				2.985	0.580	0.000	0.02			0.7	SURCHARGED	
7.000	14	60 Winter	30	+25%	2/15 Summer				3.014	0.326	0.000	0.27		62	3.3	SURCHARGED	
7.001	16	60 Summer	30	+25%	2/15 Summer				3.023	0.373	0.000	0.05			2.3	SURCHARGED	
1.005	S05	60 Winter	30	+25%	2/15 Summer				1.642	0.652	0.000	1.21			5.0	SURCHARGED	
1.006	S09	60 Summer	30	+25%					2.157	-0.093	0.000	0.31			5.0	OK	
1.007	S10	30 Summer	30	+25%					2.033	-0.067	0.000	0.24			5.0	OK	

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

Simulation Criteria

Areal Reduction Factor 1.000 Hot Start Level (mm) 0 Foul Sewage per hectare (l/s) 0.000 MADD Factor * 10m³/ha Storage 2.200 Flow per Person per Day (l/per/day) 0.000
Hot Start (mins) 0 Manhole Headloss Coeff (Global) 0.500 Additional Flow - % of Total Flow 0.000 Inlet Coeffiecient 0.800

Number of Input Hydrographs 0 Number of Online Controls 5 Number of Offline Controls 0 Number of Storage Structures 6 Number of Time/Area Diagrams 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Region England and Wales M5-60 (mm) 19.000 Ratio R 0.437 Cv (Summer) 0.750 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 25, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	Structure - (514)	15 Winter	100	+40%	30/15 Summer	100/15 Winter			2.220	0.470	0.066	0.73			12.4	FLOOD	1
1.001	S01	15 Winter	100	+40%	2/15 Summer				2.147	0.646	0.000	0.78			24.0	SURCHARGED	
2.000	Structure - (515)	15 Winter	100	+40%					2.749	-0.101	0.000	0.23			9.1	OK	
1.002	S02	15 Winter	100	+40%	2/15 Summer				2.088	0.642	0.000	1.03			61.6	SURCHARGED	
3.000	Structure - (506)	15 Winter	100	+40%					2.121	-0.168	0.000	0.14			17.0	OK	
4.000	6	60 Winter	100	+40%	2/15 Summer				2.881	0.474	0.000	0.17			2.6	SURCHARGED	
4.001	7	60 Winter	100	+40%	2/15 Summer				2.878	0.528	0.000	0.06			1.5	SURCHARGED	
1.003	S03	15 Winter	100	+40%	2/15 Summer				1.899	0.612	0.000	1.75			107.2	SURCHARGED	
1.004	TANK S04	60 Winter	100	+40%	2/15 Summer				1.721	0.571	0.000	1.16			60.4	SURCHARGED	
5.000	S06	15 Winter	100	+40%	30/15 Summer				3.305	0.506	0.000	1.13		7	84.6	FLOOD RISK	
5.001	S07	15 Winter	100	+40%	2/15 Summer				3.221	0.767	0.000	1.21			74.3	FLOOD RISK	
5.002	S07a+Swale	15 Winter	100	+40%	30/15 Summer				3.145	0.736	0.000	3.93			77.2	FLOOD RISK	
5.003	Swale End	15 Winter	100	+40%	30/15 Summer				3.096	1.006	0.000	0.29		15	51.1	SURCHARGED	
5.004	S08	15 Winter	100	+40%	2/15 Summer				2.973	1.373	0.000	0.28			48.0	SURCHARGED	
6.000	13	60 Winter	100	+40%	2/15 Summer				3.045	0.632	0.000	0.24			3.0	SURCHARGED	
6.001	14	60 Winter	100	+40%	2/15 Summer				3.044	0.639	0.000	0.02			0.7	SURCHARGED	
7.000	14	60 Winter	100	+40%	2/15 Summer				3.096	0.408	0.000	0.26			3.1	SURCHARGED	
7.001	16	60 Winter	100	+40%	2/15 Summer				3.092	0.442	0.000	0.06			2.5	SURCHARGED	
1.005	S05	60 Winter	100	+40%	2/15 Summer				1.721	0.731	0.000	1.21			5.0	SURCHARGED	
1.006	S09	60 Winter	100	+40%					2.157	-0.093	0.000	0.31			5.0	OK	
1.007	S10	30 Summer	100	+40%					2.033	-0.067	0.000	0.24			5.0	OK	