

RIDGE

VELODROME PLANT ROOM PLANNING CONDITION SIGN OFF REPORT

AUGUST 2021

VELODROME PLANT ROOM
PLANNING CONDITION SIGN OFF REPORT
KIER GROUP LTD.

Prepared for

Kier Group Ltd

Prepared by

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1. EXECUTIVE SUMMARY

This report details the Drainage Strategy for the proposed Plant Room at the Veldrome site granted under planning approval 128597/VO/2020

. Table 1 below provides a summary of the Drainage / SuDS Strategy for the scheme.

Table 1 – Drainage / SuDS Summary

Item	Brief Description
Geology	The Phase 2 site investigation at the location of the proposed plant room found that the site is underlain by significant (>4m) of made ground. The made ground is granular in nature and has been found to contain perched groundwater. This would indicate that water cannot escape into surrounding ground and the aquifer, therefore – infiltration is found to be unviable.
Infiltration Rate	N/A – perched groundwater beneath the site indicates that infiltration is not viable.
Nearest Watercourses	Ashton Canal is located 250m south of the site. The River Medlock is located 600m north of the site..
Nearest Adopted Sewers	Number of combined water sewers are located within the vicinity of the site**.** There are no Surface Water or Foul Water sewers within the vicinity of the site, **see Figure 5**.
Surface Water Outfall and SuDS Hierarchal Approach	Based on the above, surface water from the Proposed development will discharge into the Existing Private Drainage System at a reduced rate.
Existing Discharge Rate	Site is classed as Brownfield and is currently 100% impermeable. The hardstanding currently drains to the highway and is collected in a number of highway gullies that serve the car park and drop off area. Existing discharge rates are based on the Modified Rational method as detailed in the SuDS Manual. Site Area 650m^2 1 year return – 3.6 l/s 30 year return – 7.3 l/s 100 year return – 8.6 l/s
Proposed Discharge Rate	The maximum discharge rate is to be limited to the 5 l/s to minimise the risk of blockage at the site. 5 l/s is be a betterment of 43% in the 100 year event. Whilst this is less than the 50% required within the conurbation core, it is based on the minimum accepted discharge of 5 l/s
100 year 6 hour event	The 100 year 6 hour event will be limited to a discharge of 5 l/s as stated above. Whilst this is above greenfield run off rates, it is as low as is practical.
Allowance for Climate Change	**40%** - based on a residential >50-year design life to 'the 2080's'.

Item	Brief Description
Proposed Attenuation Method and Volume	Oversized pipes
SuDS features	Water Quantity – The scheme will be draining roof area only which has a low risk of water pollution. Plant condensate will be drained to the foul system. Water Quality - The scheme will be draining roof area only which has a low risk of water pollution. Plant condensate will be drained to the foul system. Amenity & Bio Diversity – The scheme is a working velodrome and cycle centre. As part of the planning process, tree replacement has been agreed to ensure environmental net gain. As the scheme is limited to a building structure there is limited scope for tree planting within the site.
Maintenance Responsibility	Management Company / Site owner
Foul Drainage Outfall	The scheme will drain to the UU combined system. There is a negligible increase in flow (only foul drainage will be plant condensate).

There is a reduction in surface water flood risk from the development site to the surrounding district due to the reduction of existing storm water flow rates. Therefore, the development does not increase the risk of flooding to the other adjacent properties and roads. Out of chamber or gully flooding for the events in excess of the 100-year plus 40% climate change event may occur within the development site and is classed as exceedance flows. Flood water from this event will be contained within the car park of the Velodrome and will not leave site or flood buildings.

2. INTRODUCTION

2.1 Ridge & Partners LLP have been appointed by Kier to prepare this Drainage Strategy and SUDS assessment Report to support the discharge of Condition 7 of planning approval 128597/VO/2020 for the external alterations to the National Cycling Centre. The assessment has been undertaken in line with the new 'National Planning Policy Framework' (NPPF), of the National Planning Practice Guidance

2.2 An Architectural site plan has been included in **Appendix A**.

2.3 The report has been commissioned to identify any drainage-related issues associated with the proposed development and which are subsequently addressed within this report.

- Determine the current surface water drainage regime and assess any potential increase in surface water runoff as a result of the proposed development.
- Discuss Sustainable Drainage Systems (SuDS) as an option for reducing surface water flood risk.
- Devise an appropriate surface water drainage strategy (including calculation where appropriate) to deal with any potential increase in surface water runoff and include for climate change.
- Devise an appropriate outline foul water drainage strategy.
- Consider the recommendations of Manchester Cuty Council Strategic Flood Risk Assessment (SFRA).
- Assess mitigation measures & off-site impacts and define any residual risks.

3. OUTLINE DRAINAGE STRATEGY

3.1. Existing Surface Water Runoff

3.1.1. The existing site is approximately 0.065ha in area and is classified as brownfield. The site is positively drained by an existing private surface water drainage network that drains off site to the north.

3.1.2. Pre-development runoff rates for the brownfield areas were calculated using the Modified Rational method as detailed in the SuDS Manual. The existing runoff rates are summarised in Table 4.

Table 4: Pre-development Brownfield Runoff Rates

	Site Area (m^2)	1 Year (l/s)	30 Year (l/s)	100 year (l/s)
Proposed Development	650	3.6	7.3	8.6

3.2. Geology

3.2.1. The Phase 2 Site investigation found that the site is underlain by granular made ground. A number of boreholes encountered perched groundwater.

4.2 Groundwater

4.2.1 Groundwater Levels

Groundwater was encountered during the drilling of CP102, CP103 and CP104. Given the volume of water encountered and the proximity of all the boreholes it is considered that these strikes represent isolated perched water tables within the made ground and do not represent the wider ground water regime.

As all investigation locations were backfilled no additional monitoring data could be collected.

3.2.2. The finding of perched groundwater within the made ground demonstrates that the made ground does not dissipate groundwater to the wider aquifers and as such would not be suitable for infiltration drainage.

3.3. Hydrology

3.3.1. There are no watercourses in the vicinity of the site. Ashton Canal is located approximately 130m south of the site and River Medlock is located approximately 600m to the north..

3.4. Existing Drainage

3.4.1. There are numerous United Utilities combined water sewers in the vicinity of the site, with the pipe size ranging from 450mm diameter to 900mm.

3.4.2. The site is drained on separate networks with the foul discharging to the public combined sewer within the car park. The surface water drains off site to the north.

3.4.3. A CCTV survey has been undertaken as is appended to this report.

3.5. Sustainable Drainage Systems

3.5.1. SuDS Objectives

Sustainable drainage developed in line with the ideals of sustainable development is collectively referred to as Sustainable Drainage Systems (SuDS). At a particular site, these systems are designed both to manage the environmental risks resulting from the urban runoff and to contribute wherever possible to environmental enhancement. SuDS objectives are therefore to minimise the impacts from the development on the quantity and quality of the runoff and maximise amenity and biodiversity opportunities (CIRIA C753, 2015).

3.5.2. SuDS's Design Themes

A strong design theme is essential if the maximum aesthetic benefits are to be gained from the SuDS approach. At a more local scale the SuDS should link with the individuals plot structure, planting, public open space requirements and amenity areas, gaining multiple benefits from a limited area of land.

3.5.3. The SuDS Management Train

The 'Management Train Approach' should be central to the surface water drainage strategy of the proposed site. The main objective is treatment and control of runoff as near to the source as possible protecting downstream habitats and further enhancing the amenity value of the site. This concept uses a hierarchy of drainage techniques to incrementally reduce pollution, flow rates and volumes of storm water discharge from the site, and is as follows:

1. **Prevention** – The use of good site design and housekeeping measures to prevent runoff and pollution and includes the use of rainwater reuse / harvesting.
2. **Source Controls** – Control of runoff at source or as close to source as possible (e.g. soakaways, green roofs, pervious pavements).
3. **Site Control** – Management of water in a local area and can include below ground storage / attenuation, detention basins, large infiltration devices.

4. **Regional Control** – Management of water from a site or various sites and can include wetlands and balancing ponds.

3.5.4. SuDS Site Constraints

SuDS techniques are suitable for all sites; therefore, an assessment of the existing site is required so that SuDS limitations can be determined.

- Land Use Characteristics: The size and type of the development plot allows a limited range of source control and site control SuDS devices to be considered are to be below ground only. Above ground SuDS features have been discounted due to space constraints at the site.
- Site Characteristics: A site investigation has been undertaken which has found the site to be underlain by granular made ground. The site has perched groundwater within the made ground, suggesting that the groundwater regime is not interconnected,. As such, infiltration has been discounted.
- Catchment Characteristics: The site is currently classed as Brownfield.
- Environmental and Amenity Performance: The inclusion of SuDS within the overall development is a key driver in providing both amenity and habitat creation. Space on site is limited to the point that off site tree planting has been agreed at planning to ensure the scheme meets environmental new gain targets.

3.5.5. SuDS Methods

Tables 5 and 6, below, provide an assessment of various above and below ground SuDS methods that can provide water quality treatment and management of flows to reduce runoff rates and volumes and whether they can be suitably incorporated at this development site. The purpose of this assessment is to set out options to be considered at the planning stage with consideration to time constraints, viability and lifetime maintenance of the development.

Table 5: Surface SuDS Methods

Method	Comment	Suitability for Development
Green Roofs	• Can be used on suitable low-rise buildings to provide retention, attenuation and treatment of rainwater Promotes evaporation and local biodiversity.	*Not suitable*: • Architectural proposals for the development include plant on the roof that is open to the air – the installation of green roof would not work in this instance..
Water Butts	• Plastic tanks placed at the base of rainwater down pipes to collect rainwater runoff from the roof areas.	*Not suitable*: • Internal Rainwater pipes mean that the inclusion of water butts would not be feasible..
Rainwater Harvesting	• Rainwater harvesting reduces the total runoff volume from the developed site and reduces treated water consumption.	*Not Suitable*: • Additional costs of installation would have severe effect on viability of development.

		• Running and maintenance costs would not be acceptable to client and future occupiers.
Infiltration Options	• Reduces total run off volume from the development.	*Not Suitable*: • Ground conditions indicates soils unsuitable for infiltration.
Permeable Surfacing (Infiltration)	• Reduces total run off volume from the development. • Can be used to enhance water quality.	*Not Suitable*: • Ground conditions indicates soils unsuitable for infiltration.
Permeable Surfacing (Standard)	• Can be used to enhance quality of runoff water. • Sub-base provides 'source' storage and reduces the volume of storage downstream. • The storage can be created with selection of the stone fill or use of plastic box stems. • Impermeable membrane at base of construction to prevent impact on pavement stability.	*Not Suitable*: • There are no external areas being replaced at the site that would enable the inclusion of permeable surfaces
Swales, basins and ponds	• Provide areas for above ground surface runoff storage. • Swales also improve water quality through filtration.	*Not Suitable*: • There are no external areas available for the installation of swales or ponds.
Rain gardens	• Reduced surface water pollution to the receiving water bodies. • Reduction in flooding from intense rainfalls. • Increased biodiversity.	*Not Suitable*: • There are no external areas available for the installation of swales or ponds.

Table 6: Sub-Surface SuDS Methods

Method	Comment	Suitability for Development
Geocellular Storage	• Suitable for sites with insufficient space for basins etc. • Suitable for sites where topography prevents the use of open basins etc. • Can be very effective infiltration devices subject to ground conditions.	*Suitable:* • The use of geocellular attenuation may be possible to retain excess storm water.
Large Diameter Pipes, Culverts or Tanks	• Suitable for sites with insufficient space for basins etc. • Provide a volume of below ground storage with a high void ratio and good man entry	*Suitable:* • The use of oversized pipes may be possible to retain excess storm water.

	provision to allow for future maintenance and cleaning. • Generally suitable for adoption by the statutory water company.	

3.5.6. SuDS Hierarchal Approach

Based on the SuDS assessment in Tables 5 and 6, plus an assessment of the local site conditions, the SuDS hierarchal approach for discharge of surface water at the development site is considered in greater detail below:

Table 7: SuDS Hierarchal Approach

Method	Suitability	Suitability for Development
Infiltration to Ground	No	Underlying ground conditions deems this approach unsuitable. See section 7.2.
Connection to Watercourse	No	The proximity of watercourses deems this approach unsuitable. See section 7.3. .
Connection to Surface Water Sewer	*Yes*	The site will discharge to the on site surface water drain that drains off site to the north.
Connection to Combined Sewer	No	The site will discharge to the on site surface water drain that drains off site to the north.

3.5.7. SuDS Design Philosophy

The SuDS assessment and hierarchal approach discussed in **Tables 5, 6 and 7** above has defined the overall SuDS strategy. Thus, the SuDS philosophy for the development site is the promotion of Prevention, Source Control and Site Control techniques with discharge rates to be restricted to brownfield rates with 30% reduction, to reduce the risk of both site and downstream flooding.

The following design philosophy is proposed:

- The surface water system will only drain roof areas that are considered low risk for surface water pollution.
- Site control in the form of oversized pipes.

3.6. Surface Water Drainage Strategy

3.6.1. A drainage strategy has been undertaken for the site to demonstrate that surface water runoff can be effectively managed within the site, without increasing the risk of flooding to the site or elsewhere.

3.6.2. As outlined previously in section 7.1, surface water for the proposed development are to be discharged into the on site surface water drain. The proposed runoff rates for the proposed developable are shown in Table 8.

Table 8: Post-Development Runoff Rates

	1 Year (l/s)	30 Year (l/s)	100 year + 40% CC
Proposed Development	3.6	5	5

3.6.3. To be in line with the Manchester City Council SFRA within conurbation areas Local Plan, the existing run off rates from the proposed development have been reduced by 50%. As the sitte is only 650m2, existing run off rates have been reduced to 5l/s (the lowest accepted minimum discharge for maintenance and to reduce the risk of blockage). This will reduce the flows by 43% in the 100 year event. No event will increase the surface water flow off site.

3.6.4. For storm event up to the 1:1 year, the discharge is to be limited to a total of 5l/s (hydraulic calculations show that this is a peak of 3.6l/s). Thereafter, for storm events of the 30 year up to the 1:100 year plus 40% climate change the discharge rate is to be limited to a total of 5l/s.

3.6.5. The flows from the proposed development are to be collected either via series of channels and downpipes, before being stored in oversized pipes. Thereafter, the surface water is to be discharged into the ion site surface water drain at a maximum allowable rate of 5l/s.

3.6.6. Table 9 below defines the outline post-development attenuation volumes. The volumes identified below are preliminary for this outline assessment and may alter at detailed design stage.

Table 9: Attenuation Volumes

	Maximum Runoff Rate (l/s)	Maximum Volume Attenuation (m^3)
Plant Room	5	27

3.6.7. The proposed drainage layout for the new development will be designed in accordance with EN 752: 2008 and Building Regulations Part H guidance, i.e. up to the 30-year storm return period criterion and tested for the 1 in 100 year return period including a 40% increase to account for climate change to confirm that there is no flood risk to the properties.

3.6.8. No flooding is to occur upto and including the 100 year +CC event. An overflow will be provided to limit any flooding in an exceedance event (Events in excess of 100 year +40%).

3.7. Pollution Control

3.7.1. The scheme is only draining the roof of the plant room. Condensate from plant will be collected within the gullies and directed to the foul / combined network. Roof areas are considered low risk of pollutants.

3.8. Foul Water Strategy

3.8.1. The outline foul water drainage strategy is to connect to the existing combined water sewer located around the proposed development..

4. MANAGEMENT MEASURES, OFF SITE IMPACTS AND RESIDUAL RISK

4.1. Off Site Impacts

4.1.1. Up to and including the 100-year plus increase in rainfall allowance due to climate change (CC) event, the report has justified that there is no risk of flooding.

4.1.2. Surface water runoff does not increase from the pre-development regime and utilises SuDS solutions to satisfy the site constraints, the proposed development will therefore not increase flood risk onto its locality.

4.1.3. The 100 year 6 hour event will be limited to 5 l/s (as close to greenfield run off rate as practicable)

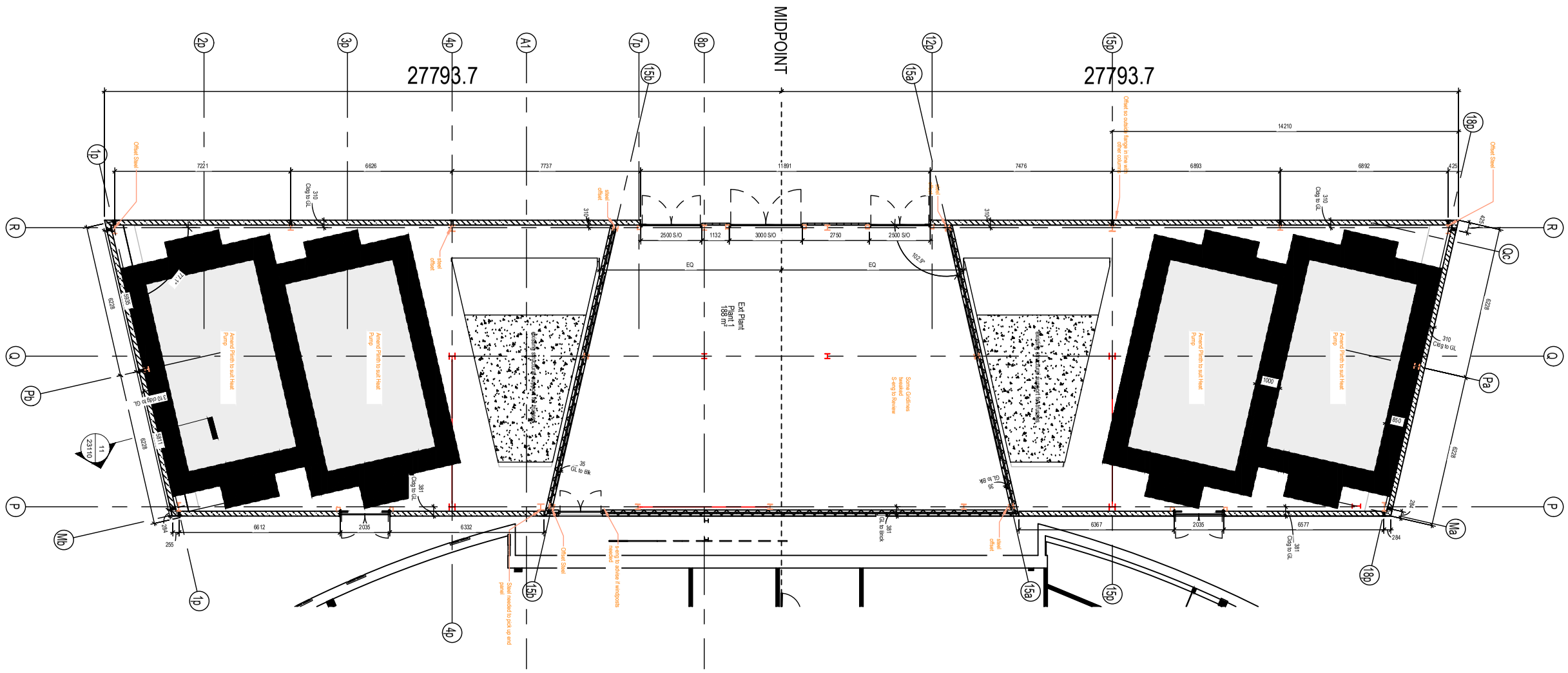
4.2. Residual Risk

4.2.1. With careful design of the drainage elements as described above there will be no residual flood-related risks that will remain after the development has been completed.

