

# Drainage Report



Prepared For

**RW Underground Services Ltd**



Site

**24 Example Street  
Birmingham  
B12 3PP**



**RW UNDEGROUND SERVICES LTD**

**Surveyor: Lee**

**0121 733 6218**

Total Defects for Project



Total DRB Grades for Project



24 Example Street, Birmingham, B12 3PP -

CCTV Survey Report : 21/03/22

Name :	RW Underground Services Ltd
Contact :	
Location :	
Town :	
Region :	
Postcode :	
Email :	rwundergroundservices@outlook.com
Contact Number :	0121 733 6218
Surveyor :	Lee
Valid Certification No :	

**Client Information**

Name :	
Contact :	
Location :	
Town :	
Region :	
Postcode :	
Tel :	
Mobile :	
Email :	
Fax :	

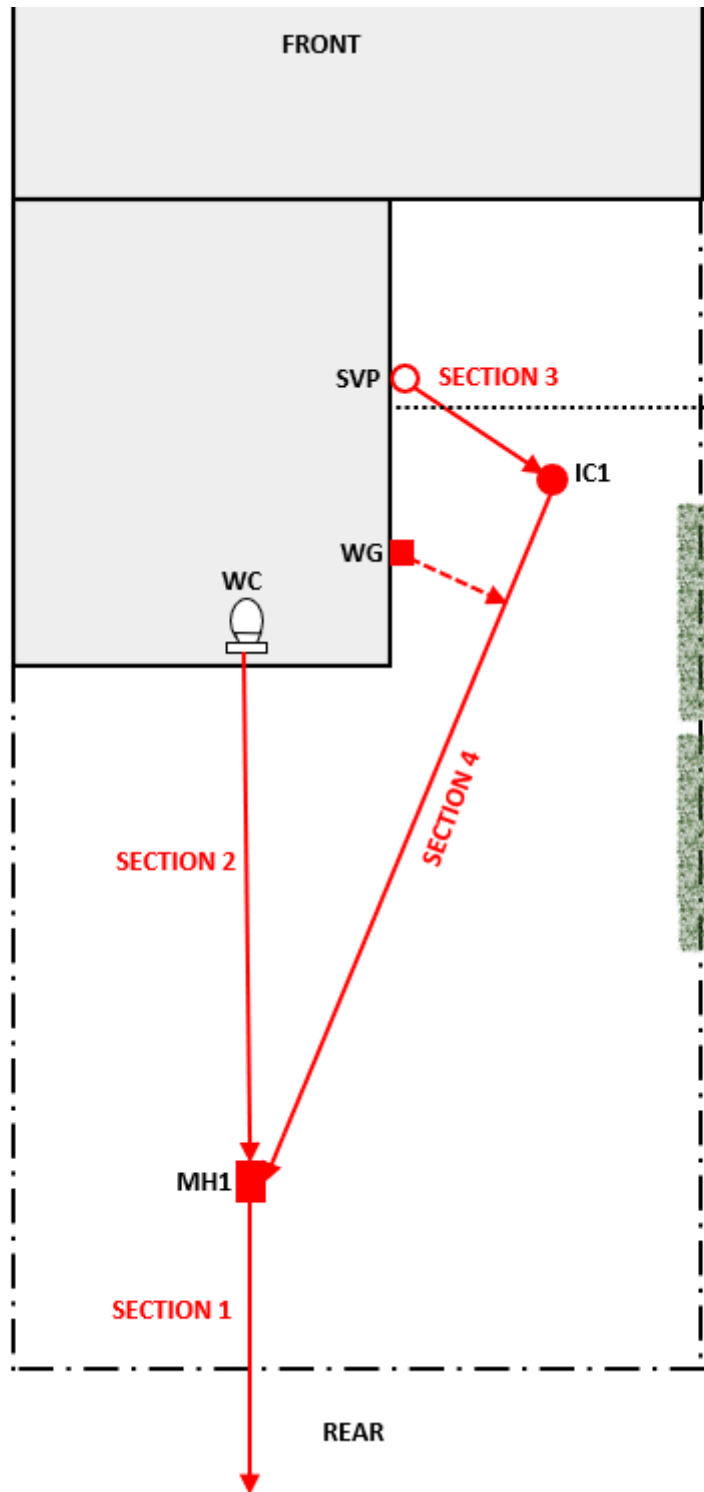
**Site Information**

Name :	
Contact :	
Location :	24 Example Street
Town :	
Region :	Birmingham
Postcode :	B12 3PP
Tel :	
Mobile :	
Email :	
Fax :	

