Eastern Drainage Services Ltd

Drainage investigations for surveyors, engineers and loss adjusters

Specialists in all drainage renovation techniques including in-situ repairs and sewer connections

6 Drymere, Beachamwell, Swaffham,Norfolk PE37 8AS
Tel Norwich office: 01603 4930855 Fax: 01603 493085 Email: info@easterndrains.co.uk
www.easterndrainageservices.co.uk

Drainage Investigation Report

Site Address:
Another House, Another Street
The Village

Date of Investigation:
20th May 2010

Client:

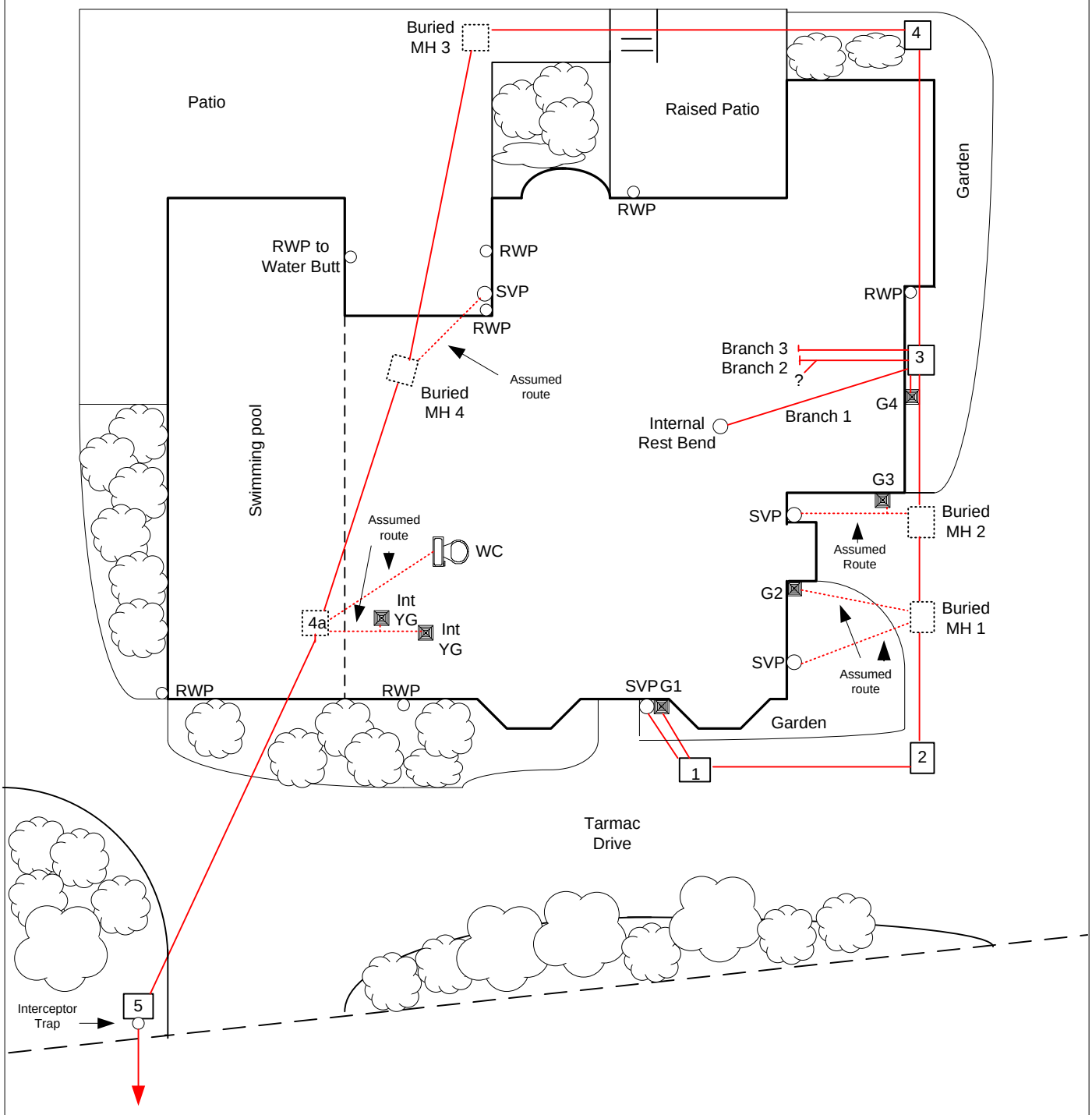
The Client

Our ref:

002

Eastern Drainage Services is a registered Limited Company in England and Wales. Company registration No 7170685
Registered office: 6 Drymere, Beachamwell, Swaffham, Norfolk, PE37 8AS

Drainage Layout Plan



E.D.S.015 – Another House, Another Street, The Village

Report Summary and Recommendations

The purpose of the investigation was to establish the route and condition of the main drain runs.