5. APPENDICES

- Appendix A – Architectural Site Layout
- Appendix B – CCTV Survey
- Appendix C – Ridge Design Drawings
- Appendix D –Surface Water Attenuation Calculations

APPENDIX A – ARCHITECTURAL SITE LAYOUT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14210
7221
6626
7737
11891
7476
6893
6892
2500 S/O
1132
3000 S/O
2750
2500 S/O
EQ
EQ
602.8°
Ext Plant
Plant 1
188 m²
Other Steel
steel offset
310 Ctrs to GL
310 Ctrs to GL
Aramco Finish to suit Heat Pump
Aramco Finish to suit Heat Pump
Aramco Finish to suit Heat Pump
Aramco Finish to suit Heat Pump
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Some Grid lines tweaked Dwg'd to Review
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6629
6612
2035
6332
6367
2035
6577
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35 GL to Blk
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Steel needed for pool dip pool
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Other Steel
Other to outside face of Beam other colours
Other to outside face of Beam other colours
11
23110
1p
4p
15b
15a
15p
18p

APPENDIX B – CCTV SURVEY

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Project

Project Name: 1280 SURVEY OPS VELODROME

Project Description: CCTV SURVEY REPORT

Project Number: 1

Project Date: 16/12/2019

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Project Information

Project Name	Project Number	Project Date
1280 SURVEY OPS VELODROME	1	16/12/2019

Client

Company: Survey Operations
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Town or City: 8LN

Site

Company: Site Address
Street: Manchester
Town or City: Velodrome
Post Code: M11 3FF

Contractor

Company: Underground Surveys (UK) Ltd
Contact: Kelly Richardson
Department: Director
Street: Unit CG17 Warrington Business Park
Town or City: Long Lane
County: Warrington
Post Code: WA2 8TX
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Section Summary

Project Name	Project Number	Project Date
1280 SURVEY OPS VELODROME	1	16/12/2019

Number of sections	44
Total length of sewer network	1096.24 m
Total length of inspections	1050.90 m
Total length of abandoned inspections	45.34 m
Total abandoned inspections	12
Number of section inspection photos	32
Number of section inspection videos	44
Number of section inspection scans	0
Number of section inclination measurements	0

PLR:	SW 01X	**Upstream Node:**	SW 01
Inspection Direction:	Upstream	**Downstream Node:**	D/S
Inspected Length:	43.85 m	**Dia/Height:**	100 mm
Total Length:	44.00 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : D/S
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.40	DES	Settled deposits, fine, 10% cross-sectional area loss, Start
4	1.29	LR	Line deviates right, SLIGHT
5	5.02	RF	Roots, fine
6	6.90	RF	Roots, fine
7	43.55	DER	Settled deposits, coarse, 20% cross-sectional area loss
8	43.85	DER	Settled deposits, coarse, 95% cross-sectional area loss
9	43.85	DES	Settled deposits, fine, 10% cross-sectional area loss, End
10	43.85	D	Deformed sewer/drain, 50%
11	43.85	SA	Survey abandoned, DUE TO DEFORMED [PIPE

PLR:	SW 03X	**Upstream Node:**	SW 03
Inspection Direction:	Upstream	**Downstream Node:**	SW 02
Inspected Length:	37.61 m	**Dia/Height:**	225 mm
Total Length:	37.61 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 02
2	0.00	WL	Water level, 05% of the vertical dimension
3	11.52	JN	Junction, at 3 o'clock, diameter 150mm
4	11.52	DES	Settled deposits, fine, 10% cross-sectional area loss
5	27.32	DES	Settled deposits, fine, 20% cross-sectional area loss, Start

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1280 SURVEY OPS VELODROME	1	16/12/2019

No.	m+	Code	Observation
6	37.61	DES	Settled deposits, fine, 20% cross-sectional area loss, End
7	37.61	MHF	Finish node type, manhole reference number: SW 03

PLR:	SW 02X	**Upstream Node:**	SW 02
Inspection Direction:	Downstream	**Downstream Node:**	D/S
Inspected Length:	56.23 m	**Dia/Height:**	225 mm
Total Length:	60.00 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 02
2	0.00	WL	Water level, 05% of the vertical dimension
3	23.26	DES	Settled deposits, fine, 30% cross-sectional area loss
4	23.26	JN	Junction, at 9 o'clock, diameter 150mm
5	52.32	JN	Junction, at 9 o'clock, diameter 150mm
6	56.23	REM	General remark, HARD TO PUSH RODS
7	56.23	SA	Survey abandoned, DUE TOP HARD TO PUSH RODS

PLR:	UP/SX	**Upstream Node:**	UP/S
Inspection Direction:	Upstream	**Downstream Node:**	SW 04
Inspected Length:	3.10 m	**Dia/Height:**	150 mm
Total Length:	3.50 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 04
2	0.00	WL	Water level, 05% of the vertical dimension
3	3.10	DER	Settled deposits, coarse, 80% cross-sectional area loss
4	3.10	REM	General remark, STUNT END BEHIND BRICK
5	3.10	SA	Survey abandoned, DUE TO BRICK AND CAPPED OFF / STUNT END

PLR:	SW 04X	**Upstream Node:**	SW 04
Inspection Direction:	Downstream	**Downstream Node:**	UP/S A
Inspected Length:	6.87 m	**Dia/Height:**	150 mm
Total Length:	10.00 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 04
2	0.05	WL	Water level, 5% of the vertical dimension
3	6.87	LR	Line deviates right
4	6.87	SA	Survey abandoned, DUE TO SHARP RIGHT

PLR:	SW 05X	**Upstream Node:**	SW 05
Inspection Direction:	Downstream	**Downstream Node:**	SW 06
Inspected Length:	36.08 m	**Dia/Height:**	225 mm
Total Length:	36.08 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 05
2	0.00	WL	Water level, 05% of the vertical dimension
3	2.51	DER	Settled deposits, coarse, 10% cross-sectional area loss, Start
4	12.10	CN	Connection other than junction, at 2 o'clock, diameter 150mm

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No.	m+	Code	Observation
5	13.18	JN	Junction, at 10 o'clock, diameter 150mm
6	13.84	DER	Settled deposits, coarse, 10% cross-sectional area loss, End
7	20.70	CN	Connection other than junction, at 2 o'clock, diameter 100mm
8	36.08	LD	Line deviates down, SHARP
9	36.08	REM	General remark, OIL INTERCEPTOR
10	36.08	OCF	Finish node type, other special chamber reference number: SW 06, INTERCEPTOR

PLR:	UP/SX	**Upstream Node:**	UP/S
Inspection Direction:	Upstream	**Downstream Node:**	SW 05
Inspected Length:	17.07 m	**Dia/Height:**	225 mm
Total Length:	17.07 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 05
2	0.00	WL	Water level, 05% of the vertical dimension
3	8.15	DER	Settled deposits, coarse, 20% cross-sectional area loss
4	10.68	JN	Junction, at 3 o'clock, diameter 225mm
5	10.68	LL	Line deviates left
6	17.07	LU	Line deviates up, SHARP
7	17.07	OCF	Finish node type, other special chamber reference number: UP/S, INTERNAL RWP

PLR:	UP/S AX	**Upstream Node:**	UP/S A
Inspection Direction:	Upstream	**Downstream Node:**	SW 05
Inspected Length:	36.89 m	**Dia/Height:**	100 mm
Total Length:	37.00 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 05
2	0.00	WL	Water level, 05% of the vertical dimension
3	1.21	LR	Line deviates right
4	9.49	FC	Fracture, circumferential, from 7 to 5 o'clock
5	14.91	DEX	Settled deposits, other, 80% cross-sectional area loss, BOTTLE
6	36.89	DER	Settled deposits, coarse, 95% cross-sectional area loss
7	36.89	SA	Survey abandoned, DUE TO STUNT END

PLR:	UP/S AX	**Upstream Node:**	UP/S A
Inspection Direction:	Upstream	**Downstream Node:**	SW 07
Inspected Length:	7.79 m	**Dia/Height:**	100 mm
Total Length:	10.00 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 07
2	0.00	WL	Water level, 05% of the vertical dimension
3	1.18	DES	Settled deposits, fine, 20% cross-sectional area loss, Start
4	7.79	DES	Settled deposits, fine, 20% cross-sectional area loss, End
5	7.79	CUD	Loss of vision, silt
6	7.79	SA	Survey abandoned, DUE TO DES

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PLR:	SW 07X	**Upstream Node:**	SW 07
Inspection Direction:	Downstream	**Downstream Node:**	SW 08
Inspected Length:	16.29 m	**Dia/Height:**	100 mm
Total Length:	16.29 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 07
2	0.00	WL	Water level, 05% of the vertical dimension
3	3.35	DER	Settled deposits, coarse, 20% cross-sectional area loss, Start
4	9.45	WL	Water level, 30% of the vertical dimension
5	15.49	LR	Line deviates right
6	15.49	RF	Roots, fine
7	16.29	DER	Settled deposits, coarse, 20% cross-sectional area loss, End
8	16.29	CPF	Finish node type, catchpit reference number: SW 08

PLR:	FW 09X	**Upstream Node:**	FW 09
Inspection Direction:	Downstream	**Downstream Node:**	FW 10
Inspected Length:	51.75 m	**Dia/Height:**	375 mm
Total Length:	51.75 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 09
2	0.00	WL	Water level, 10% of the vertical dimension
3	32.90	DEG	Attached deposits, grease, from 4 to 5 o'clock, 5% cross-sectional area loss, Start
4	32.90	DEG	Attached deposits, grease, from 7 to 8 o'clock, 5% cross-sectional area loss, Start
5	51.75	DEG	Attached deposits, grease, from 4 to 5 o'clock, 5% cross-sectional area loss, End
6	51.75	DEG	Attached deposits, grease, from 7 to 8 o'clock, 5% cross-sectional area loss, End
7	51.75	MHF	Finish node type, manhole reference number: FW 10

PLR:	FW 10X	**Upstream Node:**	FW 10
Inspection Direction:	Downstream	**Downstream Node:**	FW 11
Inspected Length:	49.80 m	**Dia/Height:**	375 mm
Total Length:	80.00 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 10
2	0.00	WL	Water level, 10% of the vertical dimension
3	6.53	LR	Line deviates right, SLIGHT
4	11.79	LL	Line deviates left, SLIGHT
5	30.47	CN	Connection other than junction, at 12 o'clock, diameter 150mm
6	36.18	CN	Connection other than junction, at 10 o'clock, diameter 150mm
7	36.58	CN	Connection other than junction, at 2 o'clock, diameter 150mm
8	38.57	CN	Connection other than junction, at 11 o'clock, diameter 150mm
9	38.57	DEG	Attached deposits, grease, from 7 to 11 o'clock, 20% cross-sectional area loss
10	41.83	CN	Connection other than junction, at 12 o'clock, diameter 150mm, DEX
11	48.07	CN	Connection other than junction, at 10 o'clock, diameter 150mm
12	48.07	DEX	Settled deposits, other, 20% cross-sectional area loss, RAGS
13	49.80	CN	Connection other than junction, at 10 o'clock, diameter 150mm
14	49.80	DER	Settled deposits, coarse, 40% cross-sectional area loss

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No.	m+	Code	Observation
15	49.80	SA	Survey abandoned, DUE TO DEE

PLR:	FW 08X	**Upstream Node:**	FW 08
Inspection Direction:	Upstream	**Downstream Node:**	FW 09
Inspected Length:	5.39 m	**Dia/Height:**	300 mm
Total Length:	10.00 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 09
2	0.00	WL	Water level, 30% of the vertical dimension
3	3.19	DES	Settled deposits, fine, 40% cross-sectional area loss
4	5.39	SA	Survey abandoned, DUE TO DES

PLR:	FW 12X	**Upstream Node:**	FW 12
Inspection Direction:	Downstream	**Downstream Node:**	FW 11
Inspected Length:	16.74 m	**Dia/Height:**	450 mm
Total Length:	16.74 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 12
2	0.00	WL	Water level, 05% of the vertical dimension
3	16.39	LL	Line deviates left
4	16.74	MHF	Finish node type, manhole reference number: FW 11

PLR:	FW 13X	**Upstream Node:**	FW 13
Inspection Direction:	Upstream	**Downstream Node:**	FW 12
Inspected Length:	12.81 m	**Dia/Height:**	450 mm
Total Length:	13.00 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 12
2	0.00	WL	Water level, 05% of the vertical dimension
3	12.81	REM	General remark, PATCH
4	12.81	SA	Survey abandoned, DUE TO DEFORMED PATCH

PLR:	UP/SX	**Upstream Node:**	UP/S
Inspection Direction:	Upstream	**Downstream Node:**	MH 14
Inspected Length:	2.09 m	**Dia/Height:**	100 mm
Total Length:	2.10 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : MH 14
2	0.07	WL	Water level, 05% of the vertical dimension
3	2.09	LD	Line deviates down, SHARP
4	2.09	SA	Survey abandoned, DUE TO LINE DOWN SAHRP

PLR:	FW 14X	**Upstream Node:**	FW 14
Inspection Direction:	Downstream	**Downstream Node:**	FW 12
Inspected Length:	36.00 m	**Dia/Height:**	150 mm
Total Length:	36.00 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

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No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 14
2	0.00	WL	Water level, 05% of the vertical dimension
3	3.92	WL	Water level, 20% of the vertical dimension
4	3.92	DES	Settled deposits, fine, 10% cross-sectional area loss, Start
5	11.88	LL	Line deviates left, SLIGHT
6	36.00	DES	Settled deposits, fine, 10% cross-sectional area loss, End
7	36.00	MHF	Finish node type, manhole reference number: FW 12

PLR:	SW 08X	**Upstream Node:**	SW 08
Inspection Direction:	Upstream	**Downstream Node:**	SW 07
Inspected Length:	14.05 m	**Dia/Height:**	450 mm
Total Length:	14.05 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 07
2	0.00	WL	Water level, 05% of the vertical dimension
3	2.88	CN	Connection other than junction, at 12 o'clock, diameter 150mm
4	14.05	OCF	Finish node type, other special chamber reference number: SW 08, OIL INTERCEPTER

PLR:	SW 07X	**Upstream Node:**	SW 07
Inspection Direction:	Downstream	**Downstream Node:**	SW 11
Inspected Length:	27.46 m	**Dia/Height:**	600 mm
Total Length:	27.46 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 07
2	0.00	WL	Water level, 20% of the vertical dimension
3	27.46	MHF	Finish node type, manhole reference number: SW 11

PLR:	UP/SX	**Upstream Node:**	UP/S
Inspection Direction:	Upstream	**Downstream Node:**	MH 13
Inspected Length:	6.64 m	**Dia/Height:**	300 mm
Total Length:	7.00 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : MH 13
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.90	DER	Settled deposits, coarse, 20% cross-sectional area loss, Start
4	1.43	CXI	Connection intruding, at 2 o'clock, diameter 150mm, intrusion 10%
5	6.64	DER	Settled deposits, coarse, 20% cross-sectional area loss, End
6	6.64	DER	Settled deposits, coarse, 95% cross-sectional area loss
7	6.64	SA	Survey abandoned, DUE TO DER

PLR:	SW 13X	**Upstream Node:**	SW 13
Inspection Direction:	Downstream	**Downstream Node:**	SW 14
Inspected Length:	51.83 m	**Dia/Height:**	300 mm
Total Length:	51.83 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 13

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No.	m+	Code	Observation
2	0.00	WL	Water level, 05% of the vertical dimension
3	3.26	CN	Connection other than junction, at 11 o'clock, diameter 150mm
4	10.43	CN	Connection other than junction, at 1 o'clock, diameter 150mm
5	14.10	DER	Settled deposits, coarse, 20% cross-sectional area loss
6	16.99	DER	Settled deposits, coarse, 20% cross-sectional area loss, Start, PATCHES
7	20.47	CN	Connection other than junction, at 1 o'clock, diameter 150mm
8	23.15	CN	Connection other than junction, at 10 o'clock, diameter 150mm
9	30.58	CN	Connection other than junction, at 1 o'clock, diameter 150mm
10	45.24	CN	Connection other than junction, at 12 o'clock, diameter 150mm
11	51.83	DER	Settled deposits, coarse, 20% cross-sectional area loss, End, PATCHES
12	51.83	MHF	Finish node type, manhole reference number: SW 14

