

DRAIN SMART

THE COMPLETE DRAINAGE SERVICE • CCTV CAMERA SURVEYS • STRUCTURAL SOFT FELT LINING
REPAIRS WITHOUT EXCAVATIONS • REFORMING OF PITCH FIBRE PIPES

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Papillons Walk

London
SE3 9SF

26 January 2024

Our reference: 37287



CCTV CAMERA INSPECTION REPORT

Site Location – Papillons Walk, London, SE3 9SF

Further to recent instruction, our engineers attended the above site location to carry out a CCTV camera inspection of the drainage and our findings are as follows:

Commence survey from Manhole 27 upstream. 100mm 'super-sleve' pipework. Duty foul water system.

<u>Distance (m)</u>	<u>Observations & Remarks</u>
0.0	Joint
0.3	Offset joint
1.8	Joint
3.6	Joint
3.7	Branch connection at 3 o'clock to rainwater gully
5.4	Severe offset joint
5.8	Joint and bend upwards
6.3	Outlet of soil and vent pipe

Continue survey from Manhole 27 up branch connection 5. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.3	Joint and slight bend to left
0.4	Joint
1.9	Joint and root penetration
2.1	Joint and root penetration
2.6	Root penetration
3.9	Offset joint
4.6	Offset joint and slight bend upwards
5.2	Offset joint and bend to level
6.0	Joint, bend upwards and scale deposits
6.1	Outlet of soil and vent pipe



410 UPPER ELMERS END ROAD,
BECKENHAM, KENT, BR3 3HG
VAT REG. NO. 848 597 461
CO. NO. 05095132



**ENERGY &
UTILITY SKILLS**

Continue survey from Manhole 27 up branch connection 4. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Offset joint
1.5	Severe offset joint, gap between sections and root penetration
2.3	Root penetration
3.2	Offset joint and root penetration
4.4	Manhole 28

Continue survey from Manhole 27 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.1	Joint and root penetration
2.4	Joint and bend upwards
2.8	Joint and bend to level
3.0	Outlet of waste gully

Continue survey from Manhole 27 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Joint
1.5	Joint
2.3	Heavy root penetration which prevented passage of the camera

Continue survey from Manhole 27 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and root penetration
0.1	Joint
0.8	Joint
1.7	Joint
1.8	Branch connection at 3 o'clock to waste/rainwater gully
2.1	Joint
3.6	Joint and bend upwards
4.1	Outlet of soil and vent pipe

Continue survey from Manhole 27 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.4	Joint
1.5	Circumferential fracture
2.0	Joint
3.6	Joint
5.1	Offset joint
5.5	Branch connection at 3 o'clock to yard gully
5.6	Joint
7.0	Joint
7.4	Joint

7.5	Branch connection at 3 o'clock to rainwater gullies
7.7	Joint
8.8	Joint
9.0	Manhole 26

Continue survey from Manhole 26 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Joint
0.5	Joint
2.0	Joint
3.5	Joint
4.8	Joint
6.5	Joint
7.8	Joint
7.9	Branch connection at 9 o'clock to waste/rainwater gully
8.1	Joint
8.6	Joint
10.1	Joint
12.0	Joint
12.5	Manhole 25

Continue survey from Manhole 26 up branch connection 6. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and root penetration
1.6	Joint and root penetration
3.2	Circumferential fracture and root penetration
3.3	Offset joint
3.4	Branch connection at 9 o'clock to waste/rainwater gully
3.7	Joint and bend to left
4.4	Joint
4.6	Joint and bend upwards
5.7	Outlet of soil and vent pipe

Continue survey from Manhole 26 up branch connection 5. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Joint and root penetration
1.0	Joint, root penetration and debris deposits
1.6	Heavy root penetration
2.6	Offset joint, gap between sections and radial fracture
3.1	Joint and bend upwards
4.0	Outlet of ground floor WC

Continue survey from Manhole 26 up branch connection 4. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and heavy debris deposits
0.1	Heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 26 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Joint and slight bend to right
0.2	Joint
1.7	Joint
2.2	Joint
3.7	Joint and slight bend to right
4.0	Joint
4.7	Joint and bend upwards
5.3	Outlet of soil and vent pipe

Continue survey from Manhole 26 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and slight bend upwards
0.9	Joint and change of pipework diameter and material to 110mm PVC
1.2	Joint and bend upwards
1.5	Outlet of rainwater gully

Continue survey from Manhole 26 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Joint and slight bend to right
0.7	Joint and bend upwards
1.4	Outlet of soil and vent pipe

Continue survey from Manhole 25 up branch connection 4. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and slight bend to left
0.1	Offset joint
1.4	Circumferential fracture
1.5	Joint and heavy debris deposits
1.7	Branch connection at 3 o'clock (origin unknown)
2.0	Heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 25 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.0	Circumferential fracture
1.4	Offset joint, gap between sections and slight bend upwards
1.9	Joint
2.1	Joint and bend to level
2.6	Outlet of rainwater gully

Continue survey from Manhole 25 up branch connection 2. 100mm 'super-sleve' pipework.

Duty foul water system.

0.0	Joint
0.1	Joint
0.4	Joint
1.4	Joint and slight bend to left
1.7	Joint
2.4	Joint and bend upwards
2.9	Outlet of soil and vent pipe

Continue survey from Manhole 25 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.2	Offset joint
0.3	Joint and slight bend upwards
1.4	Joint
1.6	Branch connection at 11 o'clock (origin unknown)
1.8	Joint
2.6	Joint and bend upwards
3.1	Outlet of soil and vent pipe

Continue survey from Manhole 25 downstream. 150mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.4	Joint and water holding in pipework which prevented a full view to 3.3m
1.8	Joint
3.3	Branch connection at 9 o'clock to rainwater gully
3.7	Joint
5.2	Manhole 24

Continue survey from Manhole 24 downstream. 150mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.0	Joint
2.4	Joint
3.8	Joint
5.7	Offset joint
5.9	Manhole 23

Continue survey from Manhole 23 downstream. 150mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.3	Joint
3.8	Offset joint and water holding in pipework which prevented a full view
4.6	Camera underwater which prevented view of pipework
6.2	Solid obstruction which prevented passage of the camera

Continue survey from Manhole 24 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Joint
0.5	Branch connection at 3 o'clock to rainwater gully
0.6	Offset joint
1.4	Offset joint and slight bend to right
2.3	Joint, bend upwards and heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 24 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and water holding in pipework which prevented a full view
1.1	Heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 24 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.8	Joint
2.4	Joint
2.6	Branch connection at 10 o'clock to rainwater pipe
2.9	Joint
4.5	Offset joint and gap between sections
6.1	Joint
6.4	Joint and bend upwards
6.7	Outlet of ground floor WC

Continue survey from Manhole 1 up branch connection 1. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0	Joint and debris deposits
2.9	End of structural soft felt liner and change of pipework material to 100mm 'super-sleve'
3.1	Joint
3.2	Outlet of rainwater gully

Continue survey from Manhole 1 up branch connection 2 (high level). 110mm PVC pipework. Duty foul water system.