The property is served by mains foul drainage constructed from clay pipework with the exception of gully 4 which is uPVC.

The drains run from the front right corner, along the right hand side, across the rear, beneath the extension and pool house out to manhole 5 and the main sewer in the road at the front.

There are a number of buried manholes and most are noticeable where the paving has sunk slightly. **Buried Manholes 1 & 2** are beneath paving and located to the right of the property.
Manhole 4 adjacent to the rear right corner is buried beneath soil but was exposed to complete the investigation.
Buried manhole 3 is again beneath paving and whilst we did attempt to lift these we were concerned the slabs would be damaged.
Buried manhole 4 is in the extension and manhole 4a next to the pool. This cover could not be lifted as we were unable to remove the screws which may have to be drilled out. We were however able to examine all of the main drain runs

The results of the investigation is as follows:

1. **Manhole 1 to SVP1**
This relatively short drain is cracked at the rest-bend. There is also a crack at 0.9m.

2. **Manhole 1 to Gully 1**
This drain has a hole in the pipe and fibrous roots.

3. **Manhole 1 to manhole 2**
This drain has an area of fibrous roots and two cracks.

4. **Manhole 2 to manhole 3 (through buried manhole 1 & 2)**
There is damage at the beginning and end of this drain run. The section between the two buried manholes is in good condition.

5. **Manhole 3 to Gully 4**
This drain is from uPVC and is in good condition.

6. Manhole 3 to internal rest-bend

This drain will serve an internal soil pipe or SVP. The CCTV survey shows widespread damage. This drain could be repaired, without excavation through the insertion of a structural liner.

7. Manhole 3 through branch 2

The end of the drain has been capped off but there is an unknown junction. The drain contains debris so this unknown junction could also be redundant. As the drain is damaged we would suggest further investigations and repairs if it is found to be live. It should also be repaired if it is to be used in the future.

8. Manhole 3 through branch 3

This drain is redundant as it has been capped at the end. We would suggest the drain is filled with concrete at the manhole.

9. Manhole 3 to manhole 4

This drain is cracked in a number of places. There is also an area of root damage. As it runs partly beneath the building we would recommend it is repaired. This could be achieved without excavation through the insertion of a structural liner.

10. Manhole 4 downstream towards MH5 (through buried manhole 3 & 4)

Manhole 4 was buried beneath soil. The CCTV survey between manhole 4 and buried manhole 3 shows a number of areas where fibrous roots are entering the system. We would suggest this drain is cleaned and then repaired by structural lining.

The drain bends left sharply in buried manhole 3 and runs under the building to buried manhole 4. The drain is cracked and contains fibrous roots close to buried manhole 3. If the drain is to be retained we would suggest it is repaired by structural lining. This will require access to buried manhole 3.

11. Manhole 5 upstream to buried manhole 4 (through manhole 4a)

The drain between manhole 5 and manhole 4a contains two cracks within the first 8.5m, which is external.

The drain between manhole 4a and buried Manhole 4 passes beneath the pool house and the extension. The CCTV survey shows this length to be in good condition.

12. Manhole 5 to main sewer

The CCTV survey shows roots at 1.3m. At 5.1m the roots were blocking the drain and the camera was unable to pass. We would recommend the interceptor trap is removed, the drain cleaned to remove roots and then repaired by structural lining to prevent further root growth.

We also noticed some defects to the gullies which require attention:

Gully 2
The waste pipes and the rainwater pipe entering the gully need to be extended

Gully 3
There is a small void between the gully and the wall of the house. As such water can escape into the ground at this point. This could be sealed by an epoxy putty.

The fall / gradient on parts of the system seems relatively slight. There is some water holding in the drains but this is relatively minor.