PLR:	MH 14X	**Upstream Node:**	MH 14
Inspection Direction:	Downstream	**Downstream Node:**	MH 09
Inspected Length:	28.62 m	**Dia/Height:**	375 mm
Total Length:	28.62 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : MH 14
2	0.00	WL	Water level, 05% of the vertical dimension
3	9.30	CN	Connection other than junction, at 11 o'clock, diameter 150mm
4	18.96	CN	Connection other than junction, at 12 o'clock, diameter 100mm
5	26.44	CN	Connection other than junction, at 12 o'clock, diameter 150mm
6	28.62	MHF	Finish node type, manhole reference number: MH 09

PLR:	UP/S AX	**Upstream Node:**	UP/S A
Inspection Direction:	Upstream	**Downstream Node:**	SW 13
Inspected Length:	1.30 m	**Dia/Height:**	225 mm
Total Length:	1.50 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 13
2	0.00	WL	Water level, 05% of the vertical dimension
3	0.80	DER	Settled deposits, coarse, 20% cross-sectional area loss
4	1.30	DER	Settled deposits, coarse, 95% cross-sectional area loss
5	1.30	SA	Survey abandoned, DUE TO STUNT END

PLR:	UP/S BX	**Upstream Node:**	UP/S B
Inspection Direction:	Downstream	**Downstream Node:**	SW 13
Inspected Length:	39.85 m	**Dia/Height:**	225 mm
Total Length:	39.85 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : UP/S B
2	0.00	WL	Water level, 05% of the vertical dimension
3	9.11	JN	Junction, at 3 o'clock, diameter 150mm
4	17.09	JN	Junction, at 2 o'clock, diameter 150mm
5	18.77	JN	Junction, at 2 o'clock, diameter 150mm

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No.	m+	Code	Observation
6	20.02	JN	Junction, at 2 o'clock, diameter 150mm
7	24.84	MC	Material changes, concrete
8	25.23	CN	Connection other than junction, at 10 o'clock, diameter 150mm
9	28.91	WL	Water level, 20% of the vertical dimension
10	33.01	WL	Water level, 05% of the vertical dimension
11	37.96	CN	Connection other than junction, at 2 o'clock, diameter 150mm
12	39.85	LU	Line deviates up, SHARP
13	39.85	OCF	Finish node type, other special chamber reference number: SW 13, INTERNAL RWP

PLR:	SW 15X	**Upstream Node:**	SW 15
Inspection Direction:	Upstream	**Downstream Node:**	SW 16
Inspected Length:	63.93 m	**Dia/Height:**	375 mm
Total Length:	63.93 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 16
2	0.00	WL	Water level, 05% of the vertical dimension
3	11.41	CN	Connection other than junction, at 11 o'clock, diameter 150mm
4	13.22	CN	Connection other than junction, at 1 o'clock, diameter 150mm
5	36.01	CN	Connection other than junction, at 11 o'clock, diameter 150mm
6	37.23	CN	Connection other than junction, at 11 o'clock, diameter 150mm
7	63.93	MHF	Finish node type, manhole reference number: SW 15

PLR:	SW 16X	**Upstream Node:**	SW 16
Inspection Direction:	Downstream	**Downstream Node:**	SW 17
Inspected Length:	69.85 m	**Dia/Height:**	450 mm
Total Length:	69.85 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 16
2	0.00	WL	Water level, 05% of the vertical dimension
3	8.79	CN	Connection other than junction, at 12 o'clock, diameter 150mm
4	13.37	CN	Connection other than junction, at 12 o'clock, diameter 150mm
5	15.13	DER	Settled deposits, coarse, 20% cross-sectional area loss
6	31.24	CN	Connection other than junction, at 1 o'clock, diameter 150mm
7	40.60	CN	Connection other than junction, at 12 o'clock, diameter 150mm
8	53.68	DER	Settled deposits, coarse, 20% cross-sectional area loss
9	69.85	MHF	Finish node type, manhole reference number: SW 17

PLR:	SW 17X	**Upstream Node:**	SW 17
Inspection Direction:	Downstream	**Downstream Node:**	SW 07
Inspected Length:	85.57 m	**Dia/Height:**	450 mm
Total Length:	85.57 m	**Pipe Material:**	Concrete

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 17
2	0.00	WL	Water level, 05% of the vertical dimension
3	2.53	DER	Settled deposits, coarse, 20% cross-sectional area loss, Start, PATCHES

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No.	m+	Code	Observation
4	5.37	JN	Junction, at 12 o'clock, diameter 150mm
5	9.25	JN	Junction, at 11 o'clock, diameter 150mm
6	10.80	CN	Connection other than junction, at 2 o'clock, diameter 150mm
7	10.81	DEX	Settled deposits, other, 10% cross-sectional area loss, OLS PATCH LINE FROM CN
8	14.00	JN	Junction, at 12 o'clock, diameter 150mm
9	24.67	CN	Connection other than junction, at 12 o'clock, diameter 150mm
10	31.96	CN	Connection other than junction, at 12 o'clock, diameter 150mm
11	32.87	CN	Connection other than junction, at 1 o'clock, diameter 150mm
12	34.93	CN	Connection other than junction, at 1 o'clock, diameter 150mm
13	40.09	CN	Connection other than junction, at 1 o'clock, diameter 150mm
14	40.44	CN	Connection other than junction, at 12 o'clock, diameter 150mm
15	42.75	CN	Connection other than junction, at 12 o'clock, diameter 150mm
16	51.45	CN	Connection other than junction, at 11 o'clock, diameter 150mm
17	58.09	CN	Connection other than junction, at 12 o'clock, diameter 150mm
18	60.20	CN	Connection other than junction, at 12 o'clock, diameter 150mm
19	76.27	CN	Connection other than junction, at 12 o'clock, diameter 100mm
20	85.57	DER	Settled deposits, coarse, 20% cross-sectional area loss, End, PATCHES
21	85.57	REM	General remark, SYPHON IN D/S MH
22	85.57	MHF	Finish node type, manhole reference number: SW 07

PLR:	SW 10X	**Upstream Node:**	SW 10
Inspection Direction:	Downstream	**Downstream Node:**	SW 09
Inspected Length:	24.21 m	**Dia/Height:**	375 mm
Total Length:	24.21 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : SW 10
2	0.00	WL	Water level, 05% of the vertical dimension
3	7.34	JDL	Joint displaced, large
4	7.34	CN	Connection other than junction, at 11 o'clock, diameter 100mm
5	14.68	CXI	Connection intruding, at 11 o'clock, diameter 100mm, intrusion 10%
6	21.19	CN	Connection other than junction, at 12 o'clock, diameter 100mm
7	24.21	MHF	Finish node type, manhole reference number: SW 09

PLR:	FW 22X	**Upstream Node:**	FW 22
Inspection Direction:	Downstream	**Downstream Node:**	FW 23
Inspected Length:	41.41 m	**Dia/Height:**	150 mm
Total Length:	41.41 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22
2	0.00	WL	Water level, 10% of the vertical dimension
3	35.69	DEG	Attached deposits, grease, from 2 to 4 o'clock, 10% cross-sectional area loss, Start
4	35.69	DEG	Attached deposits, grease, from 7 to 10 o'clock, 10% cross-sectional area loss, Start
5	40.21	DEG	Attached deposits, grease, from 7 to 10 o'clock, 10% cross-sectional area loss, End
6	40.21	DEG	Attached deposits, grease, from 2 to 4 o'clock, 10% cross-sectional area loss, End
7	41.41	MHF	Finish node type, manhole reference number: FW 23, BURIED

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PLR:	FW 23X	**Upstream Node:**	FW 23
Inspection Direction:	Downstream	**Downstream Node:**	FW 08
Inspected Length:	14.47 m	**Dia/Height:**	150 mm
Total Length:	14.47 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 23, BURIED
2	0.00	WL	Water level, 05% of the vertical dimension
3	14.47	JN	Junction, at 6 o'clock, diameter 150mm, 150
4	14.47	MHF	Finish node type, manhole reference number: FW 08

PLR:	FW 08X	**Upstream Node:**	FW 08
Inspection Direction:	Upstream	**Downstream Node:**	FW 09
Inspected Length:	4.07 m	**Dia/Height:**	300 mm
Total Length:	4.07 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 09
2	0.00	WL	Water level, 10% of the vertical dimension
3	0.90	DEG	Attached deposits, grease, from 7 to 5 o'clock, 5% cross-sectional area loss, LESS THAN 5% UNABLE TO REMOVE WITH HPWJ
4	1.60	FL	Fracture, longitudinal, at 3 o'clock
5	1.60	FL	Fracture, longitudinal, at 7 o'clock
6	4.07	MHF	Finish node type, manhole reference number: FW 08

PLR:	FW 07X	**Upstream Node:**	FW 07
Inspection Direction:	Upstream	**Downstream Node:**	FW 08
Inspected Length:	40.21 m	**Dia/Height:**	150 mm
Total Length:	40.21 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 08
2	0.00	WL	Water level, 05% of the vertical dimension
3	40.21	MHF	Finish node type, manhole reference number: FW 07, INTERNAL MH

PLR:	FW 22AX	**Upstream Node:**	FW 22A
Inspection Direction:	Upstream	**Downstream Node:**	FW 22
Inspected Length:	12.32 m	**Dia/Height:**	150 mm
Total Length:	12.32 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22
2	0.00	WL	Water level, 40% of the vertical dimension
3	1.89	WL	Water level, 05% of the vertical dimension
4	12.32	MHF	Finish node type, manhole reference number: FW 22A

PLR:	FW 22BX	**Upstream Node:**	FW 22B
Inspection Direction:	Upstream	**Downstream Node:**	FW 22A
Inspected Length:	8.45 m	**Dia/Height:**	150 mm
Total Length:	8.45 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22A

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Section Summary

Project Name	Project Number	Project Date
1280 SURVEY OPS VELODROME	1	16/12/2019

No.	m+	Code	Observation
2	0.00	WL	Water level, 10% of the vertical dimension
3	8.45	MHF	Finish node type, manhole reference number: FW 22B

PLR:	FW 22CX	**Upstream Node:**	FW 22C
Inspection Direction:	Upstream	**Downstream Node:**	FW 22B
Inspected Length:	8.17 m	**Dia/Height:**	150 mm
Total Length:	8.17 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22B
2	0.00	WL	Water level, 10% of the vertical dimension
3	4.96	WL	Water level, 20% of the vertical dimension
4	5.50	CUW	Loss of vision, camera under water, Start
5	8.17	CUW	Loss of vision, camera under water, End
6	8.17	MHF	Finish node type, manhole reference number: FW 22C

PLR:	FW 22DX	**Upstream Node:**	FW 22D
Inspection Direction:	Upstream	**Downstream Node:**	FW 22C
Inspected Length:	3.62 m	**Dia/Height:**	150 mm
Total Length:	3.62 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22C
2	0.00	WL	Water level, 05% of the vertical dimension
3	3.62	MHF	Finish node type, manhole reference number: FW 22D

PLR:	FW 22EX	**Upstream Node:**	FW 22E
Inspection Direction:	Upstream	**Downstream Node:**	FW 22D
Inspected Length:	10.50 m	**Dia/Height:**	150 mm
Total Length:	10.50 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22D
2	0.00	WL	Water level, 05% of the vertical dimension
3	7.12	JN	Junction, at 1 o'clock, diameter 100mm
4	10.50	MHF	Finish node type, manhole reference number: FW 22E

PLR:	FW 22FX	**Upstream Node:**	FW 22F
Inspection Direction:	Upstream	**Downstream Node:**	FW 22E
Inspected Length:	7.63 m	**Dia/Height:**	150 mm
Total Length:	7.63 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22E
2	0.00	WL	Water level, 05% of the vertical dimension
3	4.43	JN	Junction, at 6 o'clock, diameter 150mm
4	7.63	MHF	Finish node type, manhole reference number: FW 22F

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Section Summary

Project Name	Project Number	Project Date
1280 SURVEY OPS VELODROME	1	16/12/2019

PLR:	FW 22GX	**Upstream Node:**	FW 22G
Inspection Direction:	Upstream	**Downstream Node:**	FW 22F
Inspected Length:	15.99 m	**Dia/Height:**	150 mm
Total Length:	15.99 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22F
2	0.00	WL	Water level, 10% of the vertical dimension
3	4.30	CUW	Loss of vision, camera under water, Start
4	15.99	CUW	Loss of vision, camera under water, End
5	15.99	MHF	Finish node type, manhole reference number: FW 22G

PLR:	FW 22HX	**Upstream Node:**	FW 22H
Inspection Direction:	Upstream	**Downstream Node:**	FW 22G
Inspected Length:	7.06 m	**Dia/Height:**	150 mm
Total Length:	7.06 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22G
2	0.00	WL	Water level, 10% of the vertical dimension
3	7.06	MHF	Finish node type, manhole reference number: FW 22H

PLR:	FW 22IX	**Upstream Node:**	FW 22I
Inspection Direction:	Upstream	**Downstream Node:**	FW 22H
Inspected Length:	3.36 m	**Dia/Height:**	150 mm
Total Length:	3.36 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22H
2	0.00	WL	Water level, 10% of the vertical dimension
3	3.36	MHF	Finish node type, manhole reference number: FW 22I

PLR:	FW 22JX	**Upstream Node:**	FW 22J
Inspection Direction:	Upstream	**Downstream Node:**	FW 22I
Inspected Length:	7.03 m	**Dia/Height:**	150 mm
Total Length:	7.03 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22I
2	0.00	WL	Water level, 10% of the vertical dimension
3	7.03	MHF	Finish node type, manhole reference number: FW 22J

PLR:	FW 22KX	**Upstream Node:**	FW 22K
Inspection Direction:	Upstream	**Downstream Node:**	FW 22J
Inspected Length:	7.08 m	**Dia/Height:**	150 mm
Total Length:	7.08 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22J
2	0.00	WL	Water level, 05% of the vertical dimension
3	7.08	MHF	Finish node type, manhole reference number: FW 22K

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Section Summary

Project Name	Project Number	Project Date
1280 SURVEY OPS VELODROME	1	16/12/2019

PLR:	FW 22LX	**Upstream Node:**	FW 22L
Inspection Direction:	Upstream	**Downstream Node:**	FW 22K
Inspected Length:	9.86 m	**Dia/Height:**	150 mm
Total Length:	9.86 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	MH	Start node type, manhole, reference number : FW 22K
2	0.00	WL	Water level, 05% of the vertical dimension
3	9.86	MHF	Finish node type, manhole reference number: FW 22L

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Section Inspection - 16/12/2019 - SW 01X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	16/12/19	11:03	MM01	No Rain Or Snow	No	SW 01X

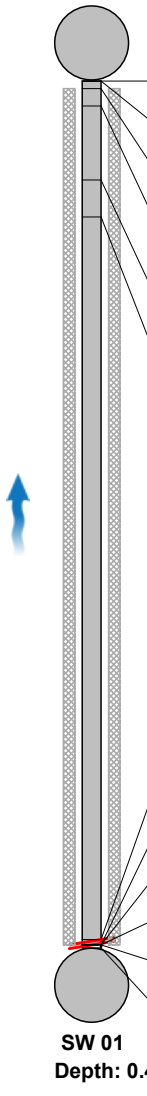
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	SW 01
Road:	Velodrome	**Inspected Length:**	43.85 m	**Upstream Pipe Depth:**	0.430 m
Location:	Other pedestrian area	**Total Length:**	44.00 m	**Downstream Node:**	D/S
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:383



Position [m]		Code	Observation	Grade
0.00		MH	Start node type, manhole, reference number : D/S	
0.00		WL	Water level, 0% of the vertical dimension	
0.40	S01	DES	Settled deposits, fine, 10% cross-sectional area loss, Start	
1.29		LR	Line deviates right: SLIGHT	
5.02		RF	Roots, fine	2
6.90		RF	Roots, fine	2
43.55		DER	Settled deposits, coarse, 20% cross-sectional area loss	3
43.85		DER	Settled deposits, coarse, 95% cross-sectional area loss	5
43.85	F01	DES	Settled deposits, fine, 10% cross-sectional area loss, End	3
43.85		D	Deformed sewer/drain, 50%	5
43.85		SA	Survey abandoned: DUE TO DEFORMED [PIPE	
44.00			End of pipe	


MH @ 0.00 m


DER @ 43.55 m


D @ 43.85 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	165.0	3.8	165.0	5.0	5	12.0	2.3	102.0	5.0

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Section Pictures - 16/12/2019 - SW 01X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Upstream	SW 01X	MM01	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : D/S



2, 00:03:03, 43.55 m
Settled deposits, coarse, 20% cross-sectional area loss

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Section Pictures - 16/12/2019 - SW 01X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Upstream	SW 01X	MM01	12860



3, 00:03:22, 43.85 m
Deformed sewer/drain, 50%

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Section Inspection - 16/12/2019 - SW 03X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	16/12/19	11:32	MM02	No Rain Or Snow	No	SW 03X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	SW 03
Road:	Velodrome	**Inspected Length:**	37.61 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	37.61 m	**Downstream Node:**	SW 02
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:328

Position [m]		Code	Observation	Grade
Depth: m				
SW 02				
0.00		MH	Start node type, manhole, reference number : SW 02	
0.00		WL	Water level, 05% of the vertical dimension	
11.52		JN	Junction, at 3 o'clock, diameter 150mm	
11.52		DES	Settled deposits, fine, 10% cross-sectional area loss	3
27.32	S01	DES	Settled deposits, fine, 20% cross-sectional area loss, Start	
37.61	F01	DES	Settled deposits, fine, 20% cross-sectional area loss, End	3
37.61		MHF	Finish node type, manhole reference number: SW 03	
SW 03				
Depth: m				


MH @ 0.00 m



DES @ 27.32 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	2.0	0.6	24.0	3.0

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Section Pictures - 16/12/2019 - SW 03X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Upstream	SW 03X	MM02	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : SW 02



2, 00:02:06, 27.32 m
Settled deposits, fine, 20% cross-sectional area loss, Start

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Section Inspection - 16/12/2019 - SW 02X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	1	16/12/19	11:41	MM03	No Rain Or Snow	No	SW 02X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	SW 02
Road:	Velodrome	**Inspected Length:**	56.23 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	60.00 m	**Downstream Node:**	D/S
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:522