0.0	Heavy debris deposits
0.2	Joint and 90° bend upwards
0.5	Outlet of 'Aco' style channel drain

Continue survey from Manhole 1 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.1	Joint and longitudinal fracture
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1.2	Joint and debris deposits which prevented a full view of pipework to 4.4m
4.4	Joint
6.0	Joint
7.6	Joint
9.2	Joint
10.7	Joint
12.4	Joint
14.0	Joint
14.5	Manhole 2

Continue survey from Manhole 2 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.2	Offset joint, gap between sections and debris deposits
2.0	Joint and debris deposits
3.8	Joint and debris deposits
5.7	Joint and debris deposits
6.9	Heavy debris deposits which prevented a full view of pipework
7.2	Unseen obstruction which prevented passage of the camera

Continue survey from Manhole 2 up branch connection 1 (high level). 110mm PVC pipework. Duty foul water system.

0.0	Camera could not enter pipework as it protrudes too far across the manhole
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Continue survey from Manhole 2 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits
0.2	Offset joint
1.9	Joint and debris deposits
2.6	Debris deposits
3.7	Joint and debris deposits
5.3	Joint
6.9	Joint
8.7	Joint
9.5	Joint and debris deposits
10.0	Manhole 3 and debris deposits

Continue survey from Manhole 3 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.3	Joint
1.9	Offset joint and minor root penetration
2.0	Branch connection at 9 o'clock possibly to rainwater pipe and possible minor root penetration
2.3	Offset joint and medium root penetration
3.8	Joint

5.3 Offset joint and possible minor root penetration
7.0 Manhole 4

Continue survey from Manhole 4 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0 Joint
0.2 Offset joint
0.9 Joint
2.5 Joint
4.1 Joint and possible minor root penetration
5.5 Joint
6.9 Joint
8.5 Joint
9.9 Joint
11.5 Joint
13.0 Joint and minor root penetration
13.3 Manhole 5 and root mass which prevented passage of the camera

Continue survey from Manhole 3 up branch connection 2. 110mm PVC pipework. Duty foul water system.

0.0 Joint
1.2 Joint
4.6 Joint and slight bend to right
5.5 Joint and 90° bend upwards
5.9 Offset joint
6.6 Offset joint
6.9 Joint and outlet of internal soil pipe

Continue survey from Manhole 3 up branch connection 1. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0 Joint
8.7 Joint and 90° bend upwards
9.1 Offset joint
9.5 Offset joint
9.8 Outlet of internal soil pipe

Continue survey from Manhole 6 up branch connection (via rodding access). 110mm PVC pipework. Duty foul water system.

0.0 Rodding access cap stuck in place which prevented entry of the camera. Run appears to go to waste/rainwater gully and if so run is approximately 1.5m in total

Continue survey from Manhole 6 upstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0 Joint and medium root penetration
0.3 Offset joint, possible minor root penetration and reverse gradient

0.8	Camera underwater which prevented view of pipework to 1.8m
1.8	Joint
3.4	Joint
4.4	Circumferential fracture and minor root penetration
5.0	Offset joint
5.1	Branch connection at 3 o'clock (origin unknown)
5.4	Joint
6.5	Joint
6.8	Joint
7.0	Concealed Manhole 5 and medium root penetration

Continue survey from Manhole 6 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and minor root penetration
0.3	Offset joint
1.1	Circumferential fracture and water holding in pipework which prevented a full view to 2.0m
2.0	Joint and scale deposits
3.5	Joint and possible minor root penetration
4.4	Circumferential fracture and minor root penetration
5.1	Offset joint and minor root penetration
5.8	Circumferential fracture, minor root penetration and water holding in pipework which prevented a full view
6.6	Offset joint
8.0	Camera underwater which prevented view of pipework
11.5	Unseen obstruction which prevented passage of the camera

Continue survey from Manhole 8 upstream. 150mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.2	Joint
1.7	Joint
3.4	Joint and medium root penetration
4.9	Joint and possible minor root penetration
5.4	Debris deposits
6.5	Joint and root mass
6.9	Heavy debris deposits which prevented passage of the camera. Run is approximately 8.5m in total to Manhole 7

Continue survey from Manhole 8 up branch connection. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint, bend upwards and debris deposits
0.3	Joint and minor root penetration
0.9	Medium root penetration and heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 8 downstream. 150mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint, slight bend to left and debris deposits
0.1	Offset joint and water holding in pipework which prevented a full view
1.4	Joint and root mass
1.6	Camera underwater which prevented view of pipework to 1.9m
1.9	Heavy debris deposits
2.4	Camera underwater which prevented view of pipework to 2.9m
2.9	Joint and heavy root penetration
4.5	Joint and heavy root penetration
6.0	Joint
7.6	Joint
9.0	Offset joint and minor root penetration
9.9	Circumferential fracture and medium root penetration
10.6	Joint
10.9	Branch connection at 3 o'clock (origin unknown)
11.1	Offset joint, gap between sections and debris deposits
12.6	Joint and debris deposits
14.2	Joint and debris deposits
15.8	Joint, possible minor root penetration and debris deposits which prevented a full view of pipework
17.8	Joint and debris deposits which prevented a full view of pipework
18.0	Manhole 10

Continue survey from Manhole 19 up branch connection 1. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0	Joint and debris deposits
1.1	Bend upwards
1.9	Joint, bend to level, end of structural soft felt liner and change of pipework material to 100mm 'super-sleve'
3.2	Joint
3.3	Outlet of waste/rainwater gully

Continue survey from Manhole 19 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits which prevented a full view of pipework
4.3	Minor root penetration and debris deposits
4.4	Heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 19 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and slight bend to right
0.1	Offset joint and gap between sections
0.3	Branch connection at 9 o'clock possibly to road gully
0.5	Pipework is capped off at this point

Continue survey from Manhole 19 up branch connection 4. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and minor root penetration
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0.3	Medium root penetration
1.4	Offset joint, heavy root penetration and gap between sections which prevented passage of the camera

Continue survey from Manhole 19 downstream. 150mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.2	Joint
1.4	Joint
3.0	Offset joint and water holding in pipework which prevented a full view
4.7	Joint and scale deposits
6.3	Joint and scale deposits
7.9	Joint
9.5	Joint and water holding in pipework which prevented a full view to 16.2m
11.1	Joint
11.8	Joint
12.7	Joint
14.3	Joint
15.0	Camera underwater which prevented view of pipework
16.2	Heavy debris deposits
16.6	Manhole 17

Continue survey from Manhole 17 downstream. 150mm 'super-sleve' pipework. Duty foul water system.

0.2	Offset joint, gap between sections and water holding in pipework which prevented a full view
1.1	Offset joint
1.5	Heavy debris deposits
2.6	Offset joint
2.8	Branch connection at 9 o'clock (origin unknown)
2.9	Offset joint
4.5	Joint
4.7	Branch connection at 2 o'clock (origin unknown)
4.9	Joint and debris deposits which prevented a full view of pipework
6.5	Joint and debris deposits
7.9	Manhole 16

Continue survey from Manhole 18 upstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Branch connection at 3 o'clock possibly to rainwater pipe
0.3	Joint
0.6	Joint
1.9	Joint
2.4	Offset joint, gap between sections and 90° bend upwards
2.8	Joint and outlet of internal soil pipe serving No.7

Continue survey from Manhole 18 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and possible minor root penetration
0.5	Joint
0.8	Branch connection at 10 o'clock (origin unknown)
0.9	Offset joint and possible minor root penetration
2.5	Offset joint, possible minor root penetration and slight bend to right
4.2	Offset joint, gap between sections and 90° bend upwards
5.1	Joint and outlet of internal soil pipe serving No.7

Continue survey from Manhole 18 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.3	Joint
3.0	Offset joint, gap between sections and 90° bend upwards
3.5	Offset joint and outlet of internal soil pipe serving No.6

Continue survey from Manhole 18 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Offset joint and gap between sections
1.7	Joint
3.3	Joint and 90° bend upwards
3.8	Joint and outlet of internal soil pipe serving No.6

Continue survey from Manhole 18 downstream. 100mm earthenware pipework. Duty foul water system.