Total Defects for Project

Total DRB Grades for Project





Total Defects for Project



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### Report Summary and Recommendations

Following your request, we attended site to carry out a CCTV survey. The result of the investigation is as follows:

**Section 1:** MH1 Downstream to Boundary

Pipe Diameter: 100mm

Pipe Material: Clay

CCTV Survey Result: The survey revealed a displaced joint and broken pipework within the private section prior to the boundary.

Repair Recommendations:

- 1) Carry out jetting prior to lining
- 2) Install up to 4m of liner to cover defects

**Section 2:** MH1 Upstream to WC

Pipe Diameter: 100mm

Pipe Material: Clay

CCTV Survey Result: The survey revealed displaced joints and scale.

Repair Recommendations:

- 1) Excavate and replace rest bend at WC
- 2) Excavate and replace 1m of pipework
- 3) Install up to 2m of flexi liner to cover defects
- 4) Back-fill, reinstate and dispose of waste

**Section 3:** IC1 Upstream to SVP

Pipe Diameter: 100mm

Pipe Material: Plastic

CCTV Survey Result: The survey revealed no structural defects.

**Section 4:** IC1 Downstream to MH1

Pipe Diameter: 100mm

Pipe Material: Plastic - Clay

CCTV Survey Result: The survey revealed displaced joints.

Repair Recommendations:

- 1) Install up to 5m of flexi liner (minding the junction at 2.39m) to cover defects

**Repairs to CWG due to severe damage within the gully pot on a visual inspection:**

- 1) Excavate and replace gully and re-bench surrounding hopper
- 2) Excavate and replace 1m of pipework
- 3) Back-fill, reinstate and dispose of waste

Total Defects for Project



Total DRB Grades for Project





Total Defects for Project



Total DRB Grades for Project



**Overview**

<b>Section: 1</b> From: MH1 To: Boundary	Grade C	DRB Grade: <b>C</b> Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Foul
<b>Section: 2</b> From: MH1 To: WC	Grade B	DRB Grade: <b>B</b> Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Foul
<b>Section: 3</b> From: IC1 To: SVP	Grade A	DRB Grade: <b>A</b> Pipe Size: 100 Material: Polyvinyl Chloride Use: Foul
<b>Section: 4</b> From: IC1 To: MH1	Grade B	DRB Grade: <b>B</b> Pipe Size: 100 Material: Polyvinyl Chloride Use: Foul

Total Defects for Project



Total DRB Grades for Project





Site: 24 Example Street, Birmingham

Section 1

Client: RW Underground Services	Location (Street Name): 24 Example Street	City/Town/Village Birmingham	Cust Job Ref.	Surveyors Name:	Date: 21/03/2022
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Start Node Ref: MH1	Finish Node Ref: Boundary	Direction: D	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: F	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned: N

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	Remarks
A				D	N	8.47	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole		0_0		
00.00m	WL	Water level 0%			0:00:00	
03.19m	JDM	Joint displaced medium		0_2	0:00:10	
04.94m	B	Broken pipe 03-07		0_3	0:00:14	
08.13m	B	Broken pipe 12-04		0_4	0:00:22	
08.47m	OFF	Finish node type, outfall		0_99		