Position [m]	Code	Observation	Grade
Depth: m SW 02			
0.00	MH	Start node type, manhole, reference number : SW 02	
0.00	WL	Water level, 05% of the vertical dimension	
23.26	DES	Settled deposits, fine, 30% cross-sectional area loss	4
23.26	JN	Junction, at 9 o'clock, diameter 150mm	
52.32	JN	Junction, at 9 o'clock, diameter 150mm	
56.23	REM	General remark: HARD TO PUSH RODS	
56.23	SA	Survey abandoned: DUE TOP HARD TO PUSH RODS	
60.00		End of pipe	
D/S Depth: m			


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	5.0	0.1	5.0	4.0

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Section Pictures - 16/12/2019 - SW 02X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	SW 02X	MM03	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : SW 02

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Section Inspection - 16/12/2019 - UP/SX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	1	16/12/19	12:17	MM04	No Rain Or Snow	No	UP/SX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	UP/S
Road:	Velodrome	**Inspected Length:**	3.10 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	3.50 m	**Downstream Node:**	SW 04
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified



Scale: 1:50	Position [m]	Code	Observation	Grade
	0.00	MH	Start node type, manhole, reference number : SW 04	
	0.00	WL	Water level, 05% of the vertical dimension	
	3.10	DER	Settled deposits, coarse, 80% cross-sectional area loss	5
	3.10	REM	General remark: STUNT END BEHIND BRICK	
	3.10	SA	Survey abandoned: DUE TO BRICK AND CAPPED OFF / STUNT END	
	3.50		End of pipe	


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	10.0	3.2	10.0	5.0

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Section Pictures - 16/12/2019 - UP/SX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
4	Upstream	UP/SX	MM04	12860



1, 00:00:01, 0.00 m
Start node type, manhole, reference number : SW 04

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Section Inspection - 16/12/2019 - SW 04X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
5	1	16/12/19	12:19	MM05	No Rain Or Snow	No	SW 04X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	SW 04
Road:	Velodrome	**Inspected Length:**	6.87 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	10.00 m	**Downstream Node:**	UP/S A
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:87	Position [m]	Code	Observation	Grade
Depth: m SW 04				
	0.00	MH	Start node type, manhole, reference number : SW 04	
	0.05	WL	Water level, 5% of the vertical dimension	
	6.87	LR	Line deviates right	
	6.87	SA	Survey abandoned: DUE TO SHARP RIGHT	
	10.00		End of pipe	
UP/S A Depth: m				


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 16/12/2019 - SW 04X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Downstream	SW 04X	MM05	12860



1, 00:00:03, 0.00 m
Start node type, manhole, reference number : SW 04

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Section Inspection - 16/12/2019 - SW 05X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
6	1	16/12/19	12:36	MM06	No Rain Or Snow	No	SW 05X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	SW 05
Road:	Velodrome	**Inspected Length:**	36.08 m	**Upstream Pipe Depth:**	0.900 m
Location:	Road	**Total Length:**	36.08 m	**Downstream Node:**	SW 06
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:314

Position [m]		Code	Observation	Grade
Depth: 0.90 m				
SW 05				
0.00		MH	Start node type, manhole, reference number : SW 05	
0.00		WL	Water level, 05% of the vertical dimension	
2.51	S01	DER	Settled deposits, coarse, 10% cross-sectional area loss, Start	
12.10		CN	Connection other than junction, at 2 o'clock, diameter 150mm	
13.18		JN	Junction, at 10 o'clock, diameter 150mm	
13.84	F01	DER	Settled deposits, coarse, 10% cross-sectional area loss, End	3
20.70		CN	Connection other than junction, at 2 o'clock, diameter 100mm	
36.08		LD	Line deviates down: SHARP	
36.08		REM	General remark: OIL INTERCEPTOR	
36.08		OCF	Finish node type, other special chamber reference number: SW 06: INTERCEPTOR	
SW 06				
Depth: m				


MH @ 0.00 m



OCF @ 36.08 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	2.0	0.7	24.0	3.0

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Section Pictures - 16/12/2019 - SW 05X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
6	Downstream	SW 05X	MM06	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : SW 05



2, 00:02:56, 36.08 m
Finish node type, other special chamber reference number: SW 06, INTERCEPTOR

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Section Inspection - 16/12/2019 - UP/SX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
7	1	16/12/19	12:46	MM07	No Rain Or Snow	No	UP/SX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	UP/S
Road:	Velodrome	**Inspected Length:**	17.07 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	17.07 m	**Downstream Node:**	SW 05
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	0.900 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:149 **Position [m]** **Code** **Observation** **Grade**

Depth: 0.90 m
SW 05


MH @ 0.00 m


DER @ 8.15 m

Position [m]	Code	Observation	Grade
0.00	MH	Start node type, manhole, reference number : SW 05	
0.00	WL	Water level, 05% of the vertical dimension	
8.15	DER	Settled deposits, coarse, 20% cross-sectional area loss	3
10.68	JN	Junction, at 3 o'clock, diameter 225mm	
10.68	LL	Line deviates left	
17.07	LU	Line deviates up: SHARP	
17.07	OCF	Finish node type, other special chamber reference number: UP/S: INTERNAL RWP	

UP/S
Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	2.0	0.1	2.0	3.0

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Section Pictures - 16/12/2019 - UP/SX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
7	Upstream	UP/SX	MM07	12860



1, 00:00:03, 0.00 m
Start node type, manhole, reference number : SW 05



2, 00:00:36, 8.15 m
Settled deposits, coarse, 20% cross-sectional area loss

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Section Inspection - 16/12/2019 - UP/S AX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
8	1	16/12/19	12:51	MM08	No Rain Or Snow	No	UP/S AX

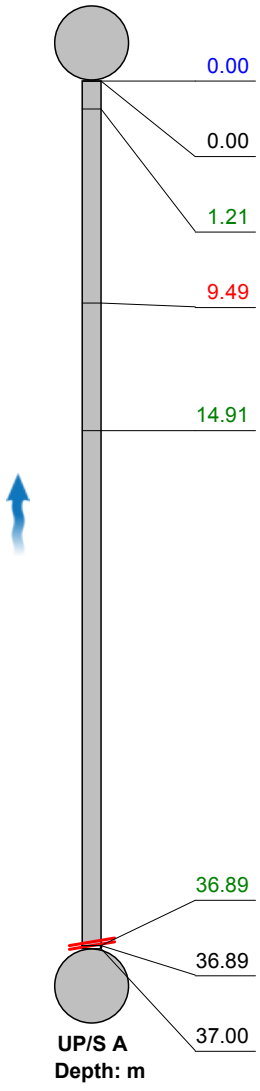
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	UP/S A
Road:	Velodrome	**Inspected Length:**	36.89 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	37.00 m	**Downstream Node:**	SW 05
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	0.900 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:322



Position [m]	Code	Observation	Grade
0.00	MH	Start node type, manhole, reference number : SW 05	
0.00	WL	Water level, 05% of the vertical dimension	
1.21	LR	Line deviates right	
9.49	FC	Fracture, circumferential, from 7 to 5 o'clock	3
14.91	DEX	Settled deposits, other, 80% cross-sectional area loss: BOTTLE	5
36.89	DER	Settled deposits, coarse, 95% cross-sectional area loss	5
36.89	SA	Survey abandoned: DUE TO STUNT END	
37.00		End of pipe	


MH @ 0.00 m


FC @ 9.49 m


DEX @ 14.91 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	40.0	1.1	40.0	3.0	2	10.0	0.5	20.0	5.0

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Section Pictures - 16/12/2019 - UP/S AX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
8	Upstream	UP/S AX	MM08	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : SW 05



2, 00:00:43, 9.49 m
Fracture, circumferential, from 7 to 5 o'clock

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Section Pictures - 16/12/2019 - UP/S AX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
8	Upstream	UP/S AX	MM08	12860



3, 00:01:03, 14.91 m
Settled deposits, other, 80% cross-sectional area loss, BOTTLE

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Section Inspection - 16/12/2019 - UP/S AX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
9	1	16/12/19	13:30	MM09	No Rain Or Snow	No	UP/S AX

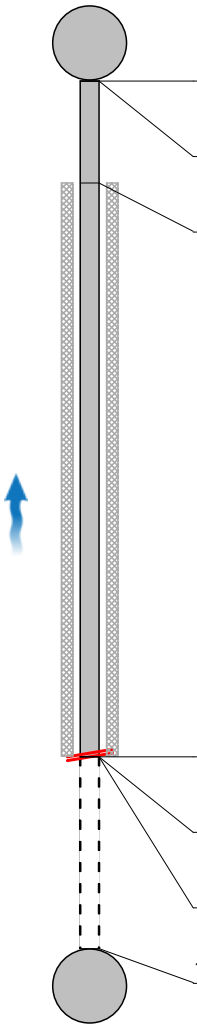
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	UP/S A
Road:	Velodrome	**Inspected Length:**	7.79 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	10.00 m	**Downstream Node:**	SW 07
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	0.680 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:87



Position [m]		Code	Observation	Grade
0.00		MH	Start node type, manhole, reference number : SW 07	
0.00		WL	Water level, 05% of the vertical dimension	
1.18	S01	DES	Settled deposits, fine, 20% cross-sectional area loss, Start	
7.79	F01	DES	Settled deposits, fine, 20% cross-sectional area loss, End	3
7.79		CUD	Loss of vision, silt	
7.79		SA	Survey abandoned: DUE TO DES	
10.00			End of pipe	


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	2.0	1.8	14.0	3.0

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Section Pictures - 16/12/2019 - UP/S AX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
9	Upstream	UP/S AX	MM09	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : SW 07

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Section Inspection - 16/12/2019 - SW 07X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
10	1	16/12/19	13:33	MM10	No Rain Or Snow	No	SW 07X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	SW 07
Road:	Velodrome	**Inspected Length:**	16.29 m	**Upstream Pipe Depth:**	0.680 m
Location:	Road	**Total Length:**	16.29 m	**Downstream Node:**	SW 08
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:142	Position [m]		Code	Observation	Grade
Depth: 0.68 m					
SW 07					
	0.00		MH	Start node type, manhole, reference number : SW 07	
	0.00		WL	Water level, 05% of the vertical dimension	
	3.35	S01	DER	Settled deposits, coarse, 20% cross-sectional area loss, Start	
	9.45		WL	Water level, 30% of the vertical dimension	
	15.49		LR	Line deviates right	
	15.49		RF	Roots, fine	2
	16.29	F01	DER	Settled deposits, coarse, 20% cross-sectional area loss, End	3
	16.29		CPF	Finish node type, catchpit reference number: SW 08	
SW 08					
Depth: m					


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	3.0	1.7	27.0	3.0

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Section Pictures - 16/12/2019 - SW 07X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
10	Downstream	SW 07X	MM10	12860



1, 00:00:01, 0.00 m
Start node type, manhole, reference number : SW 07

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Section Inspection - 17/12/2019 - FW 09X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
11	1	17/12/19	11:13	MM11	No Rain Or Snow	No	FW 09X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

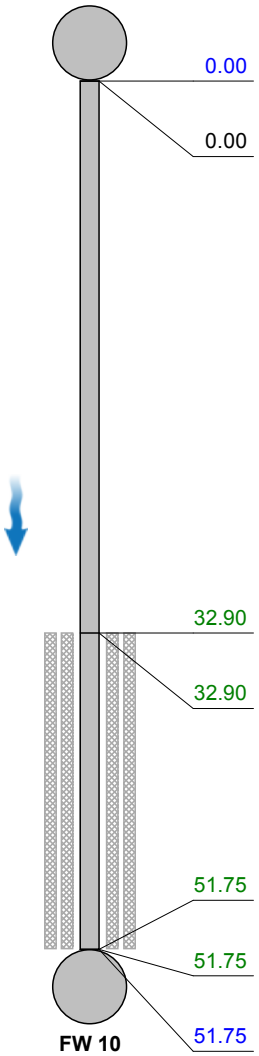
Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FW 09
Road:	Velodrome	**Inspected Length:**	51.75 m	**Upstream Pipe Depth:**	5.000 m
Location:	Road	**Total Length:**	51.75 m	**Downstream Node:**	FW 10
Surface Type:	Unknown	**Joint Length:**	1.50 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	375 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:450 **Position [m]** **Code** **Observation** **Grade**

Depth: 5.00 m
FW 09



Position [m]		Code	Observation	Grade
0.00		MH	Start node type, manhole, reference number : FW 09	
0.00		WL	Water level, 10% of the vertical dimension	
32.90	S01	DEG	Attached deposits, grease, from 4 to 5 o'clock, 5% cross-sectional area loss, Start	
32.90	S02	DEG	Attached deposits, grease, from 7 to 8 o'clock, 5% cross-sectional area loss, Start	
51.75	F01	DEG	Attached deposits, grease, from 4 to 5 o'clock, 5% cross-sectional area loss, End	2
51.75	F02	DEG	Attached deposits, grease, from 7 to 8 o'clock, 5% cross-sectional area loss, End	2
51.75		MHF	Finish node type, manhole reference number: FW 10	



DEG @ 32.90 m



DEG @ 32.90 m

FW 10
Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	2.0	0.7	38.0	3.0

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Section Pictures - 17/12/2019 - FW 09X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
11	Downstream	FW 09X	MM11	12860



1, 00:02:29, 32.90 m
Attached deposits, grease, from 4 to 5 o'clock, 5% cross-sectional area loss, Start



2, 00:02:33, 32.90 m
Attached deposits, grease, from 7 to 8 o'clock, 5% cross-sectional area loss, Start

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Section Inspection - 17/12/2019 - FW 10X

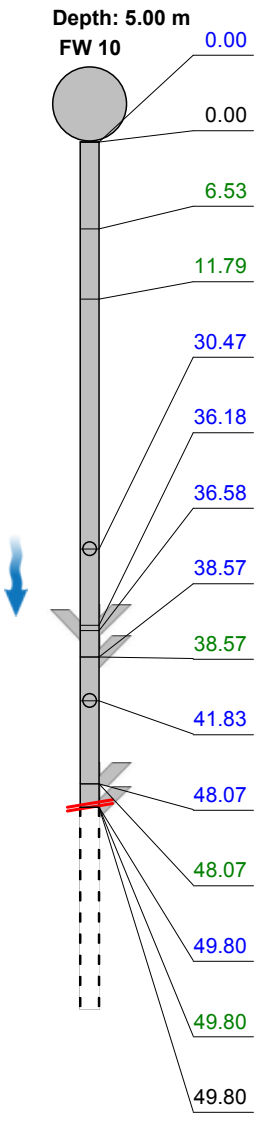
Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
12	1	17/12/19	11:21	MM12	No Rain Or Snow	No	FW 10X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FW 10
Road:	Velodrome	**Inspected Length:**	49.80 m	**Upstream Pipe Depth:**	5.000 m
Location:	Road	**Total Length:**	80.00 m	**Downstream Node:**	FW 11
Surface Type:	Unknown	**Joint Length:**	1.50 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	375 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified




MH @ 0.00 m

Scale: 1:565 Position [m]	Code	Observation	Grade
0.00	MH	Start node type, manhole, reference number : FW 10	
0.00	WL	Water level, 10% of the vertical dimension	
6.53	LR	Line deviates right: SLIGHT	
11.79	LL	Line deviates left: SLIGHT	
30.47	CN	Connection other than junction, at 12 o'clock, diameter 150mm	
36.18	CN	Connection other than junction, at 10 o'clock, diameter 150mm	
36.58	CN	Connection other than junction, at 2 o'clock, diameter 150mm	
38.57	CN	Connection other than junction, at 11 o'clock, diameter 150mm	
38.57	DEG	Attached deposits, grease, from 7 to 11 o'clock, 20% cross-sectional area loss	3
41.83	CN	Connection other than junction, at 12 o'clock, diameter 150mm: DEX	
48.07	CN	Connection other than junction, at 10 o'clock, diameter 150mm	
48.07	DEX	Settled deposits, other, 20% cross-sectional area loss: RAGS	3
49.80	CN	Connection other than junction, at 10 o'clock, diameter 150mm	
49.80	DER	Settled deposits, coarse, 40% cross-sectional area loss	4
49.80	SA	Survey abandoned: DUE TO DEE	

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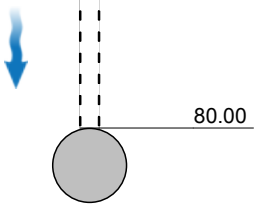
Section Inspection - 17/12/2019 - FW 10X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
12	1	17/12/19	11:21	MM12	No Rain Or Snow	No	FW 10X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Scale: 1:565	Position [m]	Code	Observation	Grade
	80.00		End of pipe	



FW 11

Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	3	5.0	0.2	9.0	4.0

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Section Pictures - 17/12/2019 - FW 10X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
12	Downstream	FW 10X	MM12	12860



1, 00:00:01, 0.00 m
Start node type, manhole, reference number : FW 10

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Section Inspection - 17/12/2019 - FW 08X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
13	1	17/12/19	11:54	MM13	No Rain Or Snow	No	FW 08X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 08
Road:	Velodrome	**Inspected Length:**	5.39 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	10.00 m	**Downstream Node:**	FW 09
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	5.000 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:87



Position [m]	Code	Observation	Grade
0.00	MH	Start node type, manhole, reference number : FW 09	
0.00	WL	Water level, 30% of the vertical dimension	
3.19	DES	Settled deposits, fine, 40% cross-sectional area loss	4
5.39	SA	Survey abandoned: DUE TO DES	
10.00		End of pipe	


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	5.0	0.9	5.0	4.0

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Section Pictures - 17/12/2019 - FW 08X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
13	Upstream	FW 08X	MM13	12860



1, 00:00:01, 0.00 m
Start node type, manhole, reference number : FW 09

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Section Inspection - 17/12/2019 - FW 12X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
14	1	17/12/19	12:22	MM14	No Rain Or Snow	No	FW 12X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FW 12
Road:	Velodrome	**Inspected Length:**	16.74 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	16.74 m	**Downstream Node:**	FW 11
Surface Type:	Unknown	**Joint Length:**	1.50 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:146

