

WJ SHIRLEY

DRAINAGE SERVICES for
COMMERCIAL PROPERTY INVESTMENT

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Mon 25th, Tues
26th & Wed 27th
February
2019

DRAINAGE REPORT

**UNIT 1, WILSON ROAD
HUYTON BUSINESS PARK
LIVERPOOL**

L36 6JF



OVERALL RATING

MODERATE

Overall, the below-ground drains are in a moderate condition, with silt and scale accumulations, a collapsed drain and several cracked pipes and displaced joints. There is also some root ingress which should be cut away and the pipes repaired. There are ten seized internal inspection covers which ideally should be broken out and renewed to allow full maintenance access. There are no oil interceptors serving the surface-water system and consideration should be given to retro-fitting suitable interceptors.

Total length of below-ground drains

1.09 km

MAIN POINTS	
* Foul and surface-water drains are separate.	
* On mains drainage.	
✓ Some drains in good condition.	
✓ Drains operating moderately well overall.	
✗ De-silting and de-scaling works required.	
✗ Seized inspection covers.	
✗ Root ingress.	
✗ No oil interceptors.	
✗ Collapsed drain needs excavation.	
✗ Cracked pipes and displaced joint need repair.	
£ Budget Costs £72,200	

OVERALL MODERATE



Overall assessment of the condition of the drainage assets

STRUCTURAL MODERATE



Overall assessment of physical condition of the drainage assets

OPERATIONAL MODERATE



Overall assessment of operational condition of the drainage assets

ENVIRONMENTAL MODERATE



Environmental risk presented via the drainage systems

DRAINAGE COSTS

£72,200

The cost figures should be seen as a guide price or allowance for the recommendations and should not be treated as a quotation. A firm price, however, can be provided for any works on request. These figures exclude any premium for out of hours working, disruption or loss of earnings to tenants, administration costs, local variations in the cost of labour or services, and also exclude any further investigative work which may be required except where stated.

There is a full breakdown of costs later in the report.

COST SUMMARY			COST BREAKDOWN	
			URGENCY	DIVISION
	Retro-fitting oil interceptors	£40,000	 HIGH 1% £800	  STRUCTURAL 13% £9,300
	New inspection covers	£8,000		
	Excavate collapsed drain	£7,500		
	Pump maintenance	£3,000	MODERATE 90% £59,200	 OPERATIONAL 23% £16,300
	De-silting and de-scaling works	£2,900		
	Root ingress	£2,400		
	Pipe repairs	£1,800	LOW 9% £5,600	 ENVIRONMENTAL 55% £40,000
Total remedial costs		£65,600		
	Allowance of approx. 10% professional fees	£6,600		 PROFESSIONAL FEES 9% £6,600
£	TOTAL COSTS	£72,200		

AT A GLANCE

An overview of whether or not key drainage items are present and their consequences from a strategic viewpoint. This is an indication of what is present rather than an assessment of condition.

Item	Present	Status	Notes
Oil Interceptor(s)	NO		Consider retro-fitting an oil interceptor.
Pumped drainage	YES		
Gravity flow drainage	YES		
Discharge from other property(ies)	NO		
Discharge to other property(ies)	NO		
Mains drainage	YES		
Surface-water soakaways	NO		
Septic tank/cesspool	NO		
Environmentally sensitive area	NO		
Combined drainage	NO		
Sustainability measures	NO		
Property next to a watercourse	NO		

GENERAL

The background, scope of engagement and level of inspection.



General

WJ Shirley Ltd were instructed by

on behalf of

Woodfellows LLP
South Green Park, Mattishall, Dereham
Norfolk
NR20 3JY

Strang Investments (2007) Ltd
c/o Peloton Properties Ltd
Ramsbottom, Lancashire
BL0 9BJ

to carry out a drainage inspection at

Unit 1, Wilson Road
Huyton Business Park
Liverpool
L36 6JF

We understand this is in relation to a Schedule of Delapidations.



Authorisation

Job No:	1147
Report Issue Date:	01/03/2019
Report prepared by:	Hayley Reed B.Sc (Hons)
Position	Associate, WJ Shirley Ltd
Report authorised by:	Robert Shirley B.A., Ph.D
Signature:	 
Position	Director, WJ Shirley Ltd



Method of Assessment

Inspection and assessment was carried out by desktop research, a site walkover and a push-rod CCTV inspection along the below-ground drainage pipes where practicable.



Access

We had adequate maintenance access to the site, however there are ten seized inspection covers which we could not access.

DRAINAGE NETWORKS

An overview of whether or not key drainage items are present and their consequences from a strategic viewpoint.