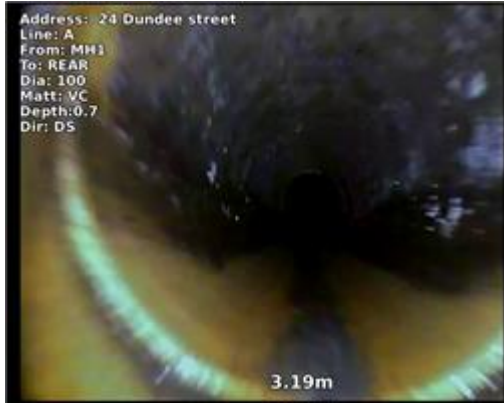

Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

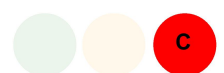
Section 1

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole MH1	<p>Image Provided - Ref: 0_0</p>  <p>Address: 24 Dundee street Line: A From: MH1 To: REAR Dia: 100 Matt: VC Depth:0.7 Dir: DS</p> <p>0.08m</p>
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
03.19m	0:00:10	JDM	Joint displaced medium - Severity 3	<p>Image Provided - Ref: 0_2</p>  <p>Address: 24 Dundee street Line: A From: MH1 To: REAR Dia: 100 Matt: VC Depth:0.7 Dir: DS</p> <p>3.19m</p>
04.94m	0:00:14	B	Broken pipe from 03 o'clock to 07 o'clock - Severity 4	<p>Image Provided - Ref: 0_3</p>  <p>Address: 24 Dundee street Line: A From: MH1 To: REAR Dia: 100 Matt: VC Depth:0.7 Dir: DS</p> <p>4.94m</p>



Total Defects for section



DRB Grade for Section





Pos	Video Ref	Code	Description	Image
08.13m	0:00:22	B	Broken pipe from 12 o'clock to 04 o'clock - Severity 4	<p>Image Provided - Ref: 0_4</p> 
08.47m		OFF	Finish node type, outfall Boundary	<p>Image Provided - Ref: 0_9999</p> 

Total Defects for section



DRB Grade for Section





**Section 2**

Client:	Location (Street Name):	City/Town/Village	Cust Job Ref.	Surveyors Name:	Date: 21/03/2022
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Start Node Ref: MH1	Finish Node Ref: WC	Direction: U	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: F	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned: N

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	Remarks
A				D	N	2.51	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole		1_0		
00.00m	WL	Water level 0%			0:00:00	
00.95m	JDM	Joint displaced medium		1_2	0:00:02	
01.86m	JDM	Joint displaced medium		1_3	0:00:05	
01.86m	DEG	Attached deposits, grease 04-08 20%		1_4	0:00:05	
02.09m	LUF	Line of drain/sewer deviates up [full]		1_5	0:00:06	
02.51m	JDM	Joint displaced medium		1_6	0:00:07	
02.51m	BRF	Finish node type, major connection without		1_99		




Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 2

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole MH1	<p>Image Provided - Ref: 1_0</p> 
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.95m	0:00:02	JDM	Joint displaced medium - Severity 3	<p>Image Provided - Ref: 1_2</p> 
01.86m	0:00:05	JDM	Joint displaced medium - Severity 3	<p>Image Provided - Ref: 1_3</p> 

Total Defects for section

DRB Grade for Section




Pos	Video Ref	Code	Description	Image
01.86m	0:00:05	DEG	Attached deposits, grease from 04 o'clock to 08 o'clock: 20% Cross sectional area loss - Severity 3	Image Provided - Ref: 1_4 
02.09m	0:00:06	LUF	Line of drain/sewer deviates up [full]	Image Provided - Ref: 1_5 
02.51m	0:00:07	JDM	Joint displaced medium - Severity 3	Image Provided - Ref: 1_6 

Total Defects for section



DRB Grade for Section



Pos	Video Ref	Code	Description	Image
02.51m		BRF	Finish node type, major connection without manhole WC	<p>Image Provided - Ref: 1_9999</p> 

Total Defects for section



DRB Grade for Section





**Section 3**

Client:	Location (Street Name):	City/Town/Village	Cust Job Ref.	Surveyors Name:	Date: 21/03/2022
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Start Node Ref:	IC1	Finish Node Ref:	SVP	Direction:	U	Height/Dia:	100
Start Node Depth:	0.00	Finish Node Depth:	0.00	Use:	F	Shape:	C
Start Node Coordinate:		Finish Node Coordinate:		Material:	PVC	Cleaned	N