Position [m]	Code	Observation	Grade
		Depth: m	
		FW 12	
0.00	MH	Start node type, manhole, reference number : FW 12	
0.00	WL	Water level, 05% of the vertical dimension	
16.39	LL	Line deviates left	
16.74	MHF	Finish node type, manhole reference number: FW 11	
		FW 11	
		Depth: m	


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 17/12/2019 - FW 12X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
14	Downstream	FW 12X	MM14	12860



1, 00:00:01, 0.00 m
Start node type, manhole, reference number : FW 12

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Section Inspection - 17/12/2019 - FW 13X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
15	1	17/12/19	12:26	MM15	No Rain Or Snow	No	FW 13X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 13
Road:	Velodrome	**Inspected Length:**	12.81 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	13.00 m	**Downstream Node:**	FW 12
Surface Type:	Unknown	**Joint Length:**	1.50 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:114

Position [m]	Code	Observation	Grade
		Depth: m	
		FW 12	
0.00	MH	Start node type, manhole, reference number : FW 12	
0.00	WL	Water level, 05% of the vertical dimension	
12.81	REM	General remark: PATCH	
12.81	SA	Survey abandoned: DUE TO DEFORMED PATCH	
13.00		End of pipe	
		FW 13	
		Depth: m	


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 17/12/2019 - FW 13X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
15	Upstream	FW 13X	MM15	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : FW 12

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Section Inspection - 17/12/2019 - UP/SX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
16	1	17/12/19	13:04	MM16	No Rain Or Snow	No	UP/SX

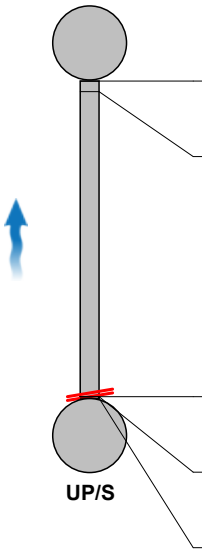
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	UP/S
Road:	Velodrome	**Inspected Length:**	2.09 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	2.10 m	**Downstream Node:**	MH 14
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	3.600 m

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:50



Position [m]	Code	Observation	Grade
0.00	MH	Start node type, manhole, reference number : MH 14	
0.07	WL	Water level, 05% of the vertical dimension	
2.09	LD	Line deviates down: SHARP	
2.09	SA	Survey abandoned: DUE TO LINE DOWN SAHRP	
2.10		End of pipe	


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 17/12/2019 - UP/SX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
16	Upstream	UP/SX	MM16	12860



1, 00:00:01, 0.00 m
Start node type, manhole, reference number : MH 14

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Section Inspection - 17/12/2019 - FW 14X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
17	1	17/12/19	13:09	MM17	No Rain Or Snow	No	FW 14X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FW 14
Road:	Velodrome	**Inspected Length:**	36.00 m	**Upstream Pipe Depth:**	3.600 m
Location:	Road	**Total Length:**	36.00 m	**Downstream Node:**	FW 12
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:314

Position [m]		Code	Observation	Grade
Depth: 3.60 m				
FW 14				
0.00		MH	Start node type, manhole, reference number : FW 14	
0.00		WL	Water level, 05% of the vertical dimension	
3.92		WL	Water level, 20% of the vertical dimension	
3.92	S01	DES	Settled deposits, fine, 10% cross-sectional area loss, Start	
11.88		LL	Line deviates left: SLIGHT	
36.00	F01	DES	Settled deposits, fine, 10% cross-sectional area loss, End	3
36.00		MHF	Finish node type, manhole reference number: FW 12	
FW 12				
Depth: m				


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	2.0	1.8	66.0	3.0

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Section Pictures - 17/12/2019 - FW 14X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
17	Downstream	FW 14X	MM17	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : FW 14

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Section Inspection - 17/12/2019 - SW 08X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
18	1	17/12/19	13:47	MM18	No Rain Or Snow	No	SW 08X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

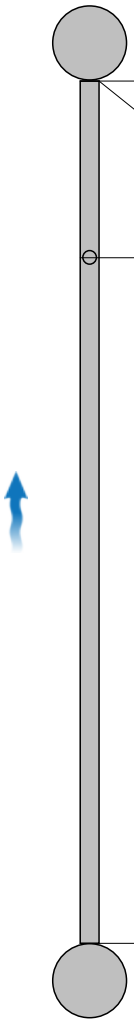
Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	SW 08
Road:	Velodrome	**Inspected Length:**	14.05 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	14.05 m	**Downstream Node:**	SW 07
Surface Type:	Unknown	**Joint Length:**	1.50 m	**Downstream Pipe Depth:**	3.700 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:123 **Position [m]** **Code** **Observation** **Grade**

Depth: 3.70 m
SW 07



Position [m]	Code	Observation
0.00	MH	Start node type, manhole, reference number : SW 07
0.00	WL	Water level, 05% of the vertical dimension
2.88	CN	Connection other than junction, at 12 o'clock, diameter 150mm
14.05	OCF	Finish node type, other special chamber reference number: SW 08: OIL INTERCEPTER

SW 08
Depth: m



MH @ 0.00 m



OCF @ 14.05 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 17/12/2019 - SW 08X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
18	Upstream	SW 08X	MM18	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : SW 07



2, 00:01:11, 14.05 m
Finish node type, other special chamber reference number: SW 08, OIL INTERCEPTER

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Section Inspection - 17/12/2019 - SW 07X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
19	1	17/12/19	14:10	MM19	No Rain Or Snow	No	SW 07X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	SW 07
Road:	Velodrome	**Inspected Length:**	27.46 m	**Upstream Pipe Depth:**	3.700 m
Location:	Road	**Total Length:**	27.46 m	**Downstream Node:**	SW 11
Surface Type:	Unknown	**Joint Length:**	2.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	600 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:239	Position [m]	Code	Observation	Grade
Depth: 3.70 m				
SW 07				
	0.00	MH	Start node type, manhole, reference number : SW 07	
	0.00	WL	Water level, 20% of the vertical dimension	
	27.46	MHF	Finish node type, manhole reference number: SW 11	
SW 11				
Depth: m				


MH @ 0.00 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 17/12/2019 - SW 07X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
19	Downstream	SW 07X	MM19	12860



1, 00:00:00, 0.00 m
Start node type, manhole, reference number : SW 07

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Section Inspection - 18/12/2019 - UP/SX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
20	1	18/12/19	10:10	MM20	No Rain Or Snow	No	UP/SX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	UP/S
Road:	Velodrome	**Inspected Length:**	6.64 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	7.00 m	**Downstream Node:**	MH 13
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:61

Position [m]		Code	Observation	Grade
			Depth: m	
			MH 13	
0.00		MH	Start node type, manhole, reference number : MH 13	
0.00		WL	Water level, 0% of the vertical dimension	
0.90	S01	DER	Settled deposits, coarse, 20% cross-sectional area loss, Start	
1.43		CXI	Connection intruding, at 2 o'clock, diameter 150mm, intrusion 10%	5
6.64	F01	DER	Settled deposits, coarse, 20% cross-sectional area loss, End	3
6.64		DER	Settled deposits, coarse, 95% cross-sectional area loss	5
6.64		SA	Survey abandoned: DUE TO DER	
7.00			End of pipe	
			UP/S	
			Depth: m	



SA @ 6.64 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	3	12.0	4.8	32.0	5.0

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Section Pictures - 18/12/2019 - UP/SX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
20	Upstream	UP/SX	MM20	12860



1, 00:00:52, 6.64 m
Survey abandoned, DUE TO DER

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Section Inspection - 19/12/2019 - SW 13X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
21	1	19/12/19	8:14	MM21	No Rain Or Snow	No	SW 13X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	SW 13
Road:	Velodrome	**Inspected Length:**	51.83 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	51.83 m	**Downstream Node:**	SW 14
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:451

Position [m]		Code	Observation	Grade
Depth: m				
SW 13				
0.00		MH	Start node type, manhole, reference number : SW 13	
0.00		WL	Water level, 05% of the vertical dimension	
3.26		CN	Connection other than junction, at 11 o'clock, diameter 150mm	
10.43		CN	Connection other than junction, at 1 o'clock, diameter 150mm	
14.10		DER	Settled deposits, coarse, 20% cross-sectional area loss	3
16.99	S01	DER	Settled deposits, coarse, 20% cross-sectional area loss, Start: PATCHES	
20.47		CN	Connection other than junction, at 1 o'clock, diameter 150mm	
23.15		CN	Connection other than junction, at 10 o'clock, diameter 150mm	
30.58		CN	Connection other than junction, at 1 o'clock, diameter 150mm	
45.24		CN	Connection other than junction, at 12 o'clock, diameter 150mm	
51.83	F01	DER	Settled deposits, coarse, 20% cross-sectional area loss, End: PATCHES	3
51.83		MHF	Finish node type, manhole reference number: SW 14	
SW 14				
Depth: m				

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	2.0	1.4	72.0	3.0

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Section Inspection - 19/12/2019 - MH 14X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
22	1	19/12/19	8:20	MM22	No Rain Or Snow	No	MH 14X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH 14
Road:	Velodrome	**Inspected Length:**	28.62 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	28.62 m	**Downstream Node:**	MH 09
Surface Type:	Unknown	**Joint Length:**	1.50 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	375 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:249

Position [m]	Code	Observation	Grade
		Depth: m	
		MH 14	
0.00	MH	Start node type, manhole, reference number : MH 14	
0.00	WL	Water level, 05% of the vertical dimension	
9.30	CN	Connection other than junction, at 11 o'clock, diameter 150mm	
18.96	CN	Connection other than junction, at 12 o'clock, diameter 100mm	
26.44	CN	Connection other than junction, at 12 o'clock, diameter 150mm	
28.62	MHF	Finish node type, manhole reference number: MH 09	
		MH 09	
		Depth: m	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 19/12/2019 - UP/S AX

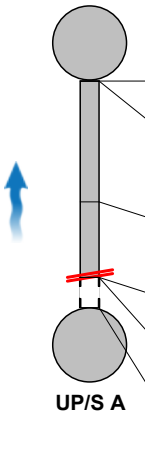
Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
23	1	19/12/19	8:33	MM23	No Rain Or Snow	No	UP/S AX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	UP/S A
Road:	Velodrome	**Inspected Length:**	1.30 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	1.50 m	**Downstream Node:**	SW 13
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified



Scale: 1:50	Position [m]	Code	Observation	Grade
	0.00	MH	Start node type, manhole, reference number : SW 13	
	0.00	WL	Water level, 05% of the vertical dimension	
	0.80	DER	Settled deposits, coarse, 20% cross-sectional area loss	3
	1.30	DER	Settled deposits, coarse, 95% cross-sectional area loss	5
	1.30	SA	Survey abandoned: DUE TO STUNT END	
	1.50		End of pipe	


DER @ 0.80 m


DER @ 1.30 m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	10.0	9.2	12.0	5.0

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Section Pictures - 19/12/2019 - UP/S AX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Upstream	UP/S AX	MM23	12860



1, 00:00:06, 0.80 m
Settled deposits, coarse, 20% cross-sectional area loss



2, 00:00:16, 1.30 m
Settled deposits, coarse, 95% cross-sectional area loss

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Section Inspection - 19/12/2019 - UP/S BX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
24	1	19/12/19	8:34	MM24	No Rain Or Snow	No	UP/S BX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	UP/S B
Road:	Velodrome	**Inspected Length:**	39.85 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	39.85 m	**Downstream Node:**	SW 13
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:347

Position [m]	Code	Observation	Grade
		Depth: m **UP/S B**	
0.00	MH	Start node type, manhole, reference number : UP/S B	
0.00	WL	Water level, 05% of the vertical dimension	
9.11	JN	Junction, at 3 o'clock, diameter 150mm	
17.09	JN	Junction, at 2 o'clock, diameter 150mm	
18.77	JN	Junction, at 2 o'clock, diameter 150mm	
20.02	JN	Junction, at 2 o'clock, diameter 150mm	
24.84	MC	Material changes, concrete	
25.23	CN	Connection other than junction, at 10 o'clock, diameter 150mm	
28.91	WL	Water level, 20% of the vertical dimension	
33.01	WL	Water level, 05% of the vertical dimension	
37.96	CN	Connection other than junction, at 2 o'clock, diameter 150mm	
39.85	LU	Line deviates up: SHARP	
39.85	OCF	Finish node type, other special chamber reference number: SW 13: INTERNAL RWP	
		SW 13 **Depth: m**	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 19/12/2019 - SW 15X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
25	1	19/12/19	9:27	MM25	No Rain Or Snow	No	SW 15X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

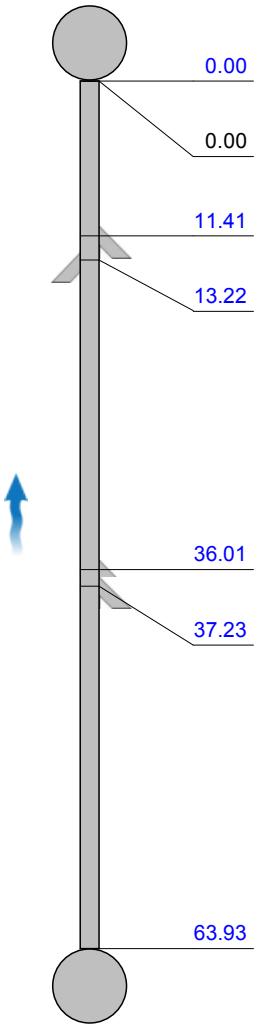
Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	SW 15
Road:	Velodrome	**Inspected Length:**	63.93 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	63.93 m	**Downstream Node:**	SW 16
Surface Type:	Unknown	**Joint Length:**	1.50 m	**Downstream Pipe Depth:**	6.200 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	375 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:556 **Position [m]** **Code** **Observation** **Grade**

Depth: 6.20 m
SW 16



Position [m]	Code	Observation
0.00	MH	Start node type, manhole, reference number : SW 16
0.00	WL	Water level, 05% of the vertical dimension
11.41	CN	Connection other than junction, at 11 o'clock, diameter 150mm
13.22	CN	Connection other than junction, at 1 o'clock, diameter 150mm
36.01	CN	Connection other than junction, at 11 o'clock, diameter 150mm
37.23	CN	Connection other than junction, at 11 o'clock, diameter 150mm
63.93	MHF	Finish node type, manhole reference number: SW 15

SW 15
Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 19/12/2019 - SW 16X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
26	1	19/12/19	9:39	MM26	No Rain Or Snow	No	SW 16X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	SW 16
Road:	Velodrome	**Inspected Length:**	69.85 m	**Upstream Pipe Depth:**	6.200 m
Location:	Other pedestrian area	**Total Length:**	69.85 m	**Downstream Node:**	SW 17
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:608

Position [m]	Code	Observation	Grade
		Depth: 6.20 m **SW 16**	
0.00	MH	Start node type, manhole, reference number : SW 16	
0.00	WL	Water level, 05% of the vertical dimension	
8.79	CN	Connection other than junction, at 12 o'clock, diameter 150mm	
13.37	CN	Connection other than junction, at 12 o'clock, diameter 150mm	
15.13	DER	Settled deposits, coarse, 20% cross-sectional area loss	3
31.24	CN	Connection other than junction, at 1 o'clock, diameter 150mm	
40.60	CN	Connection other than junction, at 12 o'clock, diameter 150mm	
53.68	DER	Settled deposits, coarse, 20% cross-sectional area loss	3
69.85	MHF	Finish node type, manhole reference number: SW 17	
		SW 17 **Depth: m**	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	2.0	0.1	4.0	3.0

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Section Inspection - 19/12/2019 - SW 17X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
27	1	19/12/19	11:20	MM27	No Rain Or Snow	No	SW 17X

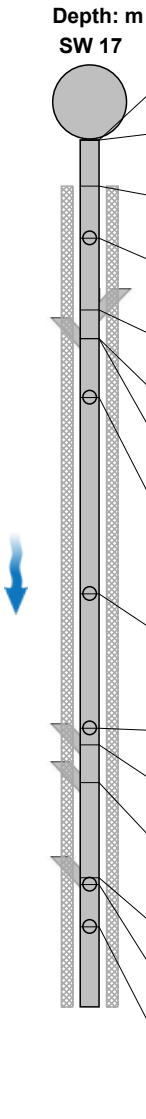
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	SW 17
Road:	Velodrome	**Inspected Length:**	85.57 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	85.57 m	**Downstream Node:**	SW 07
Surface Type:	Unknown	**Joint Length:**	1.50 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Year Constructed:		**Pipe Material:**	Concrete
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:410



Position [m]		Code	Observation	Grade
0.00		MH	Start node type, manhole, reference number : SW 17	
0.00		WL	Water level, 05% of the vertical dimension	
2.53	S01	DER	Settled deposits, coarse, 20% cross-sectional area loss, Start: PATCHES	
5.37		JN	Junction, at 12 o'clock, diameter 150mm	
9.25		JN	Junction, at 11 o'clock, diameter 150mm	
10.80		CN	Connection other than junction, at 2 o'clock, diameter 150mm	
10.81		DEX	Settled deposits, other, 10% cross-sectional area loss: OLS PATCH LINE FROM CN	3
14.00		JN	Junction, at 12 o'clock, diameter 150mm	
24.67		CN	Connection other than junction, at 12 o'clock, diameter 150mm	
31.96		CN	Connection other than junction, at 12 o'clock, diameter 150mm	
32.87		CN	Connection other than junction, at 1 o'clock, diameter 150mm	
34.93		CN	Connection other than junction, at 1 o'clock, diameter 150mm	
40.09		CN	Connection other than junction, at 1 o'clock, diameter 150mm	
40.44		CN	Connection other than junction, at 12 o'clock, diameter 150mm	
42.75		CN	Connection other than junction, at 12 o'clock, diameter 150mm	



DEX @ 10.81 m

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Section Inspection - 19/12/2019 - SW 17X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
27	1	19/12/19	11:20	MM27	No Rain Or Snow	No	SW 17X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified



