

Project-informationProject name :
37200367 - Queenswood School, HatProject Number :
37200367Contact :
Emma DoughtyDate :
22/05/2017

Client: Queenswood School
Contact Name: Emma Doughty
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County: Hertfordshire, AL9 6NS
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Site: Queenswood School
Contact Name: Emma Doughty
Department: CCTV
Road: Queenswood School, Shepherds Way
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County: Hertfordshire, AL9 6NS
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Contractor Draincare Ltd
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Project-information

Project name : 37200367 - Queenswood School, Hat	Project Number : 37200367	Contact : Emma Doughty	Date : 22/05/2017
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Background:

Draincare Ltd has been requested to undertake an investigation of the drainage at the above site.

Executive Summary / Overview:

Defects fully detailed and graded within the report.

CCTV survey conducted to establish pipework condition and defects.

Any operational or structural defects found during CCTV works are noted and graded, and if graded 4 or 5 photographed, within the following report.

All pipework, once past the property's boundary or found to be shared, may be the Water Utility's responsibility, following the 2011 legislation change, as described on the last page of this report.

Note(s):

High Pressure Jetting undertaken to facilitate CCTV works.

The pipework running upstream from branch 1 (Br1) within manhole S1 towards a Catchpit (C/Pit1) was found to contain broken pipework, as shown in photos on page 9 & page 11.

The outfall pipe of the ditch was exposed during CCTV works, as shown in Image A on page 16.

The ditch outfall pipe underneath the concrete entrance was found to be full of silt, as shown in Image B on page 16.

Recommendations:

- 1) Undertake an excavation approximately 2.7m upstream from Br1 within manhole S1, to allow the necessary remedial works to be undertaken to repair the broken pipework found within.
- 2) Undertake High Pressure Jetting works, with the use of a combination lorry jetter/tanker unit, to the ditch outfall pipe located underneath the concrete entrance, in an attempt to remove all debris build up (silt) from the pipework.

Cost:

- 1) £715.00 for up to 1 day (8 hours) on site & £340.00 per ½ day (4 hours) after if required + materials + disposal @ cost + 15%.
- 2) £420.00 for up to 3 hours on site & £40.00 per ½ hour after if required + disposal.

N.B - All prices quoted exclude VAT and assume works are to be undertaken during normal working hours.

All operational and structural defects graded 1 or 2 should not be detrimental to the effectiveness of the drainage, and are identified as a general note only.

All operational and structural defects graded 3 are unlikely to be detrimental to the effectiveness of the drainage.

All operational and structural defects graded 4 or 5 may be detrimental to the effectiveness of the drainage and should be considered for remedial work.