Type

Foul and surface-water drainage systems are separate, running through different pipes and manholes. Part of the surface-water system is pumped. Foul and surface-water are believed to both be on mains drainage.



Materials

The below-ground drainage is carried through vitrified clay pipes ranging from 100mm to 300mm diameter. Access chambers are constructed in brickwork or concrete sections. Inspection covers are cast iron, concrete, pressed or galvanised steel.



Drain Routes

Below-ground drains run according to the plan at the end of this report.



Status

Identification of the status of drains on site is beyond the scope of our inspection, however all drains are likely to be private.

CONDITION

A summary and assessment of the current structural condition and operation of the drains, and an outlook for the future.

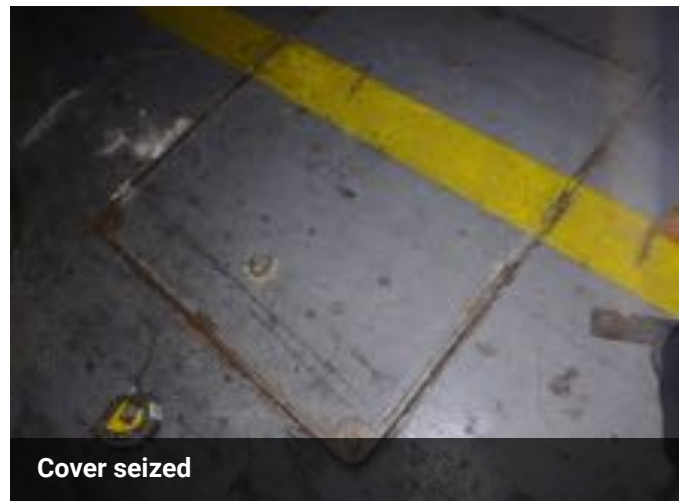


Operation

Overall the below-ground drains are operating moderately well. However, we noted the following operational defects:

OCCURANCES	DEFECT
10	Cover seized in frame or missing
8	Silt and debris
4	Roots
1	Rubbish in chamber
1	Scale
1	Pumps probably due an overhaul

There are ten seized inspection covers, mostly inside the unit. The covers have rusted into their frames and effectively fused to make a single piece of metal. These covers would need to be broken out and renewed to allow maintenance or inspection access. There is one inspection cover under carpet, and to gain access the carpet would need to be cut. One internal inspection chamber is without a cover and has accumulated a build up of debris and rubbish. This would need to be cleared and a new inspection cover fitted.



Cover seized

Although we have carried out considerable jetting works during our inspection, there are large accumulations of debris and silt in the below-ground drainage system causing blockages and reduced flow. This has probably occurred through a natural build-up and a lack of maintenance. To improve efficiency across the whole site we recommend a program of de-silting and de-scaling works to remove the



Roots

debris, clear the blockages and restore the full capacity of the system. Due to the amount of silt we recommend using a combination of high pressure jetting and a lorry-base suction tanker to clear the system out.

There is evidence of root ingress in the surface water system. Roots usually grow through existing, often minor defects in search of water and can cause repeat blockages. We recommend that the roots are cut and the pipe sections repaired by patch lining to prevent re-growth.

There is a surface-water pumping chamber at the north end of the site (MH14). If there is no evidence of regular maintenance we recommend a service/ overhaul is carried out by a specialist drainage pump engineer. We have allowed a provisional sum for this in the budget costs.



Structure

Overall the below ground drains are in moderate structural condition. We noted the following structural defect:

OCCURANCES	DEFECT
2	Cracked pipe
1	Displaced joint
1	Collapsed pipe

There appears to be a collapsed pipe D15 (MH17) which will need excavation and renewal to repair. It can sometimes be difficult to determine if a pipe has been intentionally blocked off and not properly sealed or has in fact collapsed. There are also cracked pipes D4 and D5 which we recommend are repaired to prevent further deterioration and possible collapse. These can currently be repaired relatively easily and cheaply in-situ by patch lining.





Environmental Risk

The environmental risk presented by the drainage system is moderate.
We noted the following environmental issues:

OCCURANCES	DEFECT
1	No oil interceptor serving surface-water system.