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	Remarks
A				D	N	1.22	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	IC	Start node type, inspection chamber		2_0		
00.00m	WL	Water level 0%			0:00:00	
00.42m	LLF	Line of drain/sewer deviates left [full]		2_2	0:00:01	
00.84m	LUF	Line of drain/sewer deviates up [full]		2_3	0:00:04	
01.22m	BRF	Finish node type, major connection without		2_99		




Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 3


Pos	Video Ref	Code	Description	Image
00.00m		IC	Start node type, inspection chamber IC1	<p>Image Provided - Ref: 2_0</p> 
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.42m	0:00:01	LLF	Line of drain/sewer deviates left [full]	<p>Image Provided - Ref: 2_2</p> 
00.84m	0:00:04	LUF	Line of drain/sewer deviates up [full]	<p>Image Provided - Ref: 2_3</p> 

Total Defects for section



DRB Grade for Section



Pos	Video Ref	Code	Description	Image
01.22m		BRF	Finish node type, major connection without manhole SVP	<p>Image Provided - Ref: 2_9999</p> 

Total Defects for section



DRB Grade for Section



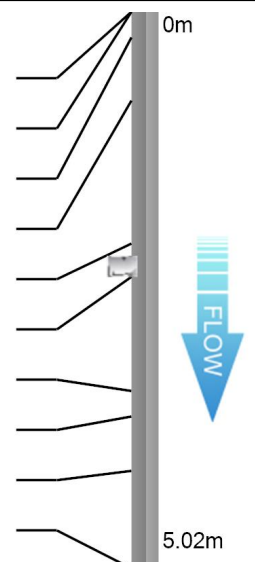


**Section 4**

Client:	Location (Street Name):	City/Town/Village	Cust Job Ref.	Surveyors Name:	Date: 21/03/2022
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Start Node Ref:	IC1	Finish Node Ref:	MH1	Direction:	D	Height/Dia:	100
Start Node Depth:	0.00	Finish Node Depth:	0.00	Use:	F	Shape:	C
Start Node Coordinate:		Finish Node Coordinate:		Material:	PVC	Cleaned	N

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	Remarks
A				D	N	5.02	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	IC	Start node type, inspection chamber		3_0		
00.00m	WL	Water level 0%			0:00:00	
00.23m	MC	Material of drain/sewer changes		3_2	0:00:02	
00.80m	JDM	Joint displaced medium		3_5	0:00:04	
02.09m	JDM	Joint displaced medium		3_6	0:00:09	
02.39m	JN	Junction 03 : 100mm Diameter		3_3	0:00:10	
03.42m	JDM	Joint displaced medium		3_7	0:00:13	
03.65m	LRH	Line of drain/sewer deviates right [half]		3_4	0:00:14	
04.14m	JDM	Joint displaced medium		3_8	0:00:16	
05.02m	MHF	Finish node type, manhole		3_99		

Total Defects for section






DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 4




Pos	Video Ref	Code	Description	Image
00.00m		IC	Start node type, inspection chamber IC1	<p>Image Provided - Ref: 3_0</p>  <p>Address: 24 Dundee street Line: D From: IC1 To: MH1 Dia: 100 Matt: VC Depth:0.7 Dir:DS</p> <p>0.00m</p>
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.23m	0:00:02	MCVC	Material of pipe changes to Vitrified Clay (i.e. all clayware)	<p>Image Provided - Ref: 3_2</p>  <p>Address: 24 Dundee street Line: D From: IC1 To: MH1 Dia: 100 Matt: VC Depth:0.7 Dir:DS</p> <p>0.23m</p>
00.80m	0:00:04	JDM	Joint displaced medium - Severity 3	<p>Image Provided - Ref: 3_5</p>  <p>Address: 24 Dundee street Line: D From: IC1 To: MH1 Dia: 100 Matt: VC Depth:0.7 Dir:DS</p> <p>0.80m</p>