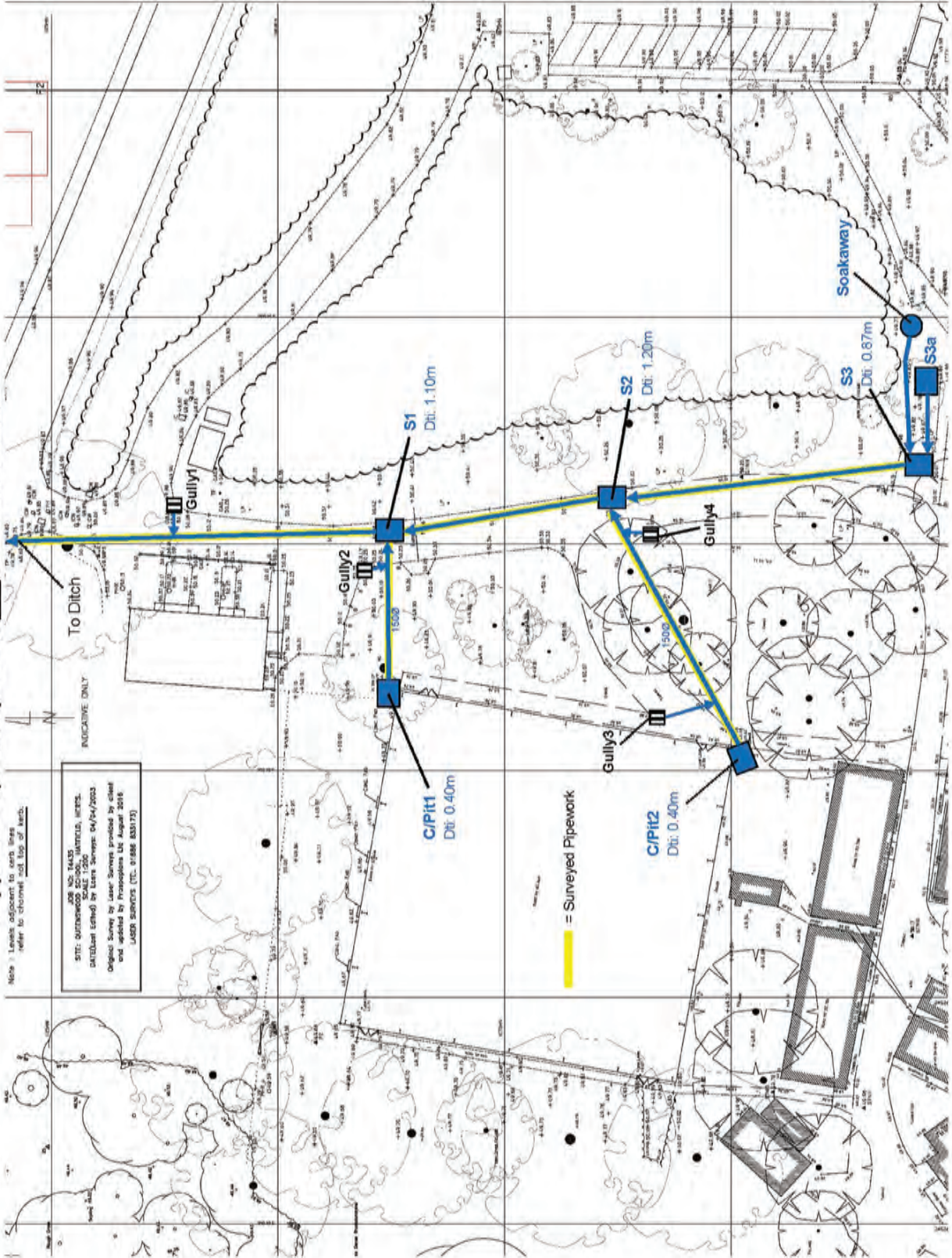
Pipe deformation / ovaling is described in % terms - % being an approximation of the amount of vertical dimension compressed.

The pipe materials as described should be recognised as the survey engineer's best judgement only.

Project-information

Project name : 37200367 - Queenswood School, Hat	Project Number : 37200367	Contact : Emma Doughty	Date : 22/05/2017
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Pipe diameters are stated in millimetres (mm). Depths and lengths are in metres (m)
 All pipework surveyed on site-plan will be 2250 unless otherwise indicated.



OUTLINE DRAINAGE PLAN A – QUEENSWOOD SCHOOL

Inspection report

Date : 22/05/2017	Job number : 37200367	Weather : no rain or snow	Operator : Draincare	Section number : 1	PLR SUFFIX: X
Weather no rain or snow	Vehicle : 75.113	Camera : SoloPro	Preset :	Cleaned : no	Operator : Draincare

Place : Road : Location Inspection	Hatfield Shepherds Way Road S1 (D/S) Ditch	Location details: Catchment: Tape number : Pipe Length	U/S MH : S1 U/S Depth : 1.1 D/S MH : Ditch D/S Depth :
Use: Year laid : Purpose : Total length :	Surface water Routine inspection of condition 14.08 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 225 mm Concrete

Comment :

1:120	Position	Code	Observation	Photo	Grade
Depth: 1.1					
	0.00	MH	Start node type, manhole reference number: S1		(Constr) 0
	0.00	WL	Water level 0 % of the vertical dimension		(Serv) 0
	0.00	DES	Settled deposits, fine 20 % cross-sectional area loss (removed)		(Serv) 3
	3.89	LR	Line deviates right		(Serv) 0
	8.45	DES	Settled deposits, fine 20 % cross-sectional area loss (removed)		(Serv) 3
	11.49	DES	Settled deposits, fine 30 % cross-sectional area loss (removed)	2_2_7_A.jpg	(Serv) 4
	14.08	SA	Survey abandoned - Unable to pass silt		(Misc) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
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	3	5	0.64	9	4