0.1	Offset joint
1.1	Joint
2.7	Joint
4.3	Joint
4.5	Branch connection at 3 o'clock (origin unknown)
4.8	Offset joint
6.3	Offset joint and debris deposits
7.9	Joint
8.1	Manhole 17 (branch connection 2)

Continue survey from Manhole 17 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.6	Joint
2.2	Offset joint and gap between sections
3.0	Joint and possible minor root penetration
3.2	Branch connection at 3 o'clock possibly to rainwater gully
3.5	Joint
5.2	Offset joint and possible minor root penetration

6.8	Joint
8.0	Debris deposits
8.4	Joint, debris deposits and slight bend upwards
8.8	Offset joint and slight bend to left
10.3	Joint and change of pipework diameter and material to 110mm PVC
10.7	Joint
10.9	Outlet of gully

Continue survey from Manhole 16 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits
0.4	Offset joint, debris deposits, slight bend to left and gap between sections
0.8	Joint, debris deposits and slight bend to left
2.5	Joint and debris deposits
2.7	Branch connection at 12 o'clock possibly to waste/rainwater gully
2.9	Joint and debris deposits
4.4	Joint
6.0	Offset joint
7.7	Joint
8.4	Offset joint
8.6	Outlet of rainwater gully

Continue survey from Manhole 16 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits
0.4	Joint
1.3	Joint
2.0	Joint
2.5	Joint
2.6	Branch connection at 10 o'clock (origin unknown)
2.7	Offset joint
3.6	Joint
5.4	Joint
7.1	Joint and minor root penetration
7.4	Joint and slight bend to left
7.7	Offset joint and slight bend to left
8.5	Offset joint and 90° bend upwards
8.7	Cement intrusion on bend which prevented passage of the camera. Run is approximately 9.0m in total to internal soil pipe

Continue survey from Manhole 16 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and reverse gradient to 2.1m
0.1	Offset joint
1.7	Joint
3.4	Joint
5.0	Joint

6.2 Offset joint
6.5 Manhole 29

Continue survey from Manhole 29 upstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0 Joint and debris deposits
2.1 Joint
3.6 Joint
5.3 Joint
6.3 Joint
6.7 Manhole 30

Continue survey from Manhole 16 up branch connection 4. 100mm 'super-sleve' pipework. Duty foul water system.

0.0 Joint
0.3 Joint and slight bend to right
0.5 Joint and slight bend to right
0.8 Offset joint and minor root penetration
2.3 Joint, medium root penetration and debris deposits
2.9 Heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 16 downstream. 150mm 'super-sleve' pipework. Duty foul water system.

0.0 Joint
1.2 Joint
2.8 Joint
3.9 Joint
4.6 Manhole 15

Continue survey from Manhole 15 downstream. 225mm 'super-sleve' pipework. Duty foul water system.

0.0 Joint
0.3 Circumferential fracture
2.0 Joint
4.1 Joint
6.1 Joint
6.3 Branch connection at 2 o'clock (origin unknown)
6.5 Joint
7.6 Manhole 14

Continue survey from Manhole 14 downstream. 225mm 'super-sleve' pipework. Duty foul water system.

0.0 Joint
1.8 Joint and minor root penetration
3.7 Joint and medium root penetration
5.5 Joint and heavy root penetration
7.5 Joint

9.5	Joint and water holding in pipework which prevented a full view
11.4	Joint
13.0	Medium root penetration
13.3	Joint
15.2	Joint
17.0	Manhole 12

Continue survey from Manhole 15 up branch connection 3. 100mm 'super-sleeve' pipework. Duty foul water system.

0.0	Joint
0.4	Joint and slight bend upwards
0.7	Joint
2.4	Joint
4.0	Joint and bend to level
4.5	Offset joint and 90° bend upwards
5.1	Joint and outlet of internal soil and vent pipe

Continue survey from Manhole 15 up branch connection 2. 100mm 'super-sleeve' pipework. Duty foul water system.

0.0	Joint and slight bend to left
0.2	Joint
1.7	Joint
1.9	Branch connection at 2 o'clock possibly to rainwater gully
2.1	Offset joint
3.3	Offset joint and gap between sections
4.1	Joint and 90° bend upwards
4.5	Joint and outlet of internal soil pipe

Continue survey from Manhole 15 up branch connection 1. 100mm 'super-sleeve' pipework. Duty foul water system.

0.0	Joint
0.4	Circumferential fracture
1.4	Joint
2.5	Joint and slight bend upwards
4.1	Offset joint, gap between sections and 90° bend upwards
4.5	Cement intrusion on bend which prevented passage of the camera. Run is approximately 5.0m in total internal soil pipe

Continue survey from Manhole 14 up branch connection 4. 100mm 'super-sleeve' pipework. Duty foul water system.

0.0	Joint and debris deposits
0.3	Offset joint and gap between sections
2.0	Offset joint, debris deposits and slight bend upwards
2.3	Joint
2.7	Joint
3.1	Offset joint and gap between sections
3.8	Offset joint
4.3	Offset joint and gap between sections

- 4.7 Offset joint
- 4.8 Outlet of rainwater gully

Continue survey from Manhole 14 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

- 0.0 Joint
- 0.9 Circumferential fracture and minor root penetration
- 1.5 Joint
- 3.1 Joint
- 3.5 Joint
- 3.7 Outlet of rainwater gully

Continue survey from Manhole 14 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

- 0.0 Joint, debris deposits and slight bend to left
- 0.2 Joint
- 1.7 Offset joint
- 3.3 Offset joint and slight bend to right
- 4.9 Joint
- 6.3 Joint and slight bend to left
- 6.7 Offset joint and slight bend to left
- 7.2 Offset joint and gap between sections
- 7.7 Offset joint and gap between sections
- 7.9 Outlet of gully

Continue survey from Manhole 14 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

- 0.0 Joint and debris deposits
- 0.8 Circumferential fracture and possible minor root penetration
- 1.4 Joint
- 1.8 Offset joint and bend to right
- 2.2 Offset joint and 90° bend upwards
- 2.7 Offset joint and outlet of internal soil pipe

Continue survey from Manhole 13 upstream. 100mm 'super-sleve' pipework. Duty foul water system.