The rainwater drains do not join the foul system and are assumed to connect to soakaways. There is part of an old pump close to manhole 3 so there could be a buried well or softwater tank which some of the rainwater goods could connect to.

There are a number of branch drains we could not examine due to a number of manholes being inaccessible. We have attached an estimate to repair the drains known to be damaged although depending upon the extent of the proposed building / alteration works some of the drains may be made redundant and so repairs are not required.

We trust the foregoing is satisfactory, however should you have any queries please do not hesitate to contact us.

Manhole Conditions

Manholes

Manhole	Depth in mm	Condition and comments
1	500	Good Condition
2	540	Good Condition
3	540	Good Condition
4	440	Defective Manhole Cover (Cracked)
4a	-	Unable to Lift
5	2360	Good Condition

CCTV Survey

Survey No.	1	**Drain Run:**	Manhole 1 Upstream towards SVP1		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 1**
0.4	Offset Joint Open Joint	Slight Medium
0.9	Offset Joint Crack	Slight Circumferential
1.2	Bends Up	
1.4	Cracks **Reaches SVP**	Multiple **Survey Ends**

CCTV Survey

Survey No.	2	**Drain Run:**	Manhole 1 Upstream towards Gully 1		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 1**
0.7	Hole in pipe Root Ingress	12 o'clock Fibrous
0.9	**Reaches Gully1**	**Survey Ends**

CCTV Survey

Survey No.	3	**Drain Run:**	Manhole 1 Downstream towards Manhole 2		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 1**
1.1	Root Ingress	Fibrous
5.0	Water Level	10%
5.5	Water Level	10%
5.6	Offset Joint Crack Water Level	 Circumferential 10%
6.3	Water Level	10%
7.5	Offset Joint Crack	Slight Circumferential
8.2	**Reaches Manhole 2**	**Survey Ends**

CCTV Survey

Survey No.	4	**Drain Run:**	Manhole 2 Downstream towards Manhole 3 (through buried MHs 1 & 2)		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 2**
1.3	Offset Joint Crack	Slight Circumferential
2.1	Debris	15%
4.5	**Enters Buried Manhole 1**	
5.3	**Exits Buried Manhole 1**	
6.6	**Enters Buried Manhole 2**	
7.1	**Exits Buried Manhole 2**	
8.4	Offset Joint Crack Root Ingress	Slight Circumferential Fibrous
9.8	**Enters Manhole 3**	**Survey Ends**

E.D.S.015 – Another House, Another Street, The Village

CCTV Survey

Survey No.	5	**Drain Run:**	Manhole 3 Upstream towards Gully 4		
Diameter:	100mm	**Pipe Material:**	uPVC	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 3**
0.1	Bends up	
0.4	**Reaches Gully 4**	**Survey Ends**

CCTV Survey

Survey No.	6	**Drain Run:**	Manhole 3 Upstream Internal Rest Bend		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 3**
0.1	Crack Root Ingress	Circumferential Fibrous
0.5	Crack	Circumferential
1.6	Offset Joint Crack	Slight Circumferential
3.1	Offset Joint Crack	Slight Circumferential
3.6	Crack	Circumferential
5.2	Crack	Circemferential
5.4	Bends Up	
5.5	**Reaches Internal Rest Bend**	**Survey Ends**

CCTV Survey

Survey No.	7	**Drain Run:**	Manhole 3 upstream Branch 2		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	
0.3	Offset Joint Crack	Slight Circumferential
1.6	Offset Joint Debris	Slight 10%
2.8	Crack Debris	Circumferential 10%
3.5	Cast Branch Debris	12 o'clock Unknown 100%
3.7	**Drain capped Off**	**Survey Ends**

E.D.S.015 – Another House, Another Street, The Village

CCTV Survey

Survey No.	8	**Drain Run:**	Manhole 3 Upstream Branch 3		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 3**
0.9	Offset Joint Crack	Circumferential
2.2	Offset Joint Crack	Circumferential
2.8	Crack	Circumferential
3.5	Debris	10%
3.6	Bends Up	
3.7	**Drain capped Off**	**Redundant Survey Ends**