Inspection pictures

 Place :
Hatfield

 Road :
Shepherds Way

 Date :
22/05/2017

 Section number :
1

 PLR Suffix :
X


Photo: 2_2_7_A.jpg, 00:01:12
 11.49m, Settled deposits, fine 30 % cross-sectional area loss
 (removed)

Inspection report

Date : 25/05/2017	Job number : 37200367	Weather : no rain or snow	Operator : Draincare	Section number : 2	PLR SUFFIX: X
Weather no rain or snow	Vehicle : 75.113	Camera : SoloPro	Preset :	Cleaned : yes	Operator : Draincare

Place : Road : Location Inspection	Hatfield Shepherds Way Road S1 (D/S) Ditch	Location details: Catchment: Tape number : Pipe Length	U/S MH : S1 U/S Depth : 1.1 D/S MH : Ditch D/S Depth :
Use: Year laid : Purpose : Total length :	Surface water Routine inspection of condition 36.11 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 225 mm Concrete

Comment :

1:285	Position	Code	Observation	Photo	Grade
Depth: 1.1					
	0.00	MH	Start node type, manhole reference number: S1		(Constr) 0
	0.00	WL	Water level 5 % of the vertical dimension		(Serv) 0
	1.78	WL	Water level 5 % of the vertical dimension		(Serv) 0
	22.83	WL	Water level 10 % of the vertical dimension		(Serv) 0
	23.02	CN	Connection other than junction, at 12 O'Clock, diameter 100mm - RG1		(Constr) 0
	23.83	LR	Line deviates right		(Serv) 0
	27.90	LR	Line deviates right		(Serv) 0
	28.37	WL	Water level 20 % of the vertical dimension		(Serv) 0
	31.84	LR	Line deviates right		(Serv) 0
	32.33	WL	Water level 10 % of the vertical dimension		(Serv) 0
	36.11	OFF	Finish node type, outfall reference number: Ditch		(Constr) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	80	2.22	80	4	0	0	0	0	1

Inspection report

Date : 25/05/2017	Job number : 37200367	Weather : no rain or snow	Operator : Draincare	Section number : 3	PLR SUFFIX: X
Weather no rain or snow	Vehicle : 75.113	Camera : SoloPro	Preset :	Cleaned : yes	Operator : Draincare

Place : Hatfield	Location details:	U/S MH : C/Pit1
Road : Shepherds Way	Catchment:	U/S Depth : 0.4
Location Road	Tape number :	D/S MH : S1 Br1
Inspection S1 Br1 (U/S) C/Pit1	Pipe Length	D/S Depth : 1.1

Use: Surface water	Pipe shape : Circular
Year laid :	Pipe size : 150 mm
Purpose : Routine inspection of condition	Pipe material : Vitrified clay
Total length : 2.69 m	Lining :

Comment :

1:50	Position	Code	Observation	Photo	Grade
Depth: 1.1					
		MH	Start node type, manhole reference number: S1 Br1		(Constr) 0
	0.00	WL	Water level 0 % of the vertical dimension		(Serv) 0
	2.69	B	Broken pipe, from 12 O'Clock to 12 O'Clock	5_5_22_A.jpg	(Struct) 4
	2.69	SA	Survey abandoned - Unable to pass broken pipe		(Misc) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	80	29.74	80	4	0	0	0	0	1

Inspection pictures

Place : Hatfield	Road : Shepherds Way	Date : 25/05/2017	Section number : 3	PLR Suffix : X
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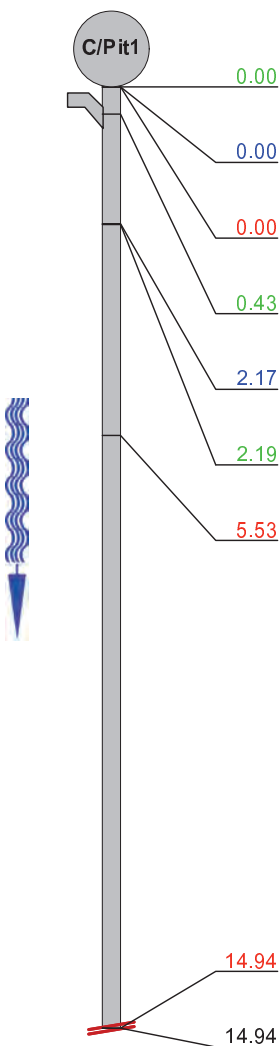
Photo: 5_5_22_A.jpg, 00:00:26
2.69m, Broken pipe, from 12 O'Clock to 12 O'Clock