We found no oil interceptor on site¹ serving the surface-water system². There is no legal requirement to fit an oil interceptor in most cases³, however there is a legal duty of care to not “knowingly permit” polluting discharge to surface-waters (rivers, streams, ponds etc.) or to groundwater (natural water beneath the site).⁴ Fines and clear-up costs can be severe and in

¹ Drainage systems can be one of the primary pathways for causing environmental pollution from a commercial site. With increasing monitoring of the environment, public awareness and the prospect of large fines and remediation costs for environmental damage caused (deliberately, accidentally or via negligence), together with indirect costs of subsequent damage to reputation, raised insurance premiums etc. the potential risks posed by drainage systems should be considered. Surface-water drains usually run either directly to a watercourse, via a public sewer untreated to a watercourse or to groundwater via soakaways and should thus contain only clean uncontaminated water. The risks associated with any particular site can vary greatly depending on pollution sources, any precautionary measures in place, the outfall of the drainage systems and the environmental sensitivity of the site and its surroundings, the probabilities of an initiating event occurring, exposure to the hazard and the receptors being affected by the hazard. There are little or no actual legal requirements in this regard for the layout or installation of precautionary measures on drainage systems such as oil interceptors or shut-off valves (unless they form part of the conditions of an Environmental Permit). However, if pollution does occur (and drainage systems are one of the principle pathways) then prosecutors are likely to take into account the precautionary and preventative measures in place when determining culpability. Reading between the lines, it is our understanding that large companies or institutional owners would be expected to have best available techniques in place regarding pollution prevention on their drainage systems. On a commercial site, especially one that is multi-tenanted, it is a grey area as to whether the landlord or tenant are responsible for implementing pollution prevention measures. There is a principle that the “polluter pays” but if the polluter can’t pay or goes out of business, then costs may fall to the landlord. In addition, it may be argued that the landlord did not provide suitable infrastructure, such as an oil interceptor, which could have prevented a pollution incident. However, for reliable legal advice, a qualified legal advisor should be consulted.

² Oil is one of the principle sources of pollution from industrial and commercial sites in the UK. There are approximately 3,000 oil spills in the UK each year, making up 16% of all pollution incidents. Above-ground oil storage outdoors above 200 litres is governed by the Oil Storage Regulations (not assessed in this report) and covers tank design, siting and secondary containment. A small oil spillage can have large effects: just 2½ litres of oil can cover the area the size of a football pitch when it reaches water.

³ However, may form a legally binding condition of an Environmental Permit or Exemption, or a Trade Effluent Consent if it discharges to the foul drains.

⁴ Environmental Permitting (England and Wales) Regulations 2010

recent years have increasingly included a deterrent factor.⁵ As such, oil interceptors are recommended by the Environment Agency for sites of this type, are a sensible precaution and offer protection against pollution resulting from oil spillages.⁶ We recommend that consideration is given to retro-fitting two oil interceptors: one downstream on MH1 before it leaves the site and one upstream of MH7.



Assessment & Outlook

We recommend a programme of de-silting and de-scaling works to clear the surface-water drains which will help prevent blockages and restore the full capacity and efficiency of the system. New inspection covers where they are currently seized will allow full maintenance and inspection access to the drainage systems. Consideration should be given to retro-fitting suitable oil interceptors. Structural repairs should be carried out in the short-medium term to prevent further deterioration. Once our recommendations are carried out we would expect a good outlook for the future.

⁵ The Sentencing Council's Environmental Offences Definitive Guideline were introduced in 2014 and a judgement made in 2015 which said that in order to meet the objectives of "punishment, deterrence and the removal of gain (for example by the decision of the management not to expend sufficient resources in modernisation and improvement)" fines may equal up to 100% of a company's pre-tax net profit for the year in question, even if that resulted in a fine exceeding £100m.

⁶ Oil interceptors require regular maintenance to operate properly: if oil levels build up too much or they become too silted, they can be rendered ineffective. Waste from an oil interceptor is likely to be classed as hazardous waste and must be transferred via a consignment note system.

SUITABILITY

An assessment of the suitability of materialised and opportunity for maintenance access.



Materials

Inspection covers, chambers and drain pipes are in suitable materials.



Access

There is adequate general maintenance access to the drainage systems, however the seized inspection covers should be broken out and renewed to allow full maintenance access.

RECOMMENDATIONS

Details of defects and recommendations arranged by urgency. The cost figures should be seen as a guide price or allowance for the recommendations and should not be treated as a quotation. A firm price, however, can be provided for any works on request.