- 0.0 Joint and debris deposits
- 1.3 Joint
- 1.5 Branch connection at 9 o'clock to rainwater gully
- 1.8 Joint
- 3.4 Offset joint
- 4.1 Joint
- 4.7 Joint
- 4.9 Outlet of rainwater gully

Continue survey from Manhole 13 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and bend to left
0.3	Offset joint
1.7	Joint and debris deposits
3.0	Solidified grease deposits
3.7	Joint
5.2	Joint
5.4	Offset joint and bend to left
5.6	Outlet of waste gully

Continue survey from Manhole 13 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.2	Joint
1.4	Outlet of rainwater gully

Continue survey from Manhole 13 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint, debris deposits and minor root penetration
0.1	Joint, water holding in pipework due to reverse gradient which prevented a full view and medium root penetration
0.4	Joint and possible minor root penetration
0.7	Debris deposits
1.2	Camera underwater which prevented view of pipework to 2.1m
2.1	Offset joint and debris deposits
3.4	Circumferential fracture
3.7	Offset joint and possible minor root penetration
5.2	Heavy debris deposits which prevented a full view of pipework
6.2	Manhole 12 (branch connection 4)

Continue survey from Manhole 12 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and minor root penetration
0.1	Joint, minor root penetration and debris deposits which prevented a full view of pipework
0.5	Joint, minor root penetration and debris deposits which prevented a full view of pipework
0.7	Joint
3.0	Outlet of rainwater gully

Continue survey from Manhole 12 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and root mass which prevented entry of the camera
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Continue survey from Manhole 12 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint, minor root penetration, bend to right and debris deposits
0.1	Offset joint

0.2 Heavy root penetration which prevented passage of the camera

Continue survey from Manhole 12 up branch connection 5. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits
0.3	Joint and debris deposits
0.5	Joint
2.1	Offset joint
2.3	Joint
2.5	Outlet of road gully (no cap)

Continue survey from Manhole 12 downstream. 225mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint, medium root penetration and debris deposits
1.9	Joint
4.0	Joint
6.0	Manhole 11

Continue survey from Manhole 11 downstream. 300mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.4	Joint and possible minor root penetration
2.9	Joint
4.2	Joint, longitudinal fracture and radial fracture
5.8	Joint and possible minor root penetration
7.3	Joint and possible minor root penetration
8.8	Joint and debris deposits
10.7	Offset joint, minor root penetration and debris deposits
12.4	Joint, minor root penetration and debris deposits
13.8	Manhole 10

Continue survey from Manhole 10 downstream. 225mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits
1.2	Joint, debris deposits and minor root penetration
2.7	Joint and debris deposits
3.5	Vertical backdrop into chamber. Survey continues down into backdrop
3.7	Joint
4.3	Joint and bend to level
5.0	Angle of bend prevented passage of the camera. Run is approximately 5.5m in total to Manhole 9

Continue survey from Manhole 11 up branch connection 2. 225mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.8	Joint

2.3	Branch connection at 9 o'clock possibly to rainwater pipe
2.4	Joint
4.4	Joint
6.4	Joint and medium root penetration
8.6	Manhole 21 and medium root penetration

Continue survey from Manhole 21 upstream. 225mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint, debris deposits and minor root penetration
1.7	Joint
3.7	Joint and debris deposits
3.9	Branch connection at 9 o'clock possibly to yard gully
4.1	Joint
6.1	Joint
8.0	Joint
9.4	Manhole 22

Continue survey from Manhole 22 upstream. 225mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.7	Joint and debris deposits
3.7	Joint
5.7	Joint
7.0	Debris deposits
7.4	Joint
9.4	Joint
11.2	Joint
12.8	Manhole 23

Continue survey from Manhole 11 up branch connection 1. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0	Joint and minor root penetration
4.7	Branch connection at 3 o'clock (origin unknown) and heavy root penetration
5.9	Root mass which prevented passage of the camera. Run is approximately 7.5m in total to internal soil pipe in No.1

Continue survey from Manhole 10 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint, minor root penetration and slight bend to right
0.2	Joint and slight bend to right
0.5	Offset joint
2.1	Offset joint and debris deposits
3.7	Joint
4.7	Circumferential fracture
5.1	Offset joint and debris deposits
5.5	Joint
5.7	Outlet of road gully and debris deposits

Continue survey from Manhole 10 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits
0.1	Joint, debris deposits and water holding in pipework due to reverse gradient which prevented a full view to 1.9m
0.7	Joint and debris deposits
1.9	Joint and debris deposits
2.4	Joint, minor root penetration and water holding in pipework due to reverse gradient which prevented a full view
3.5	Camera underwater which prevented view of pipework
5.7	Joint
6.9	Offset joint and gap between sections
7.7	Camera underwater which prevented view of pipework to 9.0m
10.3	Joint
10.6	Circumferential fracture
11.2	Circumferential fracture
11.8	Joint
12.6	Circumferential fracture
13.0	Joint and possible minor root penetration
13.3	Joint and longitudinal fracture
13.8	Manhole 36

Continue survey from Manhole 21 up branch connection 4. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits which prevented a full view of pipework
0.3	Offset joint and debris deposits which prevented a full view of pipework
6.8	Unseen obstruction which prevented passage of the camera

Continue survey from Manhole 21 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits
0.4	Offset joint
0.7	Offset joint and reverse gradient
2.2	Joint and reverse gradient
3.8	Offset joint and reverse gradient
5.5	Joint and debris deposits
6.2	Circumferential fracture and possible minor root penetration
7.1	Joint, possible minor root penetration, debris deposits and reverse gradient
8.7	Joint and reverse gradient
10.1	Joint and debris deposits
11.7	Joint and slight bend to left
11.9	Joint and debris deposits
13.5	Joint
15.1	Joint
16.8	Joint
17.9	Joint

18.2 Manhole 35

Continue survey from Manhole 21 up branch connection 2. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0	Joint and medium root penetration
2.7	Medium root penetration
3.2	End of structural soft felt liner, change of pipework material to 100mm 'super-sleve' and heavy root penetration
3.6	Offset joint, minor root penetration and debris deposits
4.5	Offset joint and slight bend to right
4.8	Joint
5.0	Offset joint, gap between sections and 90° bend upwards
5.5	Joint and outlet of internal soil pipe

Continue survey from Manhole 21 up branch connection 1. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0	Joint, minor root penetration and debris deposits which prevented a full view
0.3	Offset joint and heavy root penetration which prevented passage of the camera

Continue survey from Manhole 23 up branch connection 4. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Joint
1.7	Offset joint and gap between sections
3.4	Offset joint and debris deposits
4.9	Offset joint and debris deposits
6.4	Joint and slight bend to right
6.8	Joint and debris deposits
7.1	Offset joint and 90° bend upwards
7.7	Joint and outlet of internal soil pipe

Continue survey from Manhole 23 up branch connection 3. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Joint
1.7	Joint and minor root penetration
2.6	Circumferential fracture and medium root penetration
3.3	Offset joint and possible minor root penetration
3.6	Offset joint and gap between sections
4.7	Offset joint
5.0	Offset joint, gap between sections and 90° bend upwards
5.5	Outlet of internal soil pipe

Continue survey from Manhole 23 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.6	Joint
1.7	Branch connection at 10 o'clock possibly to rainwater gully
1.9	Offset joint and gap between sections
3.5	Offset joint and slight bend to right
3.8	Offset joint and slight bend upwards
4.1	Joint, slight bend upwards and debris deposits
4.4	Joint and outlet of internal soil pipe

Continue survey from Manhole 23 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
1.2	Circumferential fracture
1.6	Offset joint
2.1	Circumferential fracture and reverse gradient
3.2	Joint and slight bend to left
3.5	Offset joint
3.8	Offset joint and 90° bend upwards
4.2	Offset joint and outlet of internal soil pipe

Continue survey from Manhole 35 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.3	Circumferential fracture
1.0	Joint
2.6	Joint
4.2	Joint
5.9	Joint and bend to right
6.2	Joint
7.1	Joint
7.4	Joint and 90° bend upwards
7.6	Heavy cement intrusion which prevented passage of the camera

Continue survey from Manhole 35 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint, scale deposits and bend upwards
0.5	Joint and scale deposits
2.2	Joint, scale deposits and bend to level
2.6	Joint
2.7	Outlet of rainwater gully

Continue survey from Manhole 31 upstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.3	Joint and debris deposits
1.5	Joint and debris deposits
1.9	Joint and debris deposits

- 2.4 Joint and heavy debris deposits which prevented a full view of pipework
- 4.7 Heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 31 up branch connection. 100mm 'super-sleve' pipework. Duty foul water system.