Inspection report

Date : 25/05/2017	Job number : 37200367	Weather : no rain or snow	Operator : Draincare	Section number : 4	PLR SUFFIX: X
Weather no rain or snow	Vehicle : 75.113	Camera : SoloPro	Preset :	Cleaned : yes	Operator : Draincare

Place : Road : Location Inspection	Hatfield Shepherds Way Road C/Pit1 (D/S) S1 Br1	Location details: Catchment: Tape number : Pipe Length	U/S MH : C/Pit1 U/S Depth : 0.4 D/S MH : S1 Br1 D/S Depth : 1.1
Use: Year laid : Purpose : Total length :	Surface water Routine inspection of condition 14.94 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 150 mm Vitrified clay

Comment :

1:120 Depth: 0.4	Position	Code	Observation	Photo	Grade
	0.00	CP	Start node type, catchpit reference number: C/Pit1		(Constr) 0
	0.00	WL	Water level 0 % of the vertical dimension		(Serv) 0
	0.00	FM	Fracture, multiple, from 12 O'Clock to 12 O'Clock		(Struct) 3
	0.43	JN	Junction from 3 O'Clock diameter: 150 mm - RWDP		(Constr) 0
	2.17	RTJ	Roots, tap at joint		(Serv) 3
	2.19	SR	Sealing ring intruding from 9 O'Clock to 3 O'Clock		(Constr) 1
	5.53	FM	Fracture, multiple, from 12 O'Clock to 12 O'Clock		(Struct) 3
	14.94	B	Broken pipe, from 12 O'Clock to 12 O'Clock	6_6_31_A.jpg	(Struct) 4
	14.94	SA	Survey abandoned - Unable to pass broken pipe		(Misc) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
4	80	16.4	245	4	0	0	0	0	1

Inspection pictures

 Place :
Hatfield

 Road :
Shepherds Way

 Date :
25/05/2017

 Section number :
4

 PLR Suffix :
X

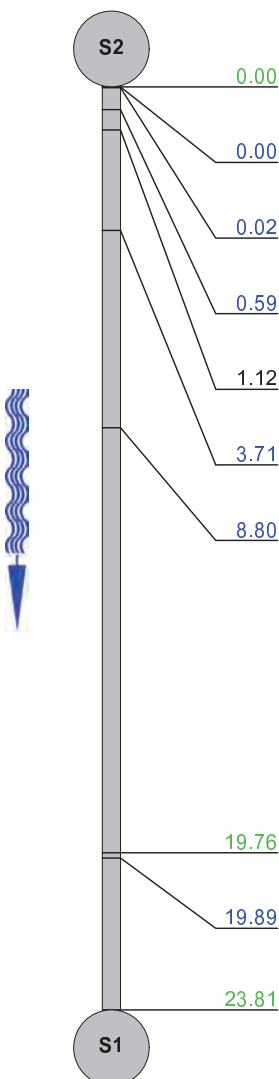

Photo: 6_6_31_A.jpg, 00:01:28
 14.94m, Broken pipe, from 12 O'Clock to 12 O'Clock

Inspection report

Date : 25/05/2017	Job number : 37200367	Weather : no rain or snow	Operator : Draincare	Section number : 5	PLR SUFFIX: X
Weather no rain or snow	Vehicle : 75.113	Camera : SoloPro	Preset :	Cleaned : yes	Operator : Draincare

Place : Hatfield	Location details:	U/S MH : S2
Road : Shepherds Way	Catchment:	U/S Depth : 1.2
Location Road	Tape number :	D/S MH : S1
Inspection S2 (D/S) S1	Pipe Length	D/S Depth : 1.1
Use: Surface water	Pipe shape : Circular	
Year laid :	Pipe size : 225 mm	
Purpose : Routine inspection of condition	Pipe material : Concrete	
Total length : 23.81 m	Lining :	

Comment :