ASSET	DEFECT	RECOMMENDATION	URGENCY	BY	COST
MH 32	D 19 Cover missing,	Replace cover	High	Jun 2019	£800
MH 1	D 1 Debris, moderate	Clear out chamber with suction tanker	Moderate	Mar 2020	£2,500
MH 1	D 2 Silt, moderate	Clear out chamber with suction tanker	Moderate	Mar 2020	£0
MH 3	D 11 Silt, moderate	Clear with high pressure water jetting	Moderate	Mar 2020	£0
MH 4	D 4 Crack, moderate	Repair by patch lining	Moderate	Mar 2020	£600
MH 7	D 29 No oil interceptor on the surface-water system,	Consider retro-fitting two oil interceptors	Moderate	Mar 2020	£40,000
MH 11	D 6 Displaced joint, moderate	Repair by patch lining	Moderate	Mar 2020	£600
MH 11	D 7 Debris, moderate	Clear with suction tanker	Moderate	Mar 2020	£0
MH 12	D 8 Debris, moderate	Clear with suction tanker	Moderate	Mar 2020	£0
MH 12	D 9 Scale, moderate	De-scale	Moderate	Mar 2020	£200
MH 13	D 10 Blockage, moderate	Clear with suction tanker	Moderate	Mar 2020	£0
MH 14	D 30 Pumps probably due an overhaul	Make allowance for pump service and overhaul	Moderate	Mar 2020	£3,000
MH 16	D 13 Silt, moderate	Clear with suction tanker	Moderate	Mar 2020	£0
MH 17	D 14 Roots, moderate	Repair by patch lining	Moderate	Mar 2020	£800
MH 17	D 15 Collapse, moderate	Excavate and renew pipe	Moderate	Mar 2020	£7,500
MH 19	D 16 Roots, moderate	Cut roots and repair by patch lining	Moderate	Mar 2020	£800
MH 19	D 27 Roots, moderate	Cut roots and repair by patch lining	Moderate	Mar 2020	£800
MH 32	D 31 Rubbish in chamber, severe	Clear out rubbish.	Moderate	Mar 2020	£200
MH 34	D 17 Bolts to cover seized,	Will probably need break-out and renewal at next maintenance access	Moderate	Mar 2020	£800
MH 36	D 5 Crack, moderate	Repair by patch lining	Moderate	Mar 2020	£600
MH 37	D 28 Inspection cover under carpet,	Remove carpet to inspect	Moderate	Mar 2020	£0
MH 38	D 18 Cover seized in frame,	Will probably need break-out and renewal at next maintenance access	Moderate	Mar 2020	£800
MH 4	D 3 Debris, appears to have been blocked off	Nothing	Low	Mar 2022	£0
MH 19	D 26 Roots in chamber, slight	Monitor roots	Low	Mar 2022	£0
MH 23	D 23 Cover seized in frame,	Will probably need break-out and renewal at next maintenance access	Low	Mar 2022	£800
MH 24	D 24 Cover does not fit frame,	Will probably need break-out and renewal at next maintenance access	Low	Mar 2022	£800
MH 25	D 25 Cover seized in frame,	Will probably need break-out and renewal at next maintenance access	Low	Mar 2022	£800

MH 26	D 20	Cover seized in frame,	Will probably need break-out and renewal at next maintenance access	Low	Mar 2022	£800
MH 28	D 12	Bolts to cover seized,	Will probably need break-out and renewal at next maintenance access	Low	Mar 2022	£800
MH 30	D 22	Cover seized in frame,	Will probably need break-out and renewal at next maintenance access	Low	Mar 2022	£800
MH 31	D 21	Cover seized in frame,	Will probably need break-out and renewal at next maintenance access	Low	Mar 2022	£800
Total remedial works						£65,600
Allowance of approx. 10% professional fees						£6,600
TOTAL						£72,200

DRAINAGE ASSETS

Details of the drainage infrastructure inspected including, where appropriate, an note and assessment of any defects.

MH 1

Surface-water inspection chamber

Budget Costs £2,500

CHAMBER

Location (Lat, Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4016, -2.8154	1880	Concrete sections	Close	Good	Moderate

COVER

Size	Material	Description	Inspection	Structure	Operation
600 x 600	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 10	150	Vitrified clay	7.0	CCTV	Good	Very Poor
SW 2	300	Vitrified clay	43.6	CCTV	Good	Very Poor

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 1	Debris	Clear out chamber with suction tanker	Moderate	£2500
MH 1	Silt	Clear out chamber with suction tanker	Moderate	£0

PHOTOS

MH 1 chamber



Defects



Debris

Section SW 10



Silt

Section SW 2



CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4019, -2.8157	1410	Concrete sections	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
600 x 600	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 50	150	Vitrified clay	16.2	CCTV	Good	Good
SW 51	150	Vitrified clay	11.0	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 2 chamber



Section SW 50



Section SW 51



MH 3

Surface-water inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4020, -2.8157	640	Concrete	Close	Good	Moderate

COVER

Size	Material	Description	Inspection	Structure	Operation
600 x 600	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 48	150	Vitrified	18.0	CCTV	Good	Very Poor
SW 49	150	Vitrified clay	8.0	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 3	Silt	Clear with high pressure water jetting	Moderate	£0