Scale: 1:410	Position [m]	Code	Observation	Grade
	51.45	CN	Connection other than junction, at 11 o'clock, diameter 150mm	
	58.09	CN	Connection other than junction, at 12 o'clock, diameter 150mm	
	60.20	CN	Connection other than junction, at 12 o'clock, diameter 150mm	
	76.27	CN	Connection other than junction, at 12 o'clock, diameter 100mm	
	85.57 F01	DER	Settled deposits, coarse, 20% cross-sectional area loss, End: PATCHES	3
	85.57	REM	General remark: SYPHON IN D/S MH	
	85.57	MHF	Finish node type, manhole reference number: SW 07	

SW 07

Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	2	4.0	2.0	170.0	3.0

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Section Pictures - 19/12/2019 - SW 17X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
27	Downstream	SW 17X	MM27	12860



1, 00:01:13, 10.81 m
Settled deposits, other, 10% cross-sectional area loss, OLS PATCH LINE FROM CN

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Section Inspection - 19/12/2019 - SW 10X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
28	1	19/12/19	11:51	MM28	No Rain Or Snow	No	SW 10X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	SW 10
Road:	Velodrome	**Inspected Length:**	24.21 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	24.21 m	**Downstream Node:**	SW 09
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	375 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:211

Position [m]	Code	Observation	Grade
		Depth: m	
		SW 10	
0.00	MH	Start node type, manhole, reference number : SW 10	
0.00	WL	Water level, 05% of the vertical dimension	
7.34	JDL	Joint displaced, large	1
7.34	CN	Connection other than junction, at 11 o'clock, diameter 100mm	
14.68	CXI	Connection intruding, at 11 o'clock, diameter 100mm, intrusion 10%	5
21.19	CN	Connection other than junction, at 12 o'clock, diameter 100mm	
24.21	MHF	Finish node type, manhole reference number: SW 09	
		SW 09	
		Depth: m	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	2.0	0.1	2.0	1.0	1	10.0	0.4	10.0	5.0

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Section Inspection - 19/12/2019 - FW 22X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
29	1	19/12/19	12:07	MM29	No Rain Or Snow	No	FW 22X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FW 22
Road:	Velodrome	**Inspected Length:**	41.41 m	**Upstream Pipe Depth:**	1.380 m
Location:	Other pedestrian area	**Total Length:**	41.41 m	**Downstream Node:**	FW 23
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:361



Position [m]	Code		Observation	Grade
Depth: 1.38 m				
FW 22				
0.00		MH	Start node type, manhole, reference number : FW 22	
0.00		WL	Water level, 10% of the vertical dimension	
35.69	S01	DEG	Attached deposits, grease, from 2 to 4 o'clock, 10% cross-sectional area loss, Start	
35.69	S02	DEG	Attached deposits, grease, from 7 to 10 o'clock, 10% cross-sectional area loss, Start	
40.21	F02	DEG	Attached deposits, grease, from 7 to 10 o'clock, 10% cross-sectional area loss, End	3
40.21	F01	DEG	Attached deposits, grease, from 2 to 4 o'clock, 10% cross-sectional area loss, End	3
41.41		MHF	Finish node type, manhole reference number: FW 23: BURIED	
FW 23				
Depth: m				

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	2	4.0	0.5	20.0	3.0

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Section Inspection - 19/12/2019 - FW 23X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
30	1	19/12/19	12:19	MM30	No Rain Or Snow	No	FW 23X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FW 23
Road:	Velodrome	**Inspected Length:**	14.47 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	14.47 m	**Downstream Node:**	FW 08
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:126

Position [m]	Code	Observation	Grade
Depth: m			
FW 23			
0.00	MH	Start node type, manhole, reference number : FW 23: BURIED	
0.00	WL	Water level, 05% of the vertical dimension	
14.47	JN	Junction, at 6 o'clock, diameter 150mm: 150	
14.47	MHF	Finish node type, manhole reference number: FW 08	
FW 08			
Depth: m			

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 08X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
31	1	23/12/19	8:31	MM31	No Rain Or Snow	Yes	FW 08X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 08
Road:	Velodrome	**Inspected Length:**	4.07 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	4.07 m	**Downstream Node:**	FW 09
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments: RE SURVEYED AGTER JETTED
Recommendations: None specified

Scale: 1:50

Position [m]	Code	Observation	Grade
		Depth: m	
		FW 09	
0.00	MH	Start node type, manhole, reference number : FW 09	
0.00	WL	Water level, 10% of the vertical dimension	
0.90	DEG	Attached deposits, grease, from 7 to 5 o'clock, 5% cross-sectional area loss: LESS THAN 5% UNABLE TO REMOVE WITH HPWJ	2
1.60	FL	Fracture, longitudinal, at 3 o'clock	3
1.60	FL	Fracture, longitudinal, at 7 o'clock	3
4.07	MHF	Finish node type, manhole reference number: FW 08	
		FW 08	
		Depth: m	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
2	80.0	19.7	80.0	3.0	1	1.0	0.2	1.0	2.0

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Section Inspection - 23/12/2019 - FW 07X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
32	1	23/12/19	8:32	MM32	No Rain Or Snow	Yes	FW 07X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 07
Road:	Velodrome	**Inspected Length:**	40.21 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	40.21 m	**Downstream Node:**	FW 08
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:350

Position [m]	Code	Observation	Grade
		Depth: m **FW 08**	
0.00	MH	Start node type, manhole, reference number : FW 08	
0.00	WL	Water level, 05% of the vertical dimension	
40.21	MHF	Finish node type, manhole reference number: FW 07: INTERNAL MH	
		FW 07 **Depth: m**	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22AX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
33	1	23/12/19	9:29	MM33	No Rain Or Snow	Yes	FW 22AX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22A
Road:	Velodrome	**Inspected Length:**	12.32 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	12.32 m	**Downstream Node:**	FW 22
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:108

Position [m]	Code	Observation	Grade
		Depth: m	
		FW 22	
0.00	MH	Start node type, manhole, reference number : FW 22	
0.00	WL	Water level, 40% of the vertical dimension	
1.89	WL	Water level, 05% of the vertical dimension	
12.32	MHF	Finish node type, manhole reference number: FW 22A	
		FW 22A	
		Depth: m	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22BX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
34	1	23/12/19	9:32	MM34	No Rain Or Snow	Yes	FW 22BX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22B
Road:	Velodrome	**Inspected Length:**	8.45 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	8.45 m	**Downstream Node:**	FW 22A
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:74	Position [m]	Code	Observation	Grade
Depth: m				
FW 22A				
	0.00	MH	Start node type, manhole, reference number : FW 22A	
	0.00	WL	Water level, 10% of the vertical dimension	
	8.45	MHF	Finish node type, manhole reference number: FW 22B	
FW 22B				
Depth: m				

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22CX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
35	1	23/12/19	9:34	MM35	No Rain Or Snow	Yes	FW 22CX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22C
Road:	Velodrome	**Inspected Length:**	8.17 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	8.17 m	**Downstream Node:**	FW 22B
Surface Type:	Unknown	**Joint Length:**	1.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:72	Position [m]		Code	Observation	Grade
Depth: m					
FW 22B					
	0.00		MH	Start node type, manhole, reference number : FW 22B	
	0.00		WL	Water level, 10% of the vertical dimension	
	4.96		WL	Water level, 20% of the vertical dimension	
	5.50	S01	CUW	Loss of vision, camera under water, Start	
	8.17	F01	CUW	Loss of vision, camera under water, End	
	8.17		MHF	Finish node type, manhole reference number: FW 22C	
FW 22C					
Depth: m					

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22DX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
36	1	23/12/19	9:36	MM36	No Rain Or Snow	Yes	FW 22DX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22D
Road:	Velodrome	**Inspected Length:**	3.62 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	3.62 m	**Downstream Node:**	FW 22C
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:50	Position [m]	Code	Observation	Grade
Depth: m				
FW 22C				
	0.00	MH	Start node type, manhole, reference number : FW 22C	
	0.00	WL	Water level, 05% of the vertical dimension	
	3.62	MHF	Finish node type, manhole reference number: FW 22D	
FW 22D				
Depth: m				

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22EX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
37	1	23/12/19	9:37	MM37	No Rain Or Snow	Yes	FW 22EX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22E
Road:	Velodrome	**Inspected Length:**	10.50 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	10.50 m	**Downstream Node:**	FW 22D
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:92	Position [m]	Code	Observation	Grade
Depth: m FW 22D				
	0.00	MH	Start node type, manhole, reference number : FW 22D	
	0.00	WL	Water level, 05% of the vertical dimension	
	7.12	JN	Junction, at 1 o'clock, diameter 100mm	
	10.50	MHF	Finish node type, manhole reference number: FW 22E	
FW 22E Depth: m				

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22FX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
38	1	23/12/19	9:39	MM38	No Rain Or Snow	Yes	FW 22FX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22F
Road:	Velodrome	**Inspected Length:**	7.63 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	7.63 m	**Downstream Node:**	FW 22E
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:67	Position [m]	Code	Observation	Grade
Depth: m FW 22E				
	0.00	MH	Start node type, manhole, reference number : FW 22E	
	0.00	WL	Water level, 05% of the vertical dimension	
	4.43	JN	Junction, at 6 o'clock, diameter 150mm	
	7.63	MHF	Finish node type, manhole reference number: FW 22F	
FW 22F Depth: m				

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22GX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
39	1	23/12/19	9:41	MM39	No Rain Or Snow	Yes	FW 22GX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22G
Road:	Velodrome	**Inspected Length:**	15.99 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	15.99 m	**Downstream Node:**	FW 22F
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:140

Position [m]		Code	Observation	Grade
Depth: m				
FW 22F				
0.00		MH	Start node type, manhole, reference number : FW 22F	
0.00		WL	Water level, 10% of the vertical dimension	
4.30	S01	CUW	Loss of vision, camera under water, Start	
15.99	F01	CUW	Loss of vision, camera under water, End	
15.99		MHF	Finish node type, manhole reference number: FW 22G	
FW 22G				
Depth: m				

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22HX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
40	1	23/12/19	9:44	MM40	No Rain Or Snow	Yes	FW 22HX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22H
Road:	Velodrome	**Inspected Length:**	7.06 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	7.06 m	**Downstream Node:**	FW 22G
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:62

Position [m]	Code	Observation	Grade
		Depth: m	
		FW 22G	
0.00	MH	Start node type, manhole, reference number : FW 22G	
0.00	WL	Water level, 10% of the vertical dimension	
7.06	MHF	Finish node type, manhole reference number: FW 22H	
		FW 22H	
		Depth: m	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22IX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
41	1	23/12/19	9:46	MM41	No Rain Or Snow	Yes	FW 22IX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22I
Road:	Velodrome	**Inspected Length:**	3.36 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	3.36 m	**Downstream Node:**	FW 22H
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:50	Position [m]	Code	Observation	Grade
Depth: m FW 22H				
	0.00	MH	Start node type, manhole, reference number : FW 22H	
	0.00	WL	Water level, 10% of the vertical dimension	
	3.36	MHF	Finish node type, manhole reference number: FW 22I	
FW 22I Depth: m				

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22JX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
42	1	23/12/19	9:47	MM42	No Rain Or Snow	Yes	FW 22JX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22J
Road:	Velodrome	**Inspected Length:**	7.03 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	7.03 m	**Downstream Node:**	FW 22I
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:62	Position [m]	Code	Observation	Grade
Depth: m FW 22I				
	0.00	MH	Start node type, manhole, reference number : FW 22I	
	0.00	WL	Water level, 10% of the vertical dimension	
	7.03	MHF	Finish node type, manhole reference number: FW 22J	
FW 22J Depth: m				

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22KX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
43	1	23/12/19	9:49	MM44	No Rain Or Snow	Yes	FW 22KX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22K
Road:	Velodrome	**Inspected Length:**	7.08 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	7.08 m	**Downstream Node:**	FW 22J
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:62

Position [m]	Code	Observation	Grade
		Depth: m	
		FW 22J	
0.00	MH	Start node type, manhole, reference number : FW 22J	
0.00	WL	Water level, 05% of the vertical dimension	
7.08	MHF	Finish node type, manhole reference number: FW 22K	
		FW 22K	
		Depth: m	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Inspection - 23/12/2019 - FW 22LX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
44	1	23/12/19	9:50	MM01	No Rain Or Snow	Yes	FW 22LX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MM	RJ16 HKB	Mini Cam	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FW 22L
Road:	Velodrome	**Inspected Length:**	9.86 m	**Upstream Pipe Depth:**	
Location:	Other pedestrian area	**Total Length:**	9.86 m	**Downstream Node:**	FW 22K
Surface Type:	Unknown	**Joint Length:**	3.00 m	**Downstream Pipe Depth:**	

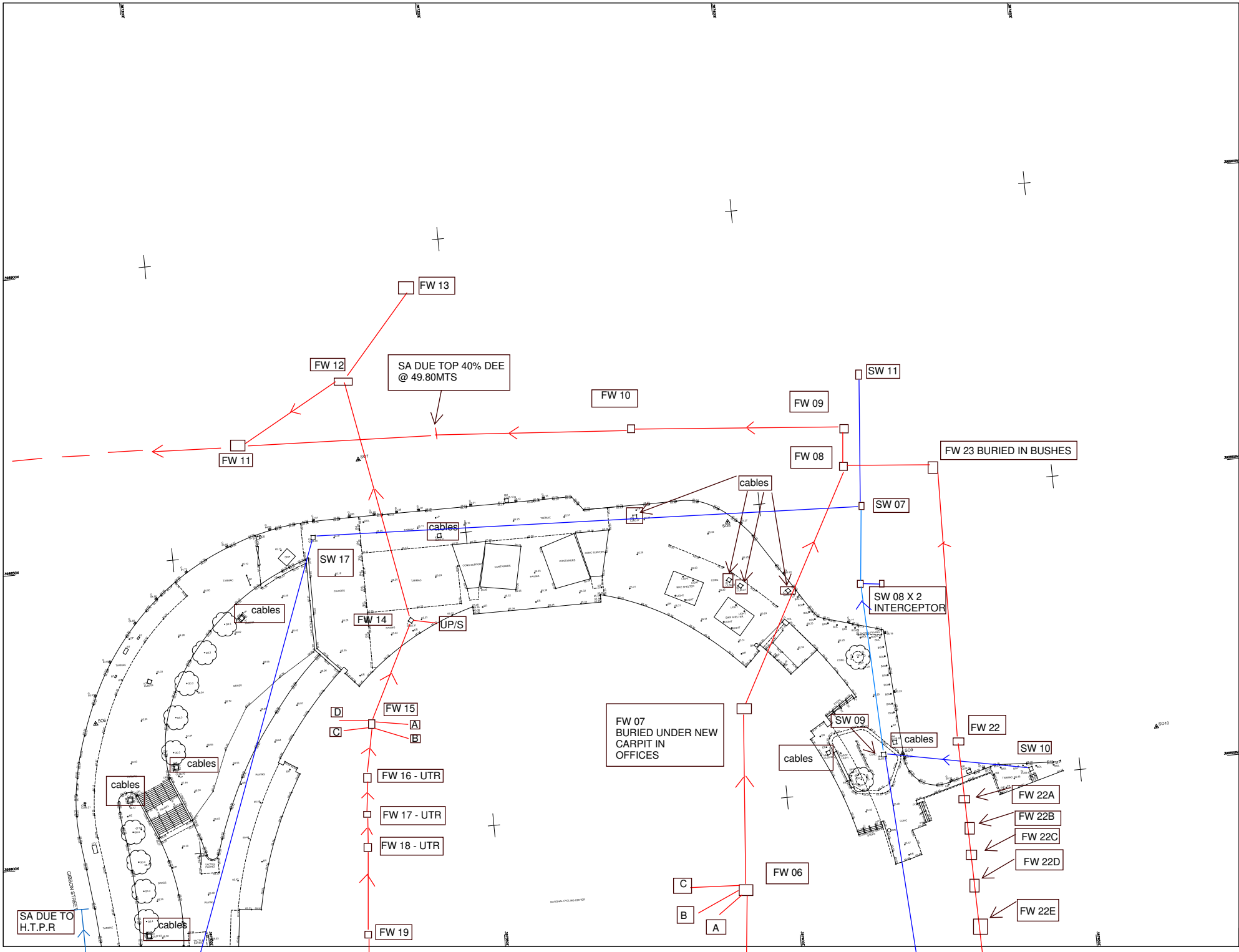
Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations: None specified

Scale: 1:86

Position [m]	Code	Observation	Grade
		Depth: m	
		FW 22K	
0.00	MH	Start node type, manhole, reference number : FW 22K	
0.00	WL	Water level, 05% of the vertical dimension	
9.86	MHF	Finish node type, manhole reference number: FW 22L	
		FW 22L	
		Depth: m	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0



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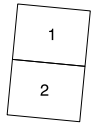
Survey Control Markers established for Mapping purposes only and should not be used for Construction without the written approval of Survey Operations Ltd.