1:195 Position	Code	Observation	Photo	Grade
Depth: 1.2				
	S2			
0.00	MH	Start node type, manhole reference number: S2		(Constr) 0
0.00	WL	Water level 20 % of the vertical dimension		(Serv) 0
0.02	LR	Line deviates right		(Serv) 0
0.59	WL	Water level 30 % of the vertical dimension		(Serv) 0
1.12	CUW	Loss of vision, camera under water		(Misc) 0
3.71	WL	Water level 10 % of the vertical dimension		(Serv) 0
8.80	WL	Water level 0 % of the vertical dimension		(Serv) 0
19.76	SR	Sealing ring intruding from 12 O'Clock to 4 O'Clock		(Constr) 1
19.89	LR	Line deviates right		(Serv) 0
23.81	MHF	Finish node type, manhole reference number: S1		(Constr) 0
S1				
Depth: 1.1				

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	5	0.21	5	1	0	0	0	0	1

Inspection report

Date : 25/05/2017	Job number : 37200367	Weather : no rain or snow	Operator : Draincare	Section number : 6	PLR SUFFIX: X
Weather no rain or snow	Vehicle : 75.113	Camera : SoloPro	Preset :	Cleaned : yes	Operator : Draincare

Place : Road : Location Inspection	Hatfield Shepherds Way Road S2 Br1 (U/S) C/Pit2	Location details: Catchment: Tape number : Pipe Length	U/S MH : C/Pit2 U/S Depth : 0.4 D/S MH : S2 Br1 D/S Depth : 1.2
Use: Year laid : Purpose : Total length :	Surface water Routine inspection of condition 31.70 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 150 mm Vitrified clay

Comment :

1:255	Position	Code	Observation	Photo	Grade
Depth: 1.2					
	0.00	MH	Start node type, manhole reference number: S2 Br1		(Constr) 0
	0.00	WL	Water level 0 % of the vertical dimension		(Serv) 0
	0.00	FM	Fracture, multiple, from 12 O'Clock to 12 O'Clock		(Struct) 3
	4.72	FL	Fracture, longitudinal from 12 O'Clock		(Struct) 3
	5.00	JN	Junction from 10 O'Clock diameter: 150 mm		(Constr) 0
	6.06	WL	Water level 10 % of the vertical dimension		(Serv) 0
	9.66	WL	Water level 0 % of the vertical dimension		(Serv) 0
	12.29	WL	Water level 5 % of the vertical dimension		(Serv) 0
	22.12	WL	Water level 0 % of the vertical dimension		(Serv) 0
	26.85	WL	Water level 5 % of the vertical dimension		(Serv) 0
	28.21	CN	Connection other than junction from 3 O'Clock diameter: 150 mm		(Constr) 0
	30.72	JN	Junction from 3 O'Clock diameter: 150 mm		(Constr) 0
	31.70	CPF	Finish node type, catchpit reference number: C/Pit2		(Constr) 0
Depth: 0.4					

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	80	3.79	120	4	0	0	0	0	1

Inspection report

Date : 25/05/2017	Job number : 37200367	Weather : no rain or snow	Operator : Draincare	Section number : 7	PLR SUFFIX: X
Weather no rain or snow	Vehicle : 75.113	Camera : SoloPro	Preset :	Cleaned : yes	Operator : Draincare

Place : Hatfield	Location details:	U/S MH : S3
Road : Shepherds Way	Catchment:	U/S Depth : 0.87
Location Road	Tape number :	D/S MH : S2
Inspection S3 (D/S) S2	Pipe Length	D/S Depth : 1.1
Use: Surface water	Pipe shape : Circular	
Year laid :	Pipe size : 225 mm	
Purpose : Routine inspection of condition	Pipe material : Concrete	
Total length : 42.39 m	Lining :	

Comment :

1:345	Position	Code	Observation	Photo	Grade
Depth: 0.87					
	0.00	MH	Start node type, manhole reference number: S3		(Constr) 0
	0.00	WL	Water level 0 % of the vertical dimension		(Serv) 0
	6.04	JD	Joint displaced		(Struct) 3
	8.36	WL	Water level 5 % of the vertical dimension		(Serv) 0
	10.33	WL	Water level 0 % of the vertical dimension		(Serv) 0
	36.88	WL	Water level 5 % of the vertical dimension		(Serv) 0
	42.39	MHF	Finish node type, manhole reference number: S2		(Constr) 0
Depth: 1.1					