- 0.0 Joint
- 0.1 Offset joint and slight bend to right
- 0.6 Joint, slight bend upwards and debris deposits
- 0.9 Joint, slight bend upwards and heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 31 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

- 0.0 Joint
- 0.1 Joint and debris deposits
- 0.6 Circumferential fracture and debris deposits
- 1.5 Joint
- 2.5 Circumferential fracture and debris deposits
- 3.2 Joint
- 4.7 Joint and debris deposits
- 6.0 Radial fracture and longitudinal fracture
- 6.3 Joint
- 8.0 Joint
- 9.5 Joint
- 11.1 Joint and debris deposits
- 12.7 Offset joint, debris deposits and minor root penetration
- 12.9 Branch connection at 3 o'clock (origin unknown)
- 13.1 Joint
- 14.3 Joint and scale deposits
- 14.8 Manhole 30

Continue survey from Manhole 39 upstream. 100mm 'super-sleve' pipework. Duty foul water system.

- 0.0 Joint and reverse gradient
- 1.2 Joint
- 2.8 Joint
- 4.4 Joint
- 6.2 Joint
- 7.3 Joint
- 7.5 Manhole 34

Continue survey from Manhole 34 upstream. 100mm 'super-sleve' pipework. Duty foul water system.

- 0.0 Joint and debris deposits
- 0.4 Heavy debris deposits
- 1.4 Heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 39 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.3	Circumferential fracture
1.3	Joint
2.9	Joint and minor root penetration
4.7	Offset joint and minor root penetration
5.5	Circumferential fracture and minor root penetration
6.3	Manhole 20 (under a car)

Continue survey from Manhole 34 up branch connection 2. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.6	Offset joint and gap between sections
1.1	Joint
1.3	Branch connection at 9 o'clock possibly to rainwater pipe
1.6	Offset joint
2.3	Offset joint, gap between sections and scale deposits
2.4	Branch connection at 12 o'clock possibly to rodding access
2.6	Offset joint
3.1	Joint and 90° bend upwards
3.6	Offset joint and outlet of internal soil pipe

Continue survey from Manhole 34 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.7	Circumferential fracture
1.2	Joint and minor root penetration
1.9	Circumferential fracture and possible minor root penetration
2.9	Offset joint and medium root penetration
3.1	Branch connection at 3 o'clock possibly to rainwater gully and medium root penetration
3.3	Joint and medium root penetration
4.4	Offset joint and slight bend to left
4.8	Offset joint and 90° bend upwards
5.3	Outlet of internal soil pipe

Continue survey from Manhole 44 upstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.8	Debris deposits
1.5	Joint
1.9	Circumferential fracture
2.8	Offset joint, slight bend to left and change of pipework diameter and material to 110mm PVC
3.2	Joint and bend upwards
3.5	Joint and bend to level
4.3	Joint

4.5 Outlet of waste gully

Continue survey from Manhole 44 up branch connection. 100mm 'super-sleeve' pipework. Duty foul water system.

0.0	Joint and debris deposits
0.3	Offset joint, gap between sections and pipework missing at this point
0.5	Offset joint, gap between sections and slight bend to right
0.8	Offset joint
1.6	Pipework is capped off at this point with plastic builders' rubble sack

Continue survey from Manhole 44 downstream. 100mm 'super-sleeve' pipework. Duty foul water system.

0.0	Debris deposits
0.2	Joint, heavy root penetration and debris deposits
0.8	Heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 43 up branch connection 2 (high level). 110mm PVC pipework. Duty foul water system.

0.0	Camera could not enter due to positioning of pipework
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Continue survey from Manhole 43 up branch connection 1. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0	Joint and debris deposits
0.5	End of structural soft felt liner, change of pipework material to 100mm 'super-sleeve and 90° bend upwards
0.8	Cement intrusion on bend which prevented passage of the camera

Continue survey from Manhole 43 downstream. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0	Joint and minor root penetration
10.2	Branch connection at 2 o'clock (origin unknown)
10.4	Joint
10.9	Manhole 42

Continue survey from Manhole 42 up branch connection. 100mm 'super-sleeve' pipework. Duty foul water system.

0.0	Joint and slight bend to left
0.2	Offset joint and gap between sections
0.4	Branch connection at 9 o'clock possibly to rainwater gully
0.6	Offset joint
0.7	Branch connection at 12 o'clock to rodding access
0.9	Offset joint and slight bend to left
1.2	Offset joint

1.4 Outlet of rainwater gully

Continue survey from Manhole 42 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.3	Joint and debris deposits
1.0	Offset joint
2.7	Joint and debris deposits
2.9	Branch connection at 9 o'clock (origin unknown)
3.1	Joint and debris deposits
4.7	Joint and medium root penetration
6.3	Offset joint, medium root penetration and slight bend to right
7.0	Manhole 41

Continue survey from Manhole 40 upstream. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0	Joint
0.8	Reverse gradient
0.9	Debris deposits
12.2	Manhole 41

Continue survey from Manhole 40 up branch connection 2. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

0.0	Joint and debris deposits
0.4	Heavy debris deposits which prevented a full view of pipework
6.2	Offset joint and slight bend upwards
6.3	Joint and bend to level
6.6	Outlet of waste/rainwater gully

Continue survey from Manhole 40 up branch connection 1. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and debris deposits
1.1	Offset joint and debris deposits
1.9	Joint and debris deposits
2.2	Circumferential fracture and debris deposits
2.9	Joint
3.4	Joint and debris deposits
5.0	Offset joint
5.7	Joint
6.8	Offset joint and debris deposits
7.6	Circumferential fracture and minor root penetration
8.3	Joint and debris deposits
9.4	Offset joint, debris deposits, gap between sections, slight bend upwards and change of pipework diameter and material to 110mm PVC
10.4	Joint and slight bend to level
10.6	Branch connection at 3 o'clock (origin unknown)
10.8	Joint

- 10.9 Joint and bend to left
- 11.2 Heavy debris deposits which prevented passage of the camera

Continue survey from Manhole 41 up branch connection 2. 100mm 'super-sleeve' pipework. Duty foul water system.

- 0.0 Joint
- 0.8 Joint
- 2.5 Offset joint and slight bend to left
- 2.7 Offset joint and slight bend to left
- 2.8 Offset joint, gap between sections and 90° bend upwards
- 3.3 Offset joint and outlet of internal soil pipe

Continue survey from Manhole 41 up branch connection 1. 100mm pipework previously repaired by structural soft felt lining. Duty foul water system.

- 0.0 Joint and debris deposits
- 2.7 Slight bend to left
- 3.2 End of structural soft felt liner and change of pipework material to 100mm 'super-sleeve'
- 4.6 Joint
- 6.3 Joint and 90° bend upwards
- 6.9 Joint and outlet of internal soil pipe

Continue survey from Manhole 38 upstream. 100mm 'super-sleeve' pipework. Duty foul water system.