SURVEY STATIONS

Name	Easting	Northing	Height
SO1	387442.28	398885.87	65.66
SO2	387406.62	398708.64	65.39
SO3	387387.43	398624.84	65.28
SO4	387359.13	398703.06	65.68
SO5	387280.06	398763.95	66.13
SO6	387181.34	398823.54	65.41
SO7	387284.97	398847.53	65.46
SO8	387394.94	398847.51	65.46
SO9	387403.26	398905.84	65.44
SO10	387463.96	398825.95	66.48
SO11	387424.82	398825.95	66.48
SO12	387254.42	398716.77	66.44

STANDARD REFERENCE & ABBREVIATIONS

Sheet Layout



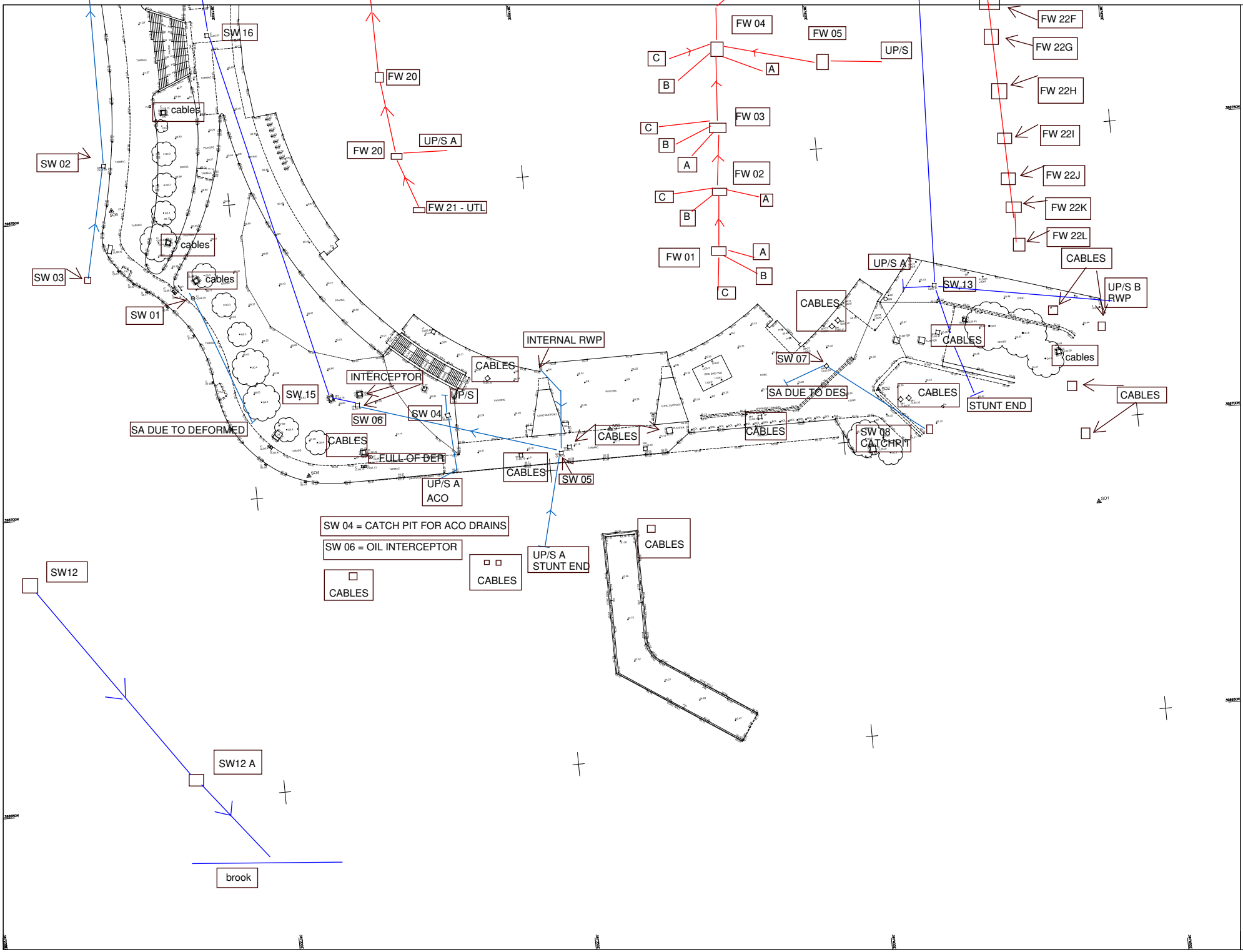
Survey OPERATIONS
Smith Street, Skelmersdale, Lancs. WN8 8LN
Tel: 01695 725662 Fax: 01695 51816
Email: mail@survops.co.uk — www.survops.co.uk

Client
ISG Construction Limited

Drawing Title
Topographical Survey of Land at:
Velodrome
Manchester
Sheet 1 of 2

Scale(s)	1:200	Surveyor	MP
Date	Dec 19	Drawn	OKS
Job Number	19G171	Checked	TP

Sheet Size & Drg Number & Revision
A0 19G171/001



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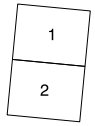
SURVEY STATIONS

Name	Easting	Northing	Height
SW1	387442.28	398685.87	68.68
SW2	387406.62	398708.64	68.39
SW3	387384.94	398697.53	68.44
SW4	387359.13	398703.66	68.28
SW5	387280.06	398703.95	68.13
SW6	387281.34	398653.55	68.14
SW7	387384.94	398647.53	68.49
SW8	387403.26	398650.63	68.64
SW9	387403.96	398625.95	68.48
SW10	387404.62	398600.96	68.47
SW12	387354.42	398718.77	68.68

STANDARD REFERENCE & ABBREVIATIONS

Sheet Layout



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Tel: 01695 725662 Fax: 01695 51816
Email: mail@survops.co.uk — www.survops.co.uk

Client: ISG Construction Limited

Drawing Title: Topographical Survey of Land at: Velodrome Manchester Sheet 2 of 2

Scale(s)	1:200	Surveyor	MP
Date	Dec 19	Drawn	OKS
Job Number	19G171	Checked	TP

Sheet Size & Drg Number & Revision: A0 19G171/002

APPENDIX C – RIDGE DESIGN DRAWINGS

GENERAL NOTES

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.

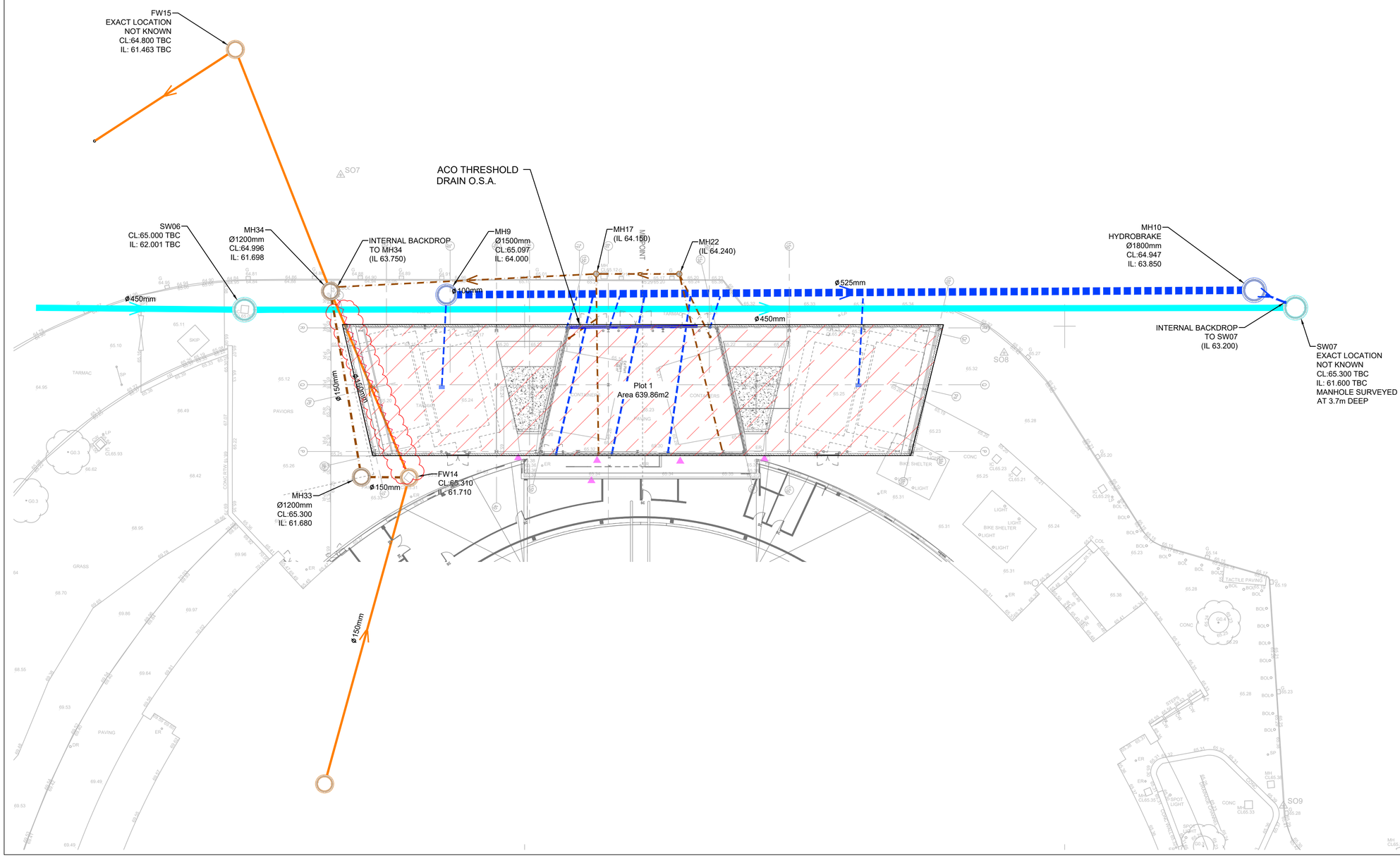
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

3. DO NOT SCALE FROM THIS DRAWING, WORK TO DIMENSIONS OR CO-ORDINATES PROVIDED. ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE NOTED. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS, SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.

4. INFORMATION CONTAINED ON THIS DRAWING IS SCHEME DESIGN ONLY AND REQUIRES FURTHER DETAILED DESIGN AND CO-ORDINATION WITH THE CONTRACTOR, DESIGN TEAM AND APPROPRIATE SUB-CONTRACTORS.

KEY

- EXISTING FOUL DRAINAGE
- PROPOSED FOUL DRAINAGE
- EXISTING SURFACE WATER
- PROPOSED SURFACE WATER
- PROPOSED SLOT DRAIN AT DOOR THRESHOLD O.S.A.



No	DATE	DRAWN	REV'D ENG.	AMENDMENT
P1	16.08.21	PB	PB	PRELIMINARY ISSUE

STATUS	PURPOSE OF ISSUE
S2	FOR INFORMATION

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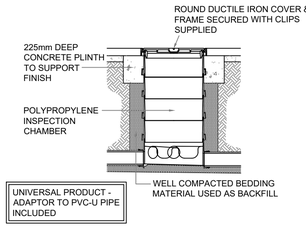
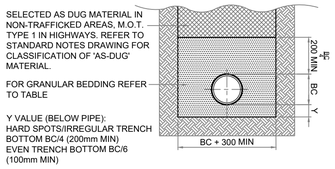
RIDGE

CLIENT	KIER GROUP LTD
PROJECT	NATIONAL CYCLING CENTRE PLANT ROOM
DRAFTER	PB
ENGINEER	PB
TITLE	PROPOSED DRAINAGE GENERAL ARRANGEMENT FOR PLANNING
PROJECT REFERENCE:	
SCALE	1:200
SHEET	A1
DRAWING No	VEL-RDG-00-ZZ-DRC-0110
REV	P1



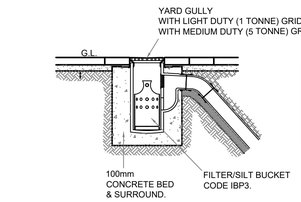
POLYPROPYLENE INSPECTION CHAMBER INSTALLATION DETAIL



PIPE BEDDING CLASS S (BEDDING FACTOR 2.5)

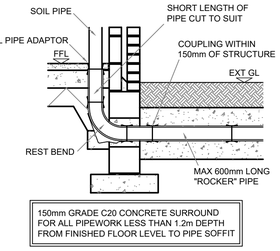
BSEN 13242, COARSE AGGREGATE (CLAUSE 4.3.2)		
CATEGORY FOR GENERAL GRADING REQUIREMENTS		
CATEGORY FOR TOLERANCES AT MID-SIZE SIEVES		
CATEGORY OF MAXIMUM VALUES OF FINES CONTENTS		
NOMINAL PIPE DIAMETER (mm)	AGGREGATE SIZE	
	GRADED SIZE	SINGLE
NOT EXCEEDING 140	-	4/10
EXCEEDING 140 BUT NOT EXCEEDING 400	2/14 or 4/20	4/10, 6/10 or 10/20
EXCEEDING 400	2/14, 4/20 or 4/40	4/10, 6/14, 10/20 or 20/40

TABLE 5/3 BSEN 13242 COURSE AGGREGATE TO CLAUSE 4.3.2 FOR PIPE BEDDING, HAUNCHING AND SURROUNDING MATERIAL

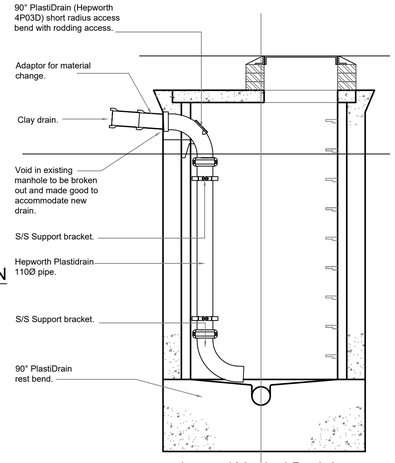


YARD GULLY

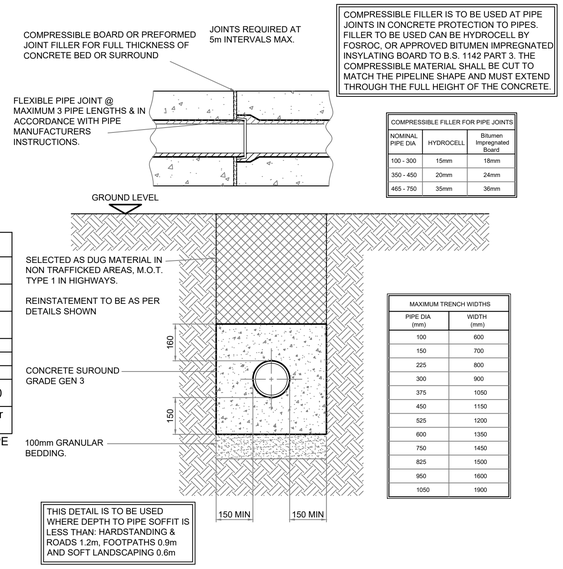
(SHOWN AS HEPWORTH PRODUCT BUT OTHER SIMILAR CAN BE USED)



SOIL AND VENT PIPE CONNECTION



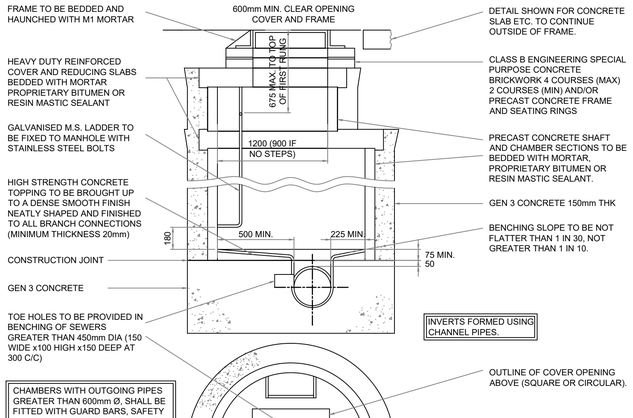
Internal Vertical Backdrop



COMPRESSIBLE FILLER FOR PIPE JOINTS		
NOMINAL PIPE DIA	HYDROCELL	Bitumen Impregnated Board
100 - 300	15mm	18mm
350 - 450	20mm	24mm
465 - 750	35mm	36mm

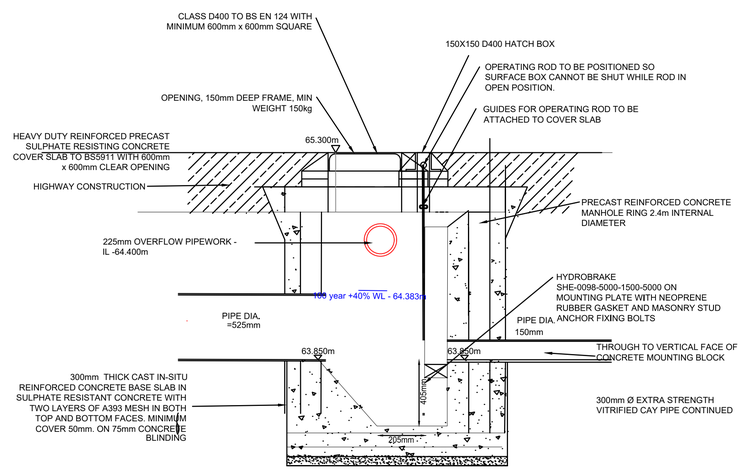
MAXIMUM TRENCH WIDTHS	
PIPE DIA (mm)	WIDTH (mm)
100	600
150	700
225	800
300	900
375	1050
450	1150
525	1200
600	1350
750	1450
825	1500
950	1600
1050	1900

CLASS 'Z' PIPE BEDDING



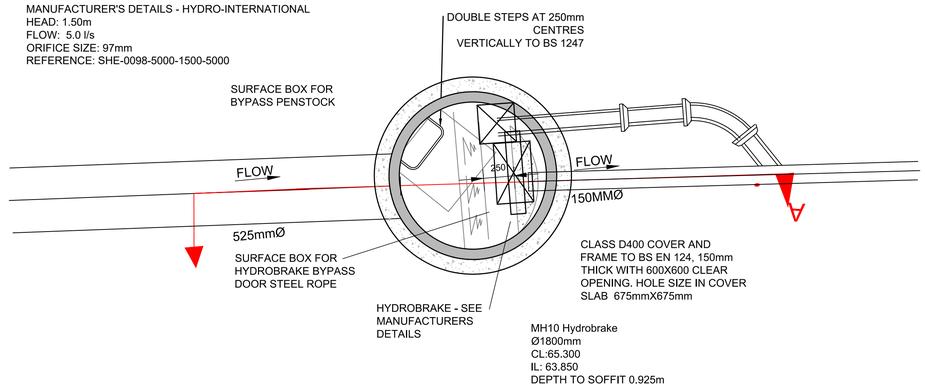
DIA. OF LARGEST PIPE IN MH (mm)	INTERNAL DIA (mm)
< 375mm	1200
375 - 700	1500
750 - 900	1800
> 900 (ADOPTED)	LARGER OF 1800 OR DN + 900
> 900 (PRIVATE)	LARGER OF 1800 OR DN + 775

MANHOLE TYPE A (DEPTH TO COVER LEVEL TO PIPE SOFFIT 3.0m to 6.0m)



HYDROBRAKE MANHOLE SECTION A-A

MANUFACTURER'S DETAILS - HYDRO-INTERNATIONAL
HEAD: 1.50m
FLOW: 5.0 l/s
ORIFICE SIZE: 97mm
REFERENCE: SHE-0098-5000-1500-5000



1:20 DETAIL HYDROBRAKE MANHOLE PLAN AND SECTION

GENERAL NOTES

1. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, ENGINEERS, ARCHITECTS & SERVICES DRAWINGS, INCLUDING APPROVED BUILDERS WORK DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS OR OTHER DRAWINGS.