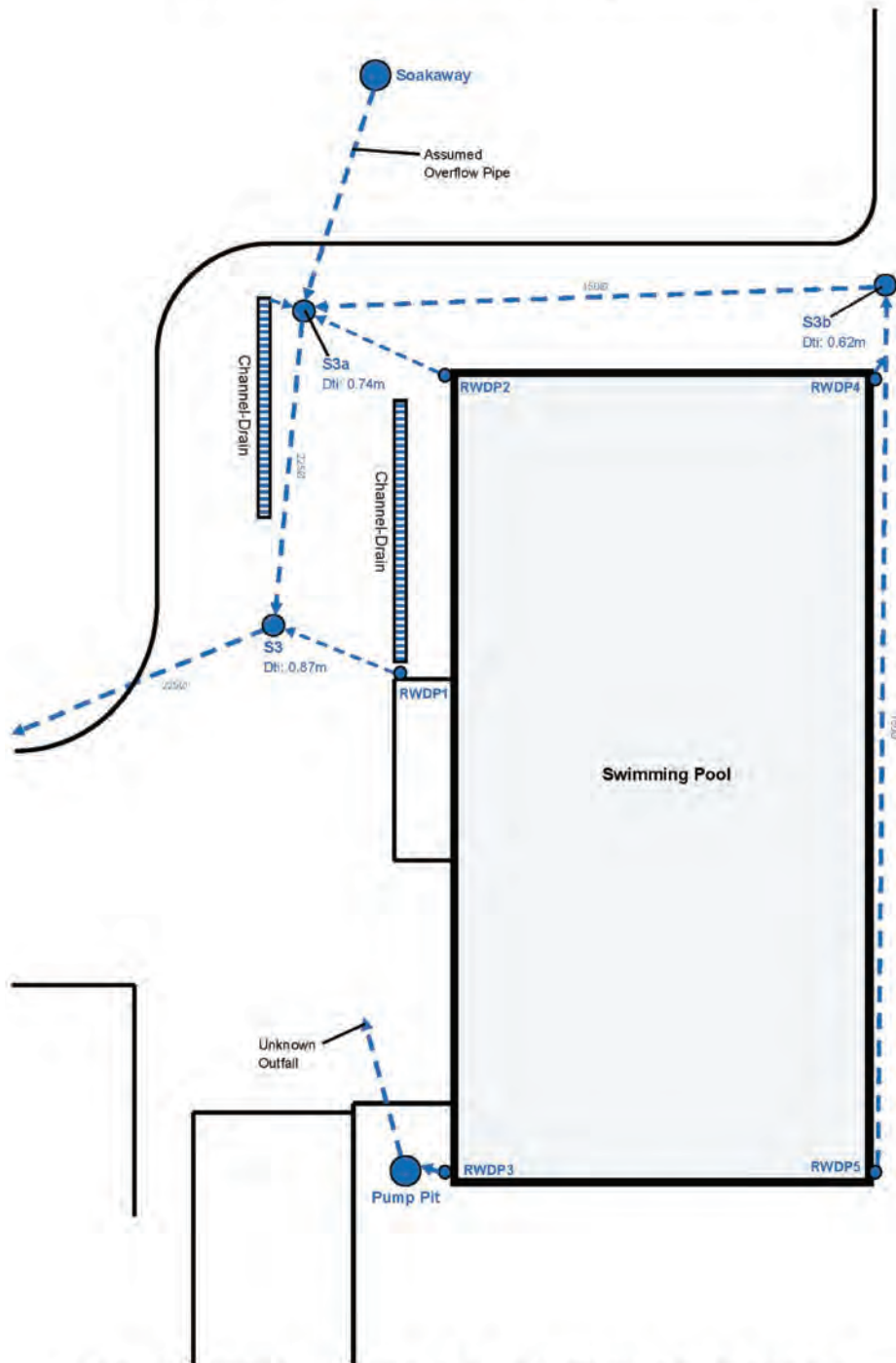
Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1



Draincare Ltd
 Unit 2, Batford Mill, Lower Luton Road
 Street : Harpenden
 Tel: 01582 467111
 Fax: 01582 467333
 Email: info@draincare.com

Date:	Job # : 37200367	Weather : no rain or snow	Operator : Draincare	Section # : 7	Section name :
Present :	Vehicle : 75.113	Camera : SoloPro	Preset :	Cleaned : yes	Rate : 0
Street 1 : Shepherds Way	City : Hatfield	Section type : unknown			
Street 2 :	Map # 1 :	Map # 2 :			
VCR # :	Media # :	US MH : S3			
DS MH : S2	Section length : 42.39 m	Joint length :			
Remark :					