PHOTOS

MH 3 chamber



Defects



Silt

Section SW 48



Section SW 49



MH 4	Foul inspection chamber	Budget Costs £600
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4012, -2.8150	750	Brickwork	Close	Good	Moderate

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 1	100	Vitrified clay	6.0	CCTV	Good	Good
FW 2	100	Vitrified	5.1	CCTV	Poor	Poor
FW 3	150	Vitrified clay	11.5	CCTV	Good	Good
FW 4	150	Vitrified clay	5.4	CCTV	Poor	Very Poor
FW 5	225	Vitrified clay	16.7	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 4	Debris, appears to have been blocked off	Nothing	Low	£0
MH 4	Crack	Repair by patch lining	Moderate	£600

PHOTOS

MH 4 chamber



Defects



Debris, appears to have been blocked off

Crack

Section FW 2



Section FW 1



Section FW 3



Section FW 4



Section FW 5



MH 5

Surface-water inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4010, -2.8149	930	Brickwork	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 500	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 5	225	Vitrified clay	16.7	CCTV	Good	Good
FW 6	225	Vitrified clay	14.3	CCTV	Good	Good
FW 7	225	Vitrified clay	27.3	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 5 chamber



Section FW 5



Section FW 6



Section FW 7







MH 6 Surface-water inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4011, -2.8145	900	Brickwork	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 500	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 10	225	Vitrified clay	35.8	CCTV	Good	Good
FW 7	225	Vitrified clay	27.3	CCTV	Good	Good
FW 8	150	Vitrified clay	13.9	CCTV	Good	Good
FW 9	150	Vitrified clay	4.3	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 6 chamber



Section FW 10



Section FW 7



Section FW 8



Section FW 9



MH 7 Surface-water inspection chamber

Budget Costs £40,000

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4011, -2.8144	2950	Concrete sections	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 22	300	Vitrified clay	14.1	CCTV	N/A	N/A
SW 23	300	Vitrified	33.7	CCTV	Good	Good
SW 24	300	Vitrified clay	10.8	CCTV	N/A	N/A
SW 59	225	Vitrified clay	19.1	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 7	No oil interceptor on the surface-water system	Consider retro-fitting two oil interceptors	Moderate	£40000

PHOTOS

MH 7 chamber



Section SW 23



Section SW 59



MH 8

Not drains

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4012, -2.8140	0	-None Selected-	Close	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
0 x 0	-None Selected-		Close	N/A	N/A

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 8 chamber
None

MH 9

Foul inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4013, -2.8140	745	Brickwork	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
900 x 600	Pressed steel		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 10	225	Vitrified clay	35.8	CCTV	Good	Good
FW 11	225	Vitrified clay	17.9	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 9 chamber



Section FW 10



Section FW 11



MH 10

Surface-water inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4013, -2.8140	2160	Concrete sections	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 23	300	Vitrified	33.7	CCTV	Good	Good
SW 29	225	Vitrified clay	59.1	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

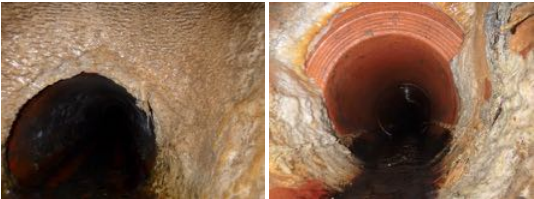
MH 10 chamber



Section SW 23



Section SW 29



MH 11 Surface-water inspection chamber

Budget Costs £600

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4018, -2.8143	1765	Concrete sections	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 29	225	Vitrified clay	59.1	CCTV	Good	Good
SW 30	150	Vitrified	10.3	CCTV	Good	Moderate
SW 32	225	Vitrified clay	40.6	CCTV	Good	Good
SW 34	150	Vitrified	3.8	CCTV	Poor	Poor

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 11	Displaced joint	Repair by patch lining	Moderate	£600
MH 11	Debris	Clear with suction tanker	Moderate	£0

PHOTOS

MH 11 chamber



Defects



Displaced joint
Section SW 29



Debris



Section SW 30



Section SW 32



Section SW 34



MH 12

Surface-water inspection chamber

Budget Costs £200

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4021, -2.8146	1550	Concrete sections	Close	Good	Moderate

COVER

Size	Material	Description	Inspection	Structure	Operation
600 x 600	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 32	225	Vitrified clay	40.6	CCTV	Good	Good
SW 37	150	Vitrified clay	23.5	CCTV	Good	Very Poor
SW 41	0		7.1	Not inspected	N/A	N/A