E.D.S.015 – Another House, Another Street, The Village

CCTV Survey

Survey No.	9	**Drain Run:**	Manhole 3 Downstream to manhole 4		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 3**
4.7	Offset Joint Crack	Slight Circumferential
5.9	Offset Joint Crack	 Circumferential
7.0	Offset Joint Root Ingress	 Mass
7.7	Offset Joint Crack	Slight Circumferential
8.4	Offset Joint Crack	Slight Circumferential
8.7	**Enters Manhole 4**	**Survey Ends**

CCTV Survey

Survey No.	10	**Drain Run:**	Manhole 4 Downstream (through buried MHs 3 & 4)		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 4**
0.9	Offset Joint Root Ingress	Slight Fibrous
1.5	Offset Joint Root Ingress	Slight Fibrous
3.6	Root Ingress	Fibrous
7.7	Root Ingress	Fibrous
8.2	Root Ingress	Fibrous
13.8	Root Ingress	Fibrous
14.0	**Enters buried Manhole 3**	
14.5	Bends Left	Sharp
15.3	**Exits Buried Manhole 3**	
15.5	Offset Joint Crack Root Ingress	Slight Circumferential Fibrous
24.4	**Enters Buried Manhole 4**	
24.9	**Exits Buried Manhole 4**	
30.4	**No Further Camera Access** (remainder of drain surveyed from MH5 – see CCTV survey No. 11)	Survey Ends

CCTV Survey

Survey No.	11	**Drain Run:**	Manhole 5 Upstream to buried manhole 4 (through buried MH 4a)		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	**Manhole 5**
0.7	Crack Water Level	Circumferential 10%
8.1	Crack	Circumferential
11.8	Debris	10%
15.1	**Enters Manhole 4a**	
15.7	**Exits Manhole 4a**	
22.8	**Enters Buried Manhole 4**	**Survey Ends**