Pipe diameters are stated in millimetres (mm). Depths and lengths are in metres (m)



OUTLINE DRAINAGE PLAN B – QUEENSWOOD SCHOOL



Draincare Ltd
 Unit 2, Batford Mill, Lower Luton Road
 Street : Harpenden
 Tel: 01582 467111
 Fax: 01582 467333
 Email: info@draincare.com

Date:	Job # : 37200367	Weather : no rain or snow	Operator : Draincare	Section # : 7	Section name :
Present :	Vehicle : 75.113	Camera : SoloPro	Preset :	Cleaned : yes	Rate : 0
Street 1 : Shepherds Way	City : Hatfield		Section type : unknown		
Street 2 :	Map # 1 :		Map # 2 :		
VCR # :	Media # :		US MH : S3		
DS MH : S2	Section length : 42.39 m		Joint length :		
Remark :					



Image A:- View of the exposed outfall pipe from ditch



Image B:- View of outfall from ditch under concrete entrance

Grade 1 & 2 structural and service/operational defects should not be detrimental to the effectiveness of the drainage.

Grade 3, 4 & 5 structural and service/operational defects may be detrimental to the effectiveness of the drainage, and may require remedial treatment.

Pipework grading is based on the Sewerage Rehabilitating Manual (SRM) grading from the Water Research Centre (WRC).

The pipe materials as described should be recognized as the survey engineer's best judgment only.

The information provided in this report is given without obligation and the accuracy cannot be guaranteed without verification. No liability of any kind whatsoever is accepted by Draincare Ltd, their agents, or servants for any error or omission. The actual position of pipelines/services faults must be verified and established on the site before any mechanical plant is used or excavations/repairs attempted.

The survey is recorded on DVD or Hard Drive, which is enclosed with the report. Please note that DVD or Hard Drive references and survey run titles are correct in the written report. Survey run titles on DVD or Hard Drive should be referred to the written report.

If the pipework material within your survey is noted as **Pitch Fibre or Asbestos Cement** please note that any works which may disturb the pipe structure must be undertaken in accordance with the Approved Code of Practice "Managing and Working With Asbestos – Control of Asbestos Regulations 2012"


Any quotation provided in this report for remedial measures affecting **Pitch Fibre Pipes** may exclude any additional costs associated with the presence of Asbestos and specialist support services.

The Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 became effective from 1st October 2011. As a result your responsibility for drainage may cease at your property boundary or you may only be responsible for the pipework before it connects to a communal drain serving your property.

We recommend that the responsibility is determined before work to the drainage system is undertaken.

Appendix E


Micro Drainage Results

Richard Jackson Plc		Page 1
26 HIGH ST. HADLEIGH IPSWICH SUFFOLK IP7 5AP	Queenswood Sch 47175 Existing 1 in 1 year	
Date 12/04/2017 13:09 File existing 1 in 1.srcx	Designed by MJG Checked by	
Micro Drainage	Source Control 2015.1	

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
15 min Summer	49.717	0.507	20.3	1.6	O K
30 min Summer	49.609	0.399	18.5	1.3	O K
60 min Summer	49.425	0.215	14.8	0.6	O K
120 min Summer	49.359	0.149	10.2	0.3	O K
180 min Summer	49.337	0.127	7.9	0.3	O K
240 min Summer	49.322	0.112	6.5	0.2	O K
360 min Summer	49.302	0.092	4.9	0.2	O K
480 min Summer	49.292	0.082	4.0	0.1	O K
600 min Summer	49.287	0.077	3.4	0.1	O K
720 min Summer	49.282	0.072	2.9	0.1	O K
960 min Summer	49.275	0.065	2.4	0.1	O K
1440 min Summer	49.265	0.055	1.8	0.1	O K
2160 min Summer	49.258	0.048	1.3	0.1	O K
2880 min Summer	49.253	0.043	1.1	0.1	O K
4320 min Summer	49.247	0.037	0.8	0.0	O K
5760 min Summer	49.244	0.034	0.7	0.0	O K
7200 min Summer	49.241	0.031	0.6	0.0	O K
8640 min Summer	49.238	0.028	0.5	0.0	O K
10080 min Summer	49.237	0.027	0.4	0.0	O K
15 min Winter	49.777	0.567	21.3	1.6	O K
30 min Winter	49.542	0.332	17.2	1.0	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	31.547	0.0	9.9	11
30 min Summer	20.414	0.0	12.9	19
60 min Summer	12.800	0.0	16.1	34
120 min Summer	7.858	0.0	19.8	64
180 min Summer	5.877	0.0	22.2	92
240 min Summer	4.776	0.0	24.1	122
360 min Summer	3.550	0.0	26.8	184
480 min Summer	2.865	0.0	28.9	240
600 min Summer	2.426	0.0	30.6	300
720 min Summer	2.117	0.0	32.0	364
960 min Summer	1.708	0.0	34.4	482
1440 min Summer	1.263	0.0	38.2	724
2160 min Summer	0.934	0.0	42.4	1076
2880 min Summer	0.754	0.0	45.6	1464
4320 min Summer	0.557	0.0	50.5	2176
5760 min Summer	0.449	0.0	54.3	2936
7200 min Summer	0.380	0.0	57.5	3624
8640 min Summer	0.332	0.0	60.3	4312
10080 min Summer	0.296	0.0	62.7	5112
15 min Winter	31.547	0.0	11.1	11
30 min Winter	20.414	0.0	14.4	19