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 12	Debris	Clear with suction tanker	Moderate	£0
MH 12	Scale	De-scale	Moderate	£200

PHOTOS

MH 12 chamber



Defects



Debris

Section SW 32



Section SW 37



MH 13

Silt catchment pit

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4024, -2.8147	0	Brickwork	Close	Good	Moderate

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Concrete		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 42	150	Vitrified clay	3.3	CCTV	Good	Very Poor
SW 43	150	Vitrified clay	3.7	CCTV	Good	Good
SW 44	150	Vitrified clay	3.6	CCTV	Good	Good
SW 45	150	Vitrified clay	6.2	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 13	Blockage	Clear with suction tanker	Moderate	£0

PHOTOS

MH 13 chamber



Defects



Blockage

Section SW 42



Section SW 43



Section SW 44



Section SW 45



MH 14

Pumping chamber surface-water

Budget Costs £3,000

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4023, -2.8150	1550	Concrete section	Distant/partial	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
900 x 900	Pressed steel		Distant/partial	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 46	0		1.9	Not inspected	N/A	N/A

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 14	Pumps probably due an overhaul	Make allowance for pump service and overhaul	Moderate	£3000

PHOTOS

MH 14 chamber



MH 15	Pumping chamber surface-water	No Budget Costs
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4023, -2.8150	1085	Concrete section	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
900 x 900	Pressed steel		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 46	0		1.9	Not inspected	N/A	N/A
SW 47	0		3.3	Not inspected	N/A	N/A

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 15 chamber



MH 16 Surface-water inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4014, -2.8144	1254	Brickwork	Close	Good	Moderate

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 56	0		10.9	Not inspected	N/A	N/A
SW 57	100	Vitrified clay	3.1	CCTV	Good	Good
SW 58	150	Vitrified clay	3.7	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

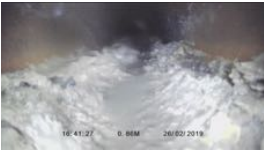
Asset	Defect	Recommendation	Urgency	Cost
MH 16	Silt	Clear with suction tanker	Moderate	£0

PHOTOS

MH 16 chamber



Defects



Silt

Section SW 57



Section SW 58



MH 17 Surface-water inspection chamber

Budget Costs £8,300

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4013, -2.8145	1930	Concrete sections	Close	Moderate	Moderate

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 56	0		10.9	Not inspected	N/A	N/A
SW 59	225	Vitrified clay	19.1	CCTV	Good	Good
SW 60	150	Vitrified clay	3.7	CCTV	N/A	N/A
SW 61	225	Vitrified clay	6.0	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 17	Roots	Repair by patch lining	Moderate	£800
MH 17	Collapse	Excavate and renew pipe	Moderate	£7500

PHOTOS

MH 17 chamber



Defects



Roots

Section SW 59



Collapse

Section SW 60



Section SW 61



MH 18

Surface-water inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4013, -2.8146	0	Concrete sections	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 61	225	Vitrified clay	6.0	CCTV	Good	Good
SW 62	150	Vitrified clay	3.9	CCTV	Good	Good
SW 65	225	Vitrified clay	103.3	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 18 chamber



Section SW 61



Section SW 62



Section SW 65



MH 19 Foul inspection chamber

Budget Costs £1,600

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4013, -2.8146	665	Brickwork	Close	Good	Moderate

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 35	150	Vitrified	2.8	CCTV	Poor	Poor
FW 36	100	Vitrified clay	1.9	CCTV	Good	Good
FW 37	150	Vitrified	1.4	CCTV	Poor	Poor

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 19	Roots	Cut roots and repair by patch lining	Moderate	£800
MH 19	Roots in chamber	Monitor roots	Low	£0
MH 19	Roots	Cut roots and repair by patch lining	Moderate	£800

PHOTOS

MH 19 chamber



Defects



Roots

Section FW 35



Section FW 36



Section FW 37



MH 20

Foul inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4018, -2.8145	800	Brickwork	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Galvanised steel with block paving infill		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 19	225	Vitrified clay	27.0	CCTV	Good	Good
FW 20	100	Vitrified clay	2.4	CCTV	Good	Good
FW 21	100	Vitrified clay	1.6	CCTV	Good	Good
FW 22	100	Vitrified clay	2.2	CCTV	Good	Good
FW 23	100	Vitrified clay	3.0	CCTV	Good	Good
FW 24	225	Vitrified clay	14.4	CCTV	Good	Good
FW 25	100	Vitrified clay	3.4	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 20 chamber