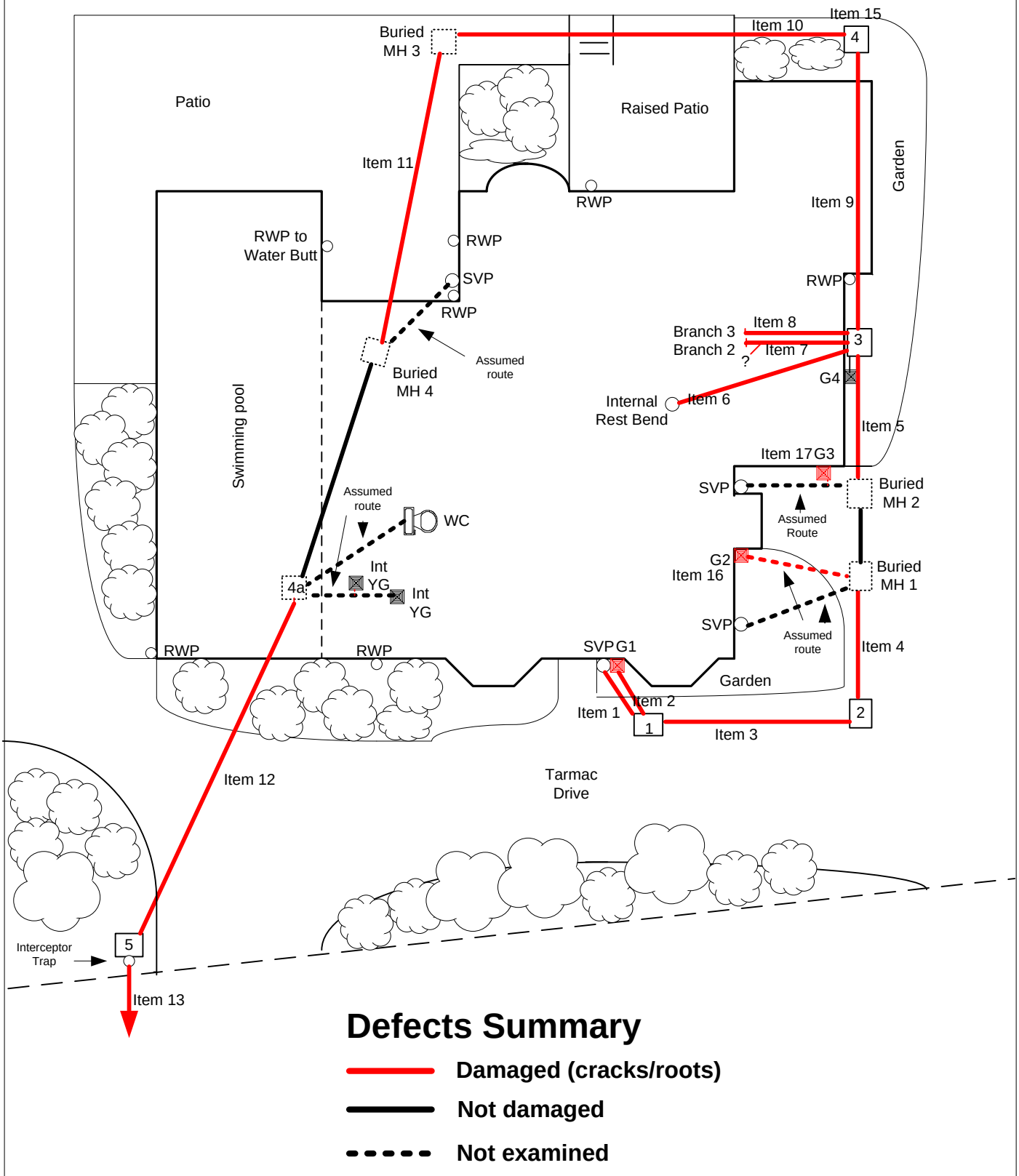
CCTV Survey

Survey No.	12	**Drain Run:**	Manhole 5 Downstream Through Interceptor Trap		
Diameter:	100mm	**Pipe Material:**	Salt Glazed Clay	**Drain Type:**	Foul

Meter Counter	Observations	Remarks
0.0	**Start Survey**	
1.3	Offset Joint Root Ingress	Slight Mass
5.1	Root Ingress **No Further Camera Access** Approx 0.5m remaining to Main	Mass **Survey Ends**

E.D.S.015 – Another House, Another Street, The Village

Defects Summary Plan



Defects Summary

Damaged (cracks/roots)

Not damaged

Not examined

Repair Estimate

The costs of the repairs recommended in this report are as follows:

Item 1 - Manhole 1 to SVP £
Excavate, replace rest-bend and install structural liner to manhole.

Item 2 - Manhole 1 to Gully 1 £
Repair drain without excavation through the insertion of a structural liner.

Item 3 - Manhole 1 to manhole 2 £
Repair drain without excavation through the insertion of a structural liner.

Item 4 - Manhole 2 to buried manhole 1 £
Repair drain without excavation through the insertion of a structural liner.

Item 5 - Manhole 3 to buried manhole 2 £
Expose buried manhole 2. Repair drain without further excavation through the insertion of a structural liner. Reinstate manhole on completion.

Item 6 – Manhole 3 towards internal rest-bend £
Repair drain without excavation through the insertion of a structural liner.

Item 7 – Manhole 3 branch 2 £
Confirm whether drain is live, redundant or to be used in the future. If redundant seal off in manhole. If live or unknown, repair drain by structural lining.

Item 8 – Manhole 3 branch 3 £
Seal off connection in manhole.

Item 9 – Manhole 3 to manhole 4 £
Repair drain without excavation through the insertion of a structural liner.

Item 10 – Manhole 4 buried manhole 3 £
Expose buried manholes. Repair drain without further excavation through the insertion of a structural liner.

Item 11 - Buried manhole 3 to buried manhole 4 £
Repair drain without excavation through the insertion of a structural liner.

Item 12 - Manhole 5 to manhole 4a £
Drill screws to lift cover of manhole 4a. Repair drain without excavation through the insertion of a structural liner.

Item 13 – Manhole 5 to main sewer £
Following cleaning, remove trap and repair drain by structural lining.

Item 14 – Drain cleaning and root removal prior to repairs £

Item 15 - MH4 £65.00 plus VAT
New cover

Item 16 – Gully 2 £
Extend waste pipes and rainwater pipe in to gully.

Item 17 – Gully 3 £
Seal gully surround with epoxy putty

Note:
The works will not require access to buried manhole 4 but we will need to get to manhole 4a, buried manhole 3 and buried manhole 2. This estimate does not include replacement covers, tiles or slabs should they prove impossible to lift intact.

Total cost	£
VAT	£
Total	**£**