Total Defects for section



DRB Grade for Section






Pos	Video Ref	Code	Description	Image
02.09m	0:00:09	JDM	Joint displaced medium - Severity 3	<p>Image Provided - Ref: 3_6</p> 
02.39m	0:00:10	JN	Junction at 03 o'clock: 100mm Diameter	<p>Image Provided - Ref: 3_3</p> 
03.42m	0:00:13	JDM	Joint displaced medium - Severity 3	<p>Image Provided - Ref: 3_7</p> 

Total Defects for section



DRB Grade for Section



Pos	Video Ref	Code	Description	Image
03.65m	0:00:14	LRH	Line of drain/sewer deviates right [half]	<p>Image Provided - Ref: 3_4</p> 
04.14m	0:00:16	JDM	Joint displaced medium - Severity 3	<p>Image Provided - Ref: 3_8</p> 
05.02m		MHF	Finish node type, manhole MH1	<p>Image Provided - Ref: 3_9999</p> 

Total Defects for section



DRB Grade for Section



**A guide to defects and other observations in drainage systems**

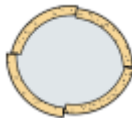


More detailed information can be found in the National Standard (BS EN 13508-1:2003) and in the Manual of Sewer Condition Classification (MSCC) 5th Edition, written by the Water Research Centre (WRc).

Use	
Code	Description
C	Combined
F	Foul
S	Surface Water
T	Trade Effluent
W	Culverted Watercourse
Z	Other

Common Materials	
Code	Description
VC	Vitrified Clay
PVC	Polyvinyl Chloride
CO	Concrete
CI	Cast Iron
PF	Pitch Fibre
PE	Polyethylene
DI	Ductile Iron

Start Node	Description	Finish Node
MH	Manhole	MHF
IC	Inspection Chamber	ICF
GY	Gulley	GYF
RE	Rodding Eye	REF
SK	Soakaway	SKF
BN	Buchan Trap	BNF
BR	Major Connection without Ref	BRF
CP	Catch Pit	CPF
OC	Other Special Chamber	OCF
OF	Outfall	OFF
OS	Oil Separator	OSF
WR	Major Connection without mh	WRF
LH	Lamphole	LHF



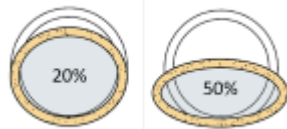







Code	Observation	Description	Attributes	
<b>B</b>	Broken	Pieces pipe have visibly moved	Defined by clock references. Associated with deformity in rigid pipe	
<b>CC CL CM CR</b>	Cracks	Cracks are break lines that are not visibly open	Defined by clock reference position/s. Longitudinal and radiating cracks attract only one clock reference	
<b>CN</b>	Connection	Lateral pipe has been connected after original construction	Described by clock reference position and diameter	

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DRB Grade for Section





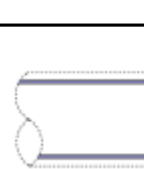
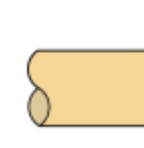
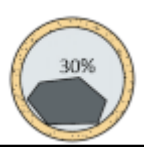
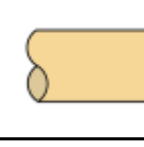
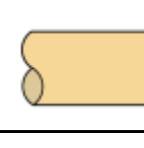
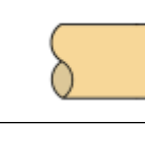