Section FW 19



Section FW 20



Section FW 21



Section FW 22



Section FW 23



Section FW 24



Section FW 25



MH 21

Foul inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4019, -2.8145	805	Brickwork	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
750 x 750	Concrete		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 24	225	Vitrified clay	14.4	CCTV	Good	Good
FW 26	100	Vitrified clay	2.9	CCTV	Good	Good
FW 27	100	Vitrified clay	3.3	CCTV	Good	Good
FW 28	225	Vitrified clay	27.7	CCTV	Good	Good
FW 29	100	Vitrified clay	2.7	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 21 chamber



Section FW 24



Section FW 26



Section FW 27



Section FW 28



Section FW 29



MH 22

Foul inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4021, -2.8147	655	Brickwork	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Galvanised steel with block paving infill		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 28	225	Vitrified clay	27.7	CCTV	Good	Good
FW 30	100	Vitrified clay	0.7	CCTV	Good	Good
FW 31	100	Vitrified clay	5.6	CCTV	Good	Good
FW 32	100	Vitrified clay	3.4	CCTV	Good	Good
FW 33	100	Vitrified clay	2.1	CCTV	Good	Good
FW 34	100	Vitrified clay	1.2	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 22 chamber



Section FW 28



Section FW 30



Section FW 31



Section FW 32



Section FW 33



Section FW 34



MH 23	Surface-water inspection chamber	Budget Costs £800
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4022, -2.8151	0	-None Selected-	Not inspected	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
800 x 800	Concrete		Not inspected	Moderate	Poor

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 23	Cover seized in frame	Will probably need break-out and renewal at next maintenance access	Low	£800

PHOTOS

MH 23 chamber



Defects



Cover seized in frame

None

MH 24	Surface-water inspection chamber	Budget Costs £800
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4022, -2.8151	0	-None Selected-	Not inspected	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
800 x 800	Concrete		Not inspected	Moderate	Poor

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 24	Cover does not fit frame	Will probably need break-out and renewal at next maintenance access	Low	£800

PHOTOS

MH 24 chamber



Defects



Cover does not fit frame
None

MH 25

Surface-water inspection chamber

Budget Costs £800

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4020, -2.8148	0	-None Selected-	Not inspected	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
800 x 800	Concrete		Not inspected	Moderate	Poor

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 52	225	Vitrified clay	29.2	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 25	Cover seized in frame	Will probably need break-out and renewal at next maintenance access	Low	£800

PHOTOS

MH 25 chamber



Defects



Cover seized in frame
Section SW 52



MH 26	Surface-water inspection chamber	Budget Costs £800
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4021, -2.8153	0	-None Selected-	Not inspected	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
800 x 800	Concrete		Not inspected	Moderate	Poor

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 26	Cover seized in frame	Will probably need break-out and renewal at next maintenance access	Low	£800

PHOTOS

MH 26 chamber



None

MH 27	-None Selected-	No Budget Costs
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
51.5836, -0.2597	0	-None Selected-	Close	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
0 x 0	-None Selected-		Close	N/A	N/A

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 27 chamber
None

MH 28	Surface-water inspection chamber	Budget Costs £800
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4023, -2.8149	0	Brickwork	Not inspected	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
750 x 750	Concrete		Not inspected	Moderate	Poor

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 28	Bolts to cover seized	Will probably need break-out and renewal at next maintenance access	Low	£800

PHOTOS

MH 28 chamber
Defects



Bolts to cover seized
None

MH 29	Surface-water inspection chamber	No Budget Costs
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4023, -2.8149	1410	Brickwork	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
750 x 600	Concrete		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
SW 52	225	Vitrified clay	29.2	CCTV	Good	Good
SW 55	225	Vitrified clay	6.6	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 29 chamber



Section SW 52



Section SW 55



MH 30	Surface-water inspection chamber	Budget Costs £800
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4021, -2.8155	0	-None Selected-	Not inspected	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
800 x 800	Concrete		Not inspected	Moderate	Poor

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 30	Cover seized in frame	Will probably need break-out and renewal at next maintenance access	Low	£800

PHOTOS

MH 30 chamber



Defects



Cover seized in frame

None

MH 31

Surface-water inspection chamber

Budget Costs £800

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4021, -2.8154	0	-None Selected-	Close	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
800 x 800	Concrete		Close	Moderate	Poor

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 31	Cover seized in frame	Will probably need break-out and renewal at next maintenance access	Low	£800

PHOTOS

MH 31 chamber



Defects



Cover seized in frame

None

MH 32 Surface-water inspection chamber

Budget Costs £1,000

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4019, -2.8152	560	-None Selected-	Distant/partial	Good	Very Poor

COVER

Size	Material	Description	Inspection	Structure	Operation
800 x 800	-None Selected-		Distant/partial	Very Poor	Very Poor