- 0.0 Joint and debris deposits
- 0.2 Joint and heavy debris deposits which prevented a full view of pipework
- 0.6 Camera underwater which prevented view of pipework to 3.0m and change of pipework diameter and material to 110mm PVC
- 4.9 Joint
- 5.0 Branch connection at 9 o'clock (origin unknown)
- 5.1 Joint
- 8.5 Joint
- 10.5 Reverse gradient to 14.4m
- 14.4 Joint
- 20.1 Joint and change of pipework diameter and material to 100mm 'super-sleeve'
- 20.3 Offset joint, minor root penetration and debris deposits
- 20.6 Manhole 40

Continue survey from Manhole 38 up branch connection. 100mm 'super-sleeve' pipework. Duty foul water system.

- 0.0 Joint, bend to left and debris deposits
- 0.1 Offset joint and debris deposits
- 0.8 Slight bend to right and debris deposits which prevented a full view of pipework
- 1.2 Joint, slight bend to right and bend upwards
- 1.6 Joint and bend to level

1.8	Offset joint
2.1	Offset joint and gap between sections
2.2	Outlet of rainwater gully

Continue survey from Manhole 38 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint
0.1	Joint
0.4	Joint and debris deposits
2.2	Joint
2.5	Circumferential fracture and debris deposits
3.9	Joint
5.6	Joint
6.5	Circumferential fracture
7.3	Joint
8.8	Joint and debris deposits
10.3	Joint
12.0	Joint
12.6	Manhole 37 (stuck down) and root penetration

Continue survey from Manhole 37 downstream. 100mm 'super-sleve' pipework. Duty foul water system.

0.0	Joint and minor root penetration
0.2	Joint and minor root penetration
1.8	Joint and debris deposits
2.1	Circumferential fracture and possible minor root penetration
3.3	Joint
4.9	Joint and debris deposits
6.0	Circumferential fracture and debris deposits
6.5	Joint
7.5	Circumferential fracture and minor root penetration
7.9	Joint and minor root penetration
8.9	Radial fracture and debris deposits
9.5	Joint
10.1	Offset joint and slight bend to right
10.5	Manhole 36

END OF SURVEY

Conclusions and Recommendations

It was apparent from the CCTV camera inspection that the accessible private drainage system is not in a satisfactory structural condition having fracturing, heavy root penetration including masses and severely misaligned and leaking joints which will be allowing the loss of water into the surrounding ground area.

It should be noted that previous repairs have been carried out in the form of structural soft felt lining.

Also, unseen obstructions were discovered which was causing a partial blockage and prevented passage of the camera. This may cause a full blockage and a spillage of sewage at ground level.

The system is also suffering from scale, solidified grease and heavy debris deposits together with cement intrusion which is affecting the free flow of waste through the pipework and prevented a clear view of some sections.

Some manhole covers could not be lifted without possibly causing damage and potentially a trip hazard, which prevented access to some parts of the system. In the event of an emergency blockage, the engineer would have difficulty without full access.

Concealed manholes were also discovered which prevented access to the connecting pipework and therefore the condition of these sections are unknown. Ideally this would be exposed as in the event of an emergency blockage, the engineer would have difficulty without full access.

Should the exact position of the concealed chamber be required, we recommend that electronic sonde tracing is carried out as the approximate position shown on the drawing cannot be relied upon.

Unfortunately, we could not access Manhole 20 as it was under a car during our time on site.

Please note that the rodding access cap on the interceptor trap up branch connection in Manhole 6 was stuck in place which could not be removed without potentially causing damage and therefore the condition of the pipework downstream cannot be confirmed.

Additionally branch connection in Manhole 44 appears to be redundant and we advise that if confirmed it should be sealed at the chamber to prevent the passage and nesting of vermin. Rats usually prefer to nest in redundant runs and therefore confirmation of this is necessary.

It was also discovered that some runs have a poor gradient where water is pooling which is causing the accelerated accumulation of debris deposits. These problems are usually impossible or too expensive to remedy and therefore the only option is likely to be regular maintenance.

In order to remedy the known defects in the private drainage system, we recommend the following works:

1a. To carry out electronic sonde tracing to locate the cover on Concealed Manhole 4 and excavate to expose for access.

1b. To raise the manhole walls up to ground level and supply and install new cover and frame. Please note that the maximum height allowed for raising the wall of the concealed manhole is 300mm.

1c. Whilst access is available, to carry out a further CCTV camera inspection to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

2a. To carry out electronic sonde tracing to locate the cover on Concealed Manhole 5 and excavate to expose for access. Please note that the decking in this area will have to be lifted prior to our attendance.

2b. To raise the manhole walls up to ground level and supply and install new cover and frame. Please note that the maximum height allowed for raising the wall of the concealed manhole is 300mm.

- 2c. Whilst access is available, to carry out a further CCTV camera inspection to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 3a. To carry out electronic sonde tracing to locate the cover on Concealed Manhole 36 and excavate to expose for access.
- 3b. To raise the manhole walls up to ground level and supply and install new cover and frame. Please note that the maximum height allowed for raising the wall of the concealed manhole is 300mm.
- 3c. Whilst access is available, to carry out a further CCTV camera inspection to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 4a. To break out defective cover on Manhole 22 and replace with new cover and frame.
- 4b. Whilst access is available, to carry out a further CCTV camera inspection to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 5a. To break out defective cover on Manhole 28 and replace with new cover and frame.
- 5b. Whilst access is available, to carry out a further CCTV camera inspection to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 6a. To break out defective cover on Manhole 37 and replace with new cover and frame.
- 6b. Whilst access is available, to carry out a further CCTV camera inspection to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
7. To carry out a further CCTV camera inspection (once car has been moved) of Manhole 20 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 8a. To carry out milling using Picote machinery of all affected runs to cut through cement intrusion, obstructions, scale, solidified grease, heavy root penetration including masses and restore the flow.
- 8b. To carry out high pressure water jetting of all affected runs to remove cut material and heavy debris deposits and leave pipework clear and free flowing.
9. To carry out structural patch lining of defective section at 5.4m upstream of Manhole 27 to seal pipework to a watertight condition.
10. To carry out structural soft felt lining up branch connection 5 in Manhole 27 to soil and vent pipe rest bend to seal pipework to a watertight condition. Please note that this technique requires a structural soft felt liner to be installed inside the internal section of the soil pipe and on occasion a non-toxic smell can be detected upon completion. This is an odour only and not dangerous and meets all WRc requirements however if any residents find the smell unpleasant the manufacturers recommend that all windows are opened to allow a through-draught until it dissipates.