<b>CX(I)</b>	Defective Connection (Intruding)	Defective by intrusion or damage due to factors including: cracks, fractures, obstruction, position etc	Described by clock reference position and diameter (+ % intrusion)	
<b>CU</b>	Loss of Vision	Lens of camera is obscured by debris, water etc. Operator is unable to see drain clearly	'W' can be added if loss of vision is due to water	
<b>D</b>	Deformed	Pipe has lost its structure	Described by percentage loss of height or width. Recorded in 5% increments	
<b>DEE</b>	Deposits Encrustation	Eg. Attached scale deposits evident	Described by clock referenced position and percentage loss of cross-sectional area (5% increments)	
<b>DEG</b>	Deposits Grease	Attached grease deposits evident	Described by clock referenced position and percentage loss of cross-sectional area (5% increments)	
<b>DER DES</b>	Deposits Coarse/Fine	Settled deposits on the invert of the pipe.	Described by percentage loss of height or diameter. Recorded in 5% increments.	
<b>FC FL FM FR</b>	Fractures	Fractures are visibly open. Pieces of pipe have not moved	Defined by clock reference position/s. Longitudinal and radiating fractures attract only one clock reference	
<b>H</b>	Holes	Section of pipe fabric is missing	Defined by clock reference location. Normally two clock references	
<b>I</b>	Infiltration	Water is infiltrating the pipe, normally via a joint but could be via another defect	Can be described in Remarks using terms such as Seeper, Dripper and Runner	
<b>JDL</b>	Joint Displaced Large	Pipe has moved at joint, perpendicular to axis of pipe	More than 1.5 times the pipe wall thickness must be visible	

Total Defects for section

DRB Grade for Section






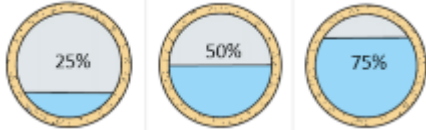


<b>JDM</b>	Joint Displaced Medium	Pipe has moved at joint, perpendicular to axis of pipe	Between 1 and 1.5 times the pipe wall thickness must be visible	
<b>JN</b>	Junction	Lateral pipe was installed at construction	Described by clock reference position and diameter	
<b>JX</b>	Defective Junction	Lateral pipe was installed at construction but is defective in some way	Joint can be defective due to factors including: cracks, fractures, obstruction, position etc	
<b>LD LU LL LR</b>	Line Deviation	LD = Line Down, LU = Line Up, LL = Line Left, LR = Line Right. Not related to CIPP lining.	Additional modifiers are added: Q = Quarter (22.5), H = Half (45), F = Full (90). In degrees.	
<b>LC</b>	Lining Changes	If the drain is lined, the lining material has changed	Position of lining material change	
<b>MC</b>	Material Change	The pipe material has changed	Position of change is noted. Type of material change can be defined	
<b>OB</b>	Obstruction/Obstacle	An obstruction or obstacle is affecting the flow through the pipe	Described in percentage loss of cross-sectional area	
<b>OJL</b>	Open Joint Large	Pipe has moved at joint, along the axis of pipe	More than 1.5 times the pipe wall thickness must be visible	
<b>OJM</b>	Open Joint Medium	Pipe has moved at joint, along the axis of pipe	Between 1 and 1.5 times the pipe wall thickness must be visible	
<b>PC</b>	Pipe Length Changes	Length of individual pipe changes	New length described at this position	

Total Defects for section

DRB Grade for Section



<b>R</b>	Roots	Evidence of root ingress	Roots will normally infiltrate via bad joints, cracks, fractures, breaks etc	
<b>REM</b>	Remark	General remark	Used for additional information	
<b>S</b>	Surface Damage	This might include corrosion, spalling and chemical attack	Position only. Additional information can be added in Remarks	
<b>SA</b>	Survey Abandoned	Used when a survey cannot continue for any reason	The reason for abandoning a survey should be noted in the remarks area	
<b>SC</b>	Shape Changes	Dimension of drain changes	Diameter dimension change recorded. Second dimension is recorded for no circular pipe changes	
<b>SR</b>	Sealing Ring	Sealing ring intrudes into pipe at joint	Described by clock reference position	
<b>V</b>	Vermin	Evidence of Vermin in pipe	Can also be used for evidence within manhole etc	
<b>WL</b>	Water Level	Used to record changes in water level. Always shown at the beginning of every survey, if dry noted as 00.	Described by percentage of height or diameter. Recorded in 5% increments	
<b>XP</b>	Collapsed	Drain is suffering from complete loss of structural integrity. Always followed by SA - Survey Abandoned	Percentage loss of cross-sectional area is recorded. Other related structural defects are not recorded	