Richard Jackson Plc		Page 2
26 HIGH ST. HADLEIGH IPSWICH SUFFOLK IP7 5AP	Queenswood Sch 47175 Existing 1 in 1 year	
Date 12/04/2017 13:09 File existing 1 in 1.srcx	Designed by MJG Checked by	
Micro Drainage	Source Control 2015.1	

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
60 min Winter	49.377	0.167	12.2	0.4	O K
120 min Winter	49.336	0.126	7.7	0.3	O K
180 min Winter	49.314	0.104	5.8	0.2	O K
240 min Winter	49.301	0.091	4.8	0.2	O K
360 min Winter	49.288	0.078	3.5	0.1	O K
480 min Winter	49.282	0.072	2.9	0.1	O K
600 min Winter	49.276	0.066	2.4	0.1	O K
720 min Winter	49.271	0.061	2.1	0.1	O K
960 min Winter	49.265	0.055	1.7	0.1	O K
1440 min Winter	49.257	0.047	1.3	0.1	O K
2160 min Winter	49.250	0.040	1.0	0.0	O K
2880 min Winter	49.246	0.036	0.8	0.0	O K
4320 min Winter	49.241	0.031	0.6	0.0	O K
5760 min Winter	49.238	0.028	0.5	0.0	O K
7200 min Winter	49.236	0.026	0.4	0.0	O K
8640 min Winter	49.235	0.025	0.4	0.0	O K
10080 min Winter	49.233	0.023	0.3	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
60 min Winter	12.800	0.0	18.1	34
120 min Winter	7.858	0.0	22.2	64
180 min Winter	5.877	0.0	24.9	94
240 min Winter	4.776	0.0	27.0	122
360 min Winter	3.550	0.0	30.1	188
480 min Winter	2.865	0.0	32.3	252
600 min Winter	2.426	0.0	34.2	300
720 min Winter	2.117	0.0	35.8	376
960 min Winter	1.708	0.0	38.6	476
1440 min Winter	1.263	0.0	42.8	730
2160 min Winter	0.934	0.0	47.4	1108
2880 min Winter	0.754	0.0	51.1	1468
4320 min Winter	0.557	0.0	56.6	2180
5760 min Winter	0.449	0.0	60.9	2992
7200 min Winter	0.380	0.0	64.4	3488
8640 min Winter	0.332	0.0	67.5	4368
10080 min Winter	0.296	0.0	70.2	5088

Richard Jackson Plc		Page 3
26 HIGH ST. HADLEIGH IPSWICH SUFFOLK IP7 5AP	Queenswood Sch 47175 Existing 1 in 1 year	
Date 12/04/2017 13:09 File existing 1 in 1.srcx	Designed by MJG Checked by	
Micro Drainage	Source Control 2015.1	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.422	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Pipe Network

Volume in Pipe Network (m³)	1	Dia of Outfall Pipe (m)	0.2
Slope of Outfall Pipe (1:X)	150	Roughness of Outfall Pipe (mm)	0.600

Time Area Diagram

Total Area (ha) 0.168

Time (mins) Area		
From:	To:	(ha)
0	4	0.168