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 32	Cover missing	Replace cover	High	£800
MH 32	Rubbish in chamber	Clear out rubbish.	Moderate	£200

PHOTOS

MH 32 chamber



Defects



Cover missing

None

MH 33	Foul inspection chamber	No Budget Costs
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4012, -2.8148	870	Brickwork	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
750 x 575	Concrete		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 3	150	Vitrified clay	11.5	CCTV	Good	Good
FW 39	100	Vitrified clay	4.2	CCTV	Good	Good
FW 40	150	Vitrified clay	8.1	CCTV	Good	Good
FW 41	100	Vitrified clay	5.4	CCTV	Good	Good
FW 42	100	Vitrified clay	5.4	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 33 chamber



Section FW 3



Section FW 39



Section FW 40



Section FW 41



Section FW 42



MH 34

Foul inspection chamber

Budget Costs £800

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4012, -2.8146	0	-None Selected-	Close	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
750 x 750	Concrete		Close	Moderate	Poor

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 35	150	Vitrified	2.8	CCTV	Poor	Poor
FW 8	150	Vitrified clay	13.9	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 34	Bolts to cover seized	Will probably need break-out and renewal at next maintenance access	Moderate	£800

PHOTOS

MH 34 chamber
Defects



Bolts to cover seized
Section FW 35



Section FW 8



MH 35	Foul inspection chamber	No Budget Costs
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4013, -2.8146	600	Brickwork	Close	Good	Good

COVER

Size	Material	Description	Inspection	Structure	Operation
500 x 675	Concrete		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 36	100	Vitrified clay	1.9	CCTV	Good	Good
FW 37	150	Vitrified	1.4	CCTV	Poor	Poor
FW 38	0		0.8	Not inspected	N/A	N/A

DEFECTS & RECOMMENDATIONS

No defects

PHOTOS

MH 35 chamber



Section FW 36



Section FW 37



MH 36	Foul inspection chamber	Budget Costs £600
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4014, -2.8141	780	Brickwork	Close	Poor	Moderate

COVER

Size	Material	Description	Inspection	Structure	Operation
675 x 675	Cast iron heavy duty		Close	Good	Good

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 11	225	Vitrified clay	17.9	CCTV	Good	Good
FW 12	100	Vitrified clay	2.9	CCTV	Good	Good
FW 13	100	Vitrified	4.4	CCTV	Moderate	Good
FW 14	100	Vitrified clay	4.4	CCTV	Good	Good
FW 15	100	Vitrified clay	4.6	CCTV	Good	Good
FW 16	100	Vitrified clay	5.1	CCTV	Good	Good
FW 17	100	Vitrified clay	4.9	CCTV	Good	Good
FW 18	225	Vitrified clay	19.6	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

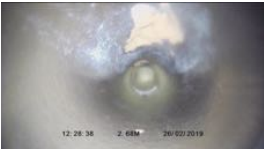
Asset	Defect	Recommendation	Urgency	Cost
MH 36	Crack	Repair by patch lining	Moderate	£600

PHOTOS

MH 36 chamber



Defects



Crack

Section FW 11



Section FW 12



Section FW 13



Section FW 14



Section FW 17



Section FW 15



Section FW 16



Section FW 18



MH 37

Foul inspection chamber

No Budget Costs

CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4016, -2.8143	0	-None Selected-	Not inspected	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
0 x 0	-None Selected-		Not inspected	N/A	N/A

PIPE SECTIONS

Section	Diameter mm	Material	Length m	Inspection	Structure	Operation
FW 18	225	Vitrified clay	19.6	CCTV	Good	Good
FW 19	225	Vitrified clay	27.0	CCTV	Good	Good

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 37	Inspection cover under carpet	Remove carpet to inspect	Moderate	£0

PHOTOS

MH 37 chamber



Section FW 18



Section FW 19



MH 38	Foul inspection chamber	Budget Costs £800
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CHAMBER

Location (Lat,Lon)	Depth mm	Construction	Inspection	Structure	Operation
53.4013, -2.8147	0	Brickwork	Not inspected	N/A	N/A

COVER

Size	Material	Description	Inspection	Structure	Operation
700 x 700	Concrete		Not inspected	Moderate	Poor

PIPE SECTIONS

No data

DEFECTS & RECOMMENDATIONS

Asset	Defect	Recommendation	Urgency	Cost
MH 38	Cover seized in frame	Will probably need break-out and renewal at next maintenance access	Moderate	£800

PHOTOS

MH 38 chamber



Defects



Cover seized in frame

None

Drainage Plan

Foul drain

Surface-water drain

Defect

Pumping chamber