11. To carry out structural soft felt lining up branch connection 4 in Manhole 27 to Manhole 28 to seal pipework to a watertight condition.
12. To carry out structural soft felt lining up branch connection 3 in Manhole 27 to waste gully rest bend to seal pipework to a watertight condition.
- 13a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 2 in Manhole 27 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 13b. If no further damage is discovered, to carry out structural soft felt lining of initial 3.0m to seal pipework to a watertight condition.
14. To carry out a cement repair at 0.0m up branch connection 1 in Manhole 27 to seal pipework to a watertight condition.
15. To carry out structural soft felt lining up branch connection 6 in Manhole 26 to branch connection at 3.4m to seal pipework to a watertight condition. Please note that this technique requires a structural soft felt liner to be installed inside the internal section of the soil pipe and on occasion a non-toxic smell can be detected upon completion. This is an odour only and not dangerous and meets all WRc requirements however if any residents find the smell unpleasant the manufacturers recommend that all windows are opened to allow a through-draught until it dissipates.
16. To carry out structural soft felt lining up branch connection 5 in Manhole 26 to ground floor WC rest bend to seal pipework to a watertight condition. Upon completion of lining, to reinstate water level in WC pan. Please note that this technique requires a structural soft felt liner to be installed inside the internal section of the soil pipe and on occasion a non-toxic smell can be detected upon completion. This is an odour only and not dangerous and meets all WRc requirements however if any residents find the smell unpleasant the manufacturers recommend that all windows are opened to allow a through-draught until it dissipates.
17. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 4 in Manhole 26 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 18a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 4 in Manhole 25 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 18b. If no further damage is discovered, to carry out structural soft felt lining to branch connection at 1.7m to seal pipework to a watertight condition.
19. To carry out structural soft felt lining up branch connection 3 in Manhole 25 to bend at 1.4m to seal pipework to a watertight condition.
20. To carry out a further CCTV camera inspection (after high pressure water jetting) downstream of Manhole 23 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
21. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 3 in Manhole 24 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

22. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 2 in Manhole 24 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
23. To carry out structural soft felt lining of initial 3.0m downstream of Manhole 1 to seal pipework to a watertight condition.
24. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 2 in Manhole 2 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
25. To cut back protruding PVC pipework of branch connection 1 in Manhole 2 to allow access into the pipework and carry out a further CCTV camera inspection.
- 26a. To excavate above defective branch connection at 2.0m downstream of Manhole 3 and replace with new PVC junction.
- 26b. Whilst access is available, to carry out a further CCTV camera inspection to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 26c. Whilst pipework is open, to carry out structural soft felt lining upstream to Manhole 3 and downstream to Manhole 4 to seal pipework to a watertight condition.
- 26d. Upon completion, to reinstate pipework, making all necessary connections.
27. To carry out structural soft felt lining downstream of Manhole 4 to Manhole 5 to seal pipework to a watertight condition.
- 28a. To break out rodding access cap on branch connection in Manhole 6 and replace with new cap.
- 28b. Whilst pipework is open, to carry out a CCTV camera inspection from this point to ascertain the condition of the unseen sections and report findings.
29. To carry out structural soft felt lining upstream of Manhole 6 to Manhole 5 allowing for branch connection at 5.1m to seal pipework to a watertight condition.
- 30a. To carry out a further CCTV camera inspection (after high pressure water jetting) downstream of Manhole 6 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 30b. If no further damage is discovered, to carry out structural soft felt lining of initial 6.0m to seal pipework to a watertight condition.
- 31a. To carry out a further CCTV camera inspection (after high pressure water jetting) upstream of Manhole 8 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 31b. If no further damage is discovered, to carry out structural soft felt lining to Manhole 7 to seal pipework to a watertight condition.

- 32a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection in Manhole 8 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 32b. If no further damage is discovered, to carry out structural soft felt lining of initial 1.0m to seal pipework to a watertight condition.
- 33a. To carry out structural soft felt lining of initial 5.0m downstream of Manhole 8 to seal pipework to a watertight condition.
- 33b. To carry out structural patch lining of defective sections at 9.0m and 9.9m to seal pipework to a watertight condition.
- 33c. To carry out structural soft felt lining of initial 3.0m upstream of Manhole 10 to seal pipework to a watertight condition.
- 34a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 2 in Manhole 19 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 34b. If no further damaged is discovered, to carry out structural patch lining of defective sections at 4.3m and 4.4m (utilising 1 structural patch liner) to seal pipework to a watertight condition.
- 35a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 4 in Manhole 19 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 35b. If no further damage is discovered, to carry out structural soft felt lining of initial 2.0m to seal pipework to a watertight condition.
36. To carry out a further CCTV camera inspection (after high pressure water jetting) downstream of Manhole 19 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 37a. To carry out a cement repair at 0.0m up branch connection 3 in Manhole 18 to seal pipework to a watertight condition.
- 37b. To carry out structural patch lining of defective sections at 0.9m and 2.5m to seal pipework to a watertight condition.
- 38a. To carry out structural soft felt lining up branch connection 1 in Manhole 17 to branch connection at 3.2m to seal pipework to a watertight condition.
- 38b. To carry out structural patch lining of defective section at 5.2m to seal pipework to a watertight condition.
- 39a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 2 in Manhole 16 to confirm the removal of cement intrusion and report findings. Please note that further remedial works may be recommended.
- 39b. If no further damage is discovered, to carry out structural patch lining of defective section at 7.1m to seal pipework to a watertight condition.

- 40a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 4 in Manhole 16 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 40b. If no further damage is discovered, to carry out structural soft felt lining of initial 3.0m to seal pipework to a watertight condition.
41. To carry out structural patch lining of defective section at 0.3m downstream of Manhole 15 to seal pipework to a watertight condition.
- 42a. To carry out structural soft felt lining of initial 6.0m downstream of Manhole 14 to seal pipework to a watertight condition.
- 42b. To carry out structural patch lining of defective section at 13.0m to seal pipework to a watertight condition.
- 43a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 1 in Manhole 15 to confirm removal of cement intrusion and report findings. Please note that further remedial works may be recommended.
- 43b. If no further damage is discovered, to carry out structural soft felt lining to bend at 2.5m to seal pipework to a watertight condition.
44. To carry out structural soft felt lining up branch connection 3 in Manhole 14 to rainwater gully rest bend to seal pipework to a watertight condition.
45. To carry out structural soft felt lining up branch connection 1 in Manhole 14 to internal soil pipe rest bend to seal pipework to a watertight condition. Please note that this technique requires a structural soft felt liner to be installed inside the internal section of the soil pipe and on occasion a non-toxic smell can be detected upon completion. This is an odour only and not dangerous and meets all WRc requirements however if any residents find the smell unpleasant the manufacturers recommend that all windows are opened to allow a through-draught until it dissipates.
46. To carry out structural soft felt lining downstream of Manhole 13 to Manhole 12 (branch connection 4) to seal pipework to a watertight condition.
47. To carry out structural soft felt lining up branch connection 1 in Manhole 12 to rainwater gully rest bend to seal pipework to a watertight condition.
48. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 2 in Manhole 12 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
49. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 3 in Manhole 12 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
50. To supply and fit rodding access cap on road gully up branch connection 5 in Manhole 12 to prevent the escape of vermin.

51. To carry out a cement repair at 0.0m downstream of Manhole 12 to seal pipework to a watertight condition.
52. To carry out structural soft felt lining downstream of Manhole 11 to Manhole 10 to seal pipework to a watertight condition.
53. To carry out structural soft felt lining downstream of Manhole 10 to vertical backdrop to seal pipework to a watertight condition.
54. To carry out structural soft felt lining of initial 3.0m upstream of Manhole 21 (towards Manhole 11) to seal pipework to a watertight condition.
55. To carry out a cement repair at 0.0m upstream of Manhole 21 to seal pipework to a watertight condition.
- 56a. To excavate above defective branch connection at 4.7m up branch connection 1 in Manhole 11 and replace with new junction.
- 56b. Whilst access is available, to carry out a CCTV camera inspection up branch connection and upstream of excavation to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
- 56c. Whilst pipework is open, to carry out structural soft felt lining downstream to Manhole 11 and upstream to internal soil pipe to seal pipework to a watertight condition. Please note that this technique requires a structural soft felt liner to be installed inside the internal section of the soil pipe and on occasion a non-toxic smell can be detected upon completion. This is an odour only and not dangerous and meets all WRc requirements however if any residents find the smell unpleasant the manufacturers recommend that all windows are opened to allow a through-draught until it dissipates.
- 56d. Upon completion, to reinstate pipework, making all necessary connections.
57. To carry out structural soft felt lining up branch connection 2 in Manhole 10 to road gully rest bend to seal pipework to a watertight condition.
58. To carry out structural soft felt lining up branch connection 3 in Manhole 10 to Manhole 36 to seal pipework to a watertight condition.
59. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 4 in Manhole 21 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.
60. To carry out structural soft felt lining of initial 8.0m up branch connection 3 in Manhole 21 to seal pipework to a watertight condition.
- 61a. To carry out a cement repair at 0.0m up branch connection 2 in Manhole 21 to seal pipework to a watertight condition.
- 61b. To carry out structural patch lining of defective sections at 2.7m, 3.2m and 3.6m (utilising 2 structural patch liners) to seal pipework to a watertight condition.

62. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 1 in Manhole 21 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

63. To carry out structural soft felt lining up branch connection 3 in Manhole 23 to internal soil pipe rest bend to seal pipework to a watertight condition. Please note that this technique requires a structural soft felt liner to be installed inside the internal section of the soil pipe and on occasion a non-toxic smell can be detected upon completion. This is an odour only and not dangerous and meets all WRc requirements however if any residents find the smell unpleasant the manufacturers recommend that all windows are opened to allow a through-draught until it dissipates.

64. To carry out structural soft felt lining up branch connection 1 in Manhole 23 to internal soil pipe rest bend to seal pipework to a watertight condition. Please note that this technique requires a structural soft felt liner to be installed inside the internal section of the soil pipe and on occasion a non-toxic smell can be detected upon completion. This is an odour only and not dangerous and meets all WRc requirements however if any residents find the smell unpleasant the manufacturers recommend that all windows are opened to allow a through-draught until it dissipates.

65a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 1 in Manhole 35 to confirm removal of cement intrusion and report findings. Please note that further remedial works may be recommended.

65b. If no further damage is discovered, to carry out structural soft felt lining of initial 3.0m to seal pipework to a watertight condition.

66. To carry out a further CCTV camera inspection (after high pressure water jetting) upstream of Manhole 31 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

67. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection in Manhole 31 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

68a. To carry out structural soft felt lining of initial 7.0m downstream of Manhole 31 to seal pipework to a watertight condition.

68b. To carry out structural patch lining of defective section at 12.7m to seal pipework to a watertight condition.

69. To carry out a further CCTV camera inspection (after high pressure water jetting) upstream of Manhole 34 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

70. To carry out structural soft felt lining downstream of Manhole 39 to Manhole 20 to seal pipework to a watertight condition.

71a. To excavate above defective branch connection at 3.1m up branch connection 1 in Manhole 34.

71b. Whilst access is available, to carry out a further CCTV camera inspection to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

71c. Whilst pipework is open, to carry out structural soft felt lining through to manhole using flexi-liner to seal pipework to a watertight condition.

71d. Upon completion, to reinstate pipework, making all necessary connections.

72. To carry out structural soft felt lining of initial 3.0m upstream of Manhole 44 to seal pipework to a watertight condition.

73. To permanently seal branch connection in Manhole 44 at chamber to prevent the passage and nesting of vermin.

74. To carry out a further CCTV camera inspection (after high pressure water jetting) downstream of Manhole 44 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

75. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 1 in Manhole 43 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

76. To carry out a cement repair at 0.0m downstream of Manhole 43 to seal pipework to a watertight condition.

77. To carry out structural soft felt lining upstream of Manhole 41 to branch connection shown at 2.9m downstream of Manhole 42 to seal pipework to a watertight condition.

78a. To carry out a further CCTV camera inspection (after high pressure water jetting) up branch connection 1 in Manhole 40 to ascertain the condition of the unseen sections and report findings. Please note that further remedial works may be recommended.

78b. To carry out structural soft felt lining of initial 3.0m to seal pipework to a watertight condition.

78c. To carry out structural patch lining of defective section at 7.6m to seal pipework to a watertight condition.

79. To carry out structural soft felt lining of initial 2.0m downstream of Manhole 40 towards Manhole 38 to seal pipework to a watertight condition.

80. To carry out structural soft felt lining downstream of Manhole 38 to Manhole 37 to seal pipework to a watertight condition.

81. To carry out structural soft felt lining downstream of Manhole 37 to Manhole 36 to seal pipework to a watertight condition.

82. To backfill all excavations in compacted layers and reinstate all surfaces to match existing where possible.

83. To remove all excess spoil and materials from site and leave clean and tidy.

We would be pleased to carry out the above works for the sum of £47,475.00 plus VAT and we look forward to receiving your further instructions.

Should you instruct the above repairs within 14 days of the date of this report, we will offer a 5% discount. Please note that the above price is fixed for 3 months.

We do hope that the above meets with your approval but should you have any queries please do not hesitate to contact us.

PLEASE NOTE 1: ALL REPAIR WORKS CARRIED OUT ARE COVERED BY CERTIFIED ENGINEERS AS PART OF THE NATIONAL ASSOCIATION OF DRAINAGE CONTRACTORS (NADC) SCHEME. THIS ENSURES THAT ANY REMEDIAL WORKS MEET THE HIGHEST INDUSTRY STANDARDS AND CARRY OUR 15-YEAR GUARANTEE AGAINST FAULTY WORKMANSHIP AND MATERIALS. PLEASE BEWARE CONTRACTORS WHO ARE NOT NADC CERTIFIED.

PLEASE NOTE 2:

(A) THE MEASUREMENTS IN OUR REPORTS OR ON OUR RECORDINGS ARE TO BE USED AS A GUIDE LINE ONLY. THE LINES SHOWN ON OUR DRAWINGS ARE AN APPROXIMATE ROUTE AND SHOULD NOT BE RELIED UPON. SHOULD CONFIRMATION OF THE ROUTE BE REQUIRED, ELECTRONIC SONDE TRACING WOULD BE NECESSARY.

(B) WE HAVE ALLOWED FOR A THICKNESS OF CONCRETE TO A MAXIMUM OF 150MM AND IF THE ACTUAL DEPTH IS MORE, WE RESERVE THE RIGHT TO REQUEST ADDITIONAL COSTS.

(C) WE WILL UTILISE CAT SCANNING EQUIPMENT PRIOR TO ANY EXCAVATIONS HOWEVER IT IS NOT POSSIBLE TO DETECT POLYMAIN OR SIMILAR PIPEWORK. SHOULD YOU HAVE ACCESS TO ANY SERVICES DRAWINGS, WE WILL REQUIRE A COPY OF THESE PRIOR TO COMMENCEMENT OF WORKS. SHOULD THESE NOT BE PROVIDED AND WE STRIKE A SERVICE PIPE OR CABLE IN THE COURSE OF OUR WORKS, WE RESERVE THE RIGHT TO CHARGE FOR ITS REPAIR.