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No	DATE	DRAWN	REV'D ENG.	AMENDMENT
P1	16.08.21	PB	PB	PRELIMINARY ISSUE

STATUS	PURPOSE OF ISSUE
S2	FOR INFORMATION

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RIDGE

CLIENT: KIER GROUP LTD

PROJECT: NATIONAL CYCLING CENTRE PLANT ROOM

DRAFTER	ENGINEER
PB	PB

TITLE: PROPOSED DRAINAGE DETAILS FOR PLANNING

PROJECT REFERENCE:

SCALE	SHEET	DRAWING No	REV
1:20	A1	VEL-RDG-00-ZZ-DRC-0111	P1

GENERAL NOTES

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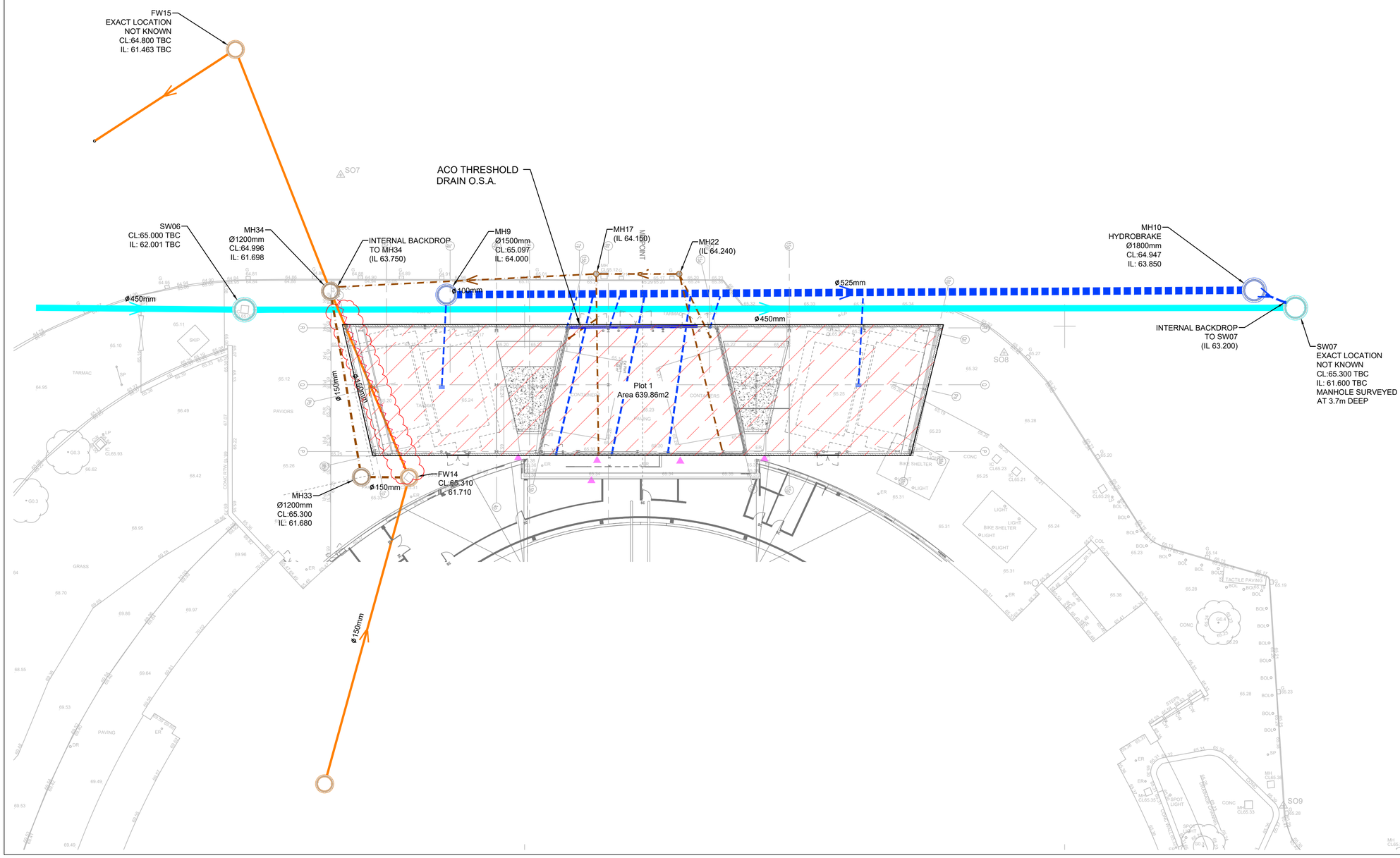
KEY

- EXISTING FOUL DRAINAGE
- PROPOSED FOUL DRAINAGE
- EXISTING SURFACE WATER
- PROPOSED SURFACE WATER
- PROPOSED SLOT DRAIN AT DOOR THRESHOLD O.S.A.



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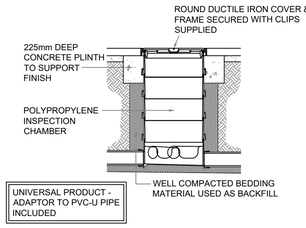
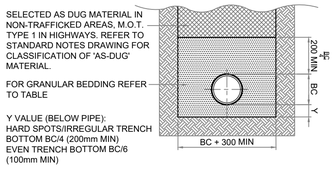
RIDGE

CLIENT	KIER GROUP LTD
PROJECT	NATIONAL CYCLING CENTRE PLANT ROOM
DRAFTER	PB
ENGINEER	PB
TITLE	PROPOSED DRAINAGE GENERAL ARRANGEMENT FOR PLANNING
PROJECT REFERENCE:	
SCALE	1:200
SHEET	A1
DRAWING No	VEL-RDG-00-ZZ-DRC-0110
REV	P1



POLYPROPYLENE INSPECTION CHAMBER INSTALLATION DETAIL



PIPE BEDDING CLASS S (BEDDING FACTOR 2.5)

BSEN 13242, COARSE AGGREGATE (CLAUSE 4.3.2)		
CATEGORY FOR GENERAL GRADING REQUIREMENTS		
CATEGORY FOR TOLERANCES AT MID-SIZE SIEVES		
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	GRADED SIZE	SINGLE
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EXCEEDING 140 BUT NOT EXCEEDING 400	2/14 or 4/20	4/10, 6/10 or 10/20
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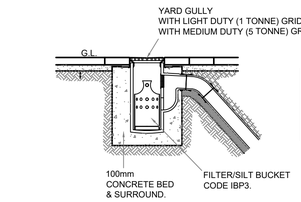

YARD GULLY

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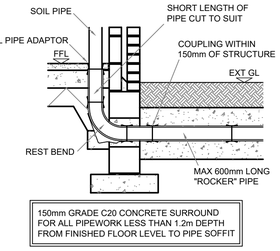
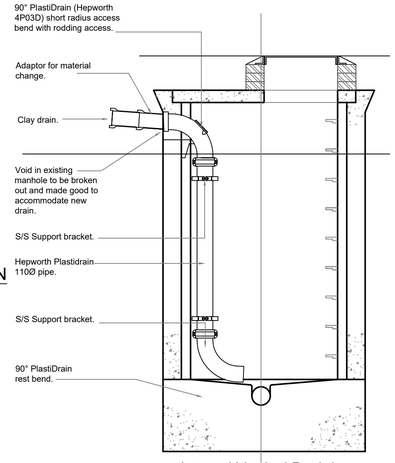
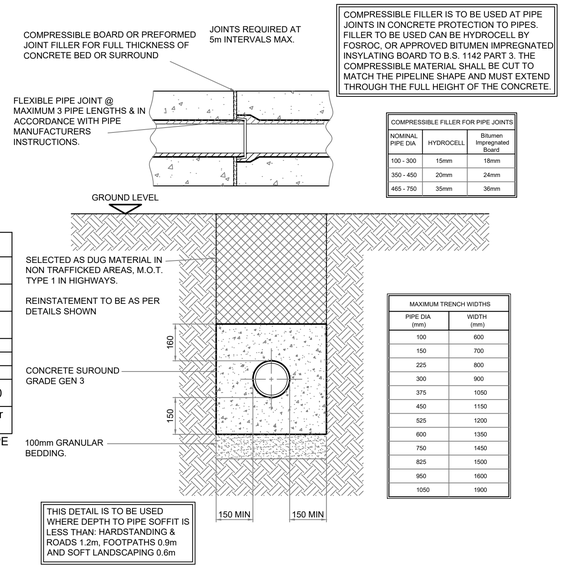


SOIL AND VENT PIPE CONNECTION



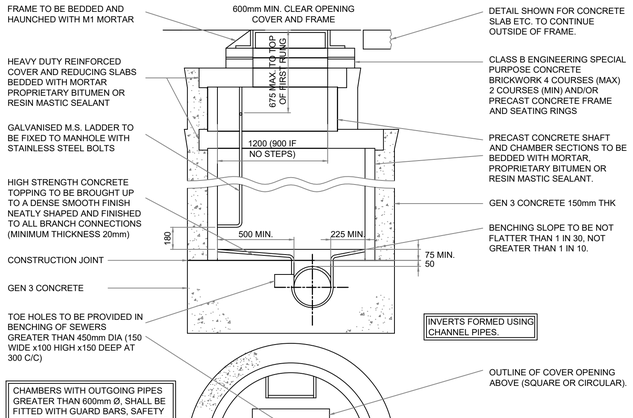
Internal Vertical Backdrop



COMPRESSIBLE FILLER FOR PIPE JOINTS		
NOMINAL PIPE DIA	HYDROCELL	Bitumen Impregnated Board
100 - 300	15mm	18mm
350 - 450	20mm	24mm
465 - 750	35mm	36mm

MAXIMUM TRENCH WIDTHS	
PIPE DIA (mm)	WIDTH (mm)
100	600
150	700
225	800
300	900
375	1050
450	1150
525	1200
600	1350
750	1450
825	1500
950	1600
1050	1900

CLASS 'Z' PIPE BEDDING



DIA. OF LARGEST PIPE IN MH (mm)	INTERNAL DIA (mm)
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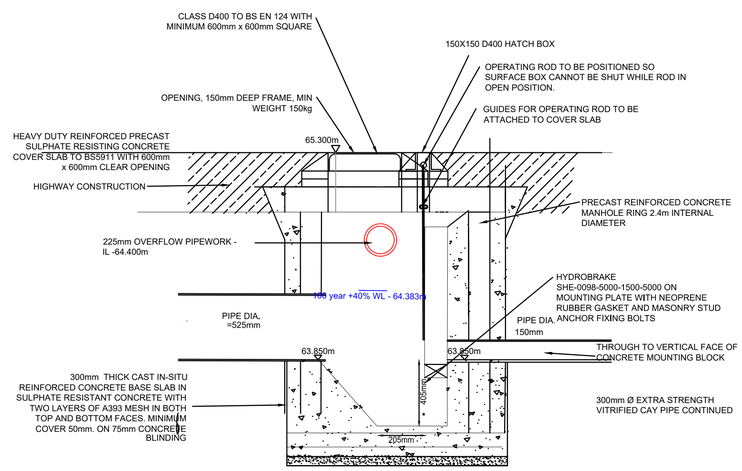
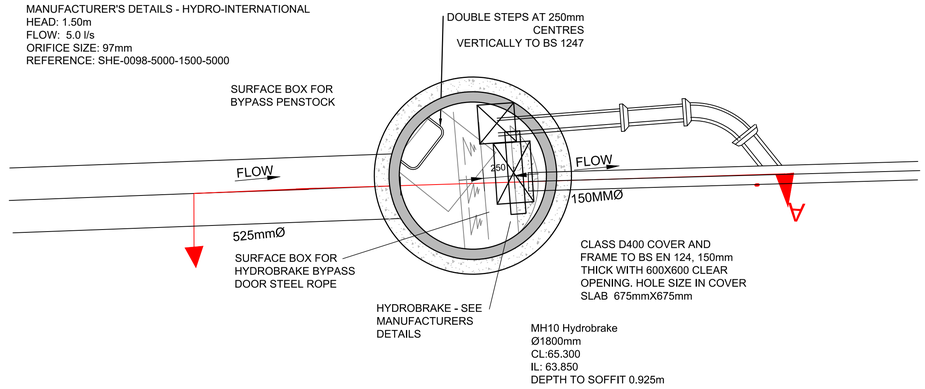
375 - 700	1500
750 - 900	1800
> 900 (ADOPTED)	LARGER OF 1800 OR DN + 900
> 900 (PRIVATE)	LARGER OF 1800 OR DN + 775

MANHOLE TYPE A (DEPTH TO COVER LEVEL TO PIPE SOFFIT 3.0m to 6.0m)



HYDROBRAKE MANHOLE SECTION A-A

MANUFACTURER'S DETAILS - HYDRO-INTERNATIONAL
HEAD: 1.50m
FLOW: 5.0 l/s
ORIFICE SIZE: 97mm
REFERENCE: SHE-0098-5000-1500-5000



1:20 DETAIL HYDROBRAKE MANHOLE PLAN AND SECTION

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RIDGE

CLIENT: KIER GROUP LTD

PROJECT: NATIONAL CYCLING CENTRE PLANT ROOM

DRAFTER	ENGINEER
PB	PB

TITLE: PROPOSED DRAINAGE DETAILS FOR PLANNING

PROJECT REFERENCE:

SCALE	SHEET	DRAWING No	REV
1:20	A1	VEL-RDG-00-ZZ-DRC-0111	P1

APPENDIX D –SURFACE WATER ATTENUATION CALCULATIONS

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	75.000	0.150	500.0	0.065	10.00	0.0	0.600	o	450	Pipe/Conduit	
1.001	5.000	0.030	166.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	31.15	11.39	64.000	0.065	0.0	0.0	0.0	0.90	143.5	5.5
1.001	30.99	11.49	63.850	0.065	0.0	0.0	0.0	0.78	13.7	5.5

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
1	65.100	1.100	Open Manhole	2100	1.000	64.000	450				
2	65.300	1.450	Open Manhole	2100	1.001	63.850	150	1.000	63.850	450	
	65.300	1.480	Open Manhole	0		OUTFALL		1.001	63.820	150	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	450	1	65.100	64.000	0.650	Open Manhole	2100
1.001	o	150	2	65.300	63.850	1.300	Open Manhole	2100

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	75.000	500.0	2	65.300	63.850	1.000	Open Manhole	2100
1.001	5.000	166.7		65.300	63.820	1.330	Open Manhole	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.001		65.300	63.820	0.000	0	0

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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	18.000	Cv (Summer)	0.750
Return Period (years)	1	Ratio R	0.357	Cv (Winter)	0.840
Region	England and Wales	Profile Type	Summer	Storm Duration (mins)	30

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: 2, DS/PN: 1.001, Volume (m³): 16.6

Unit Reference	MD-SHE-0098-5000-1500-5000	Sump Available	Yes
Design Head (m)	1.500	Diameter (mm)	98
Design Flow (l/s)	5.0	Invert Level (m)	63.850
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	150
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	5.0	Kick-Flo®	0.878	3.9
Flush-Flo™	0.431	4.9	Mean Flow over Head Range	-	4.3

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.2	0.600	4.8	1.600	5.1	2.600	6.5	5.000	8.8	7.500	10.7
0.200	4.4	0.800	4.3	1.800	5.4	3.000	6.9	5.500	9.2	8.000	11.0
0.300	4.8	1.000	4.1	2.000	5.7	3.500	7.4	6.000	9.6	8.500	11.3
0.400	4.9	1.200	4.5	2.200	6.0	4.000	7.9	6.500	10.0	9.000	11.6
0.500	4.9	1.400	4.8	2.400	6.2	4.500	8.4	7.000	10.3	9.500	11.9

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Manhole Headloss Coeff (Global)	0.500	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Foul Sewage per hectare (l/s)	0.000	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Additional Flow - % of Total Flow	0.000	Flow per Person per Day (l/per/day)	0.000

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm)	18.000	Cv (Summer)	0.750
Region	England and Wales	Ratio R	0.356	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep	2.5 Second Increment (Extended)	Inertia Status	ON
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	15 Winter	1	+0%					64.059	-0.391	0.000	0.04		5.2	OK	
1.001	2	30 Winter	1	+0%	30/15 Summer				63.971	-0.029	0.000	0.34		3.6	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Manhole Headloss Coeff (Global)	0.500	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Foul Sewage per hectare (l/s)	0.000	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Additional Flow - % of Total Flow	0.000	Flow per Person per Day (l/per/day)	0.000

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm)	18.000	Cv (Summer)	0.750
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Analysis Timestep	2.5 Second Increment (Extended)	Inertia Status	ON
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Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	1	30 Winter	30	+0%					64.121	-0.329	0.000	0.09		12.1	OK
1.001	2	30 Winter	30	+0%	30/15 Summer				64.116	0.116	0.000	0.43		4.7	SURCHARGED

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	1	
1.001	2	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Manhole Headloss Coeff (Global)	0.500	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Foul Sewage per hectare (l/s)	0.000	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Additional Flow - % of Total Flow	0.000	Flow per Person per Day (l/per/day)	0.000

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm)	18.000	Cv (Summer)	0.750
Region	England and Wales	Ratio R	0.356	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep	2.5 Second Increment (Extended)	Inertia Status	ON
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	1	60 Winter	100	+40%					64.383	-0.067	0.000	0.12		16.4	OK
1.001	2	60 Winter	100	+40%	30/15 Summer				64.378	0.378	0.000	0.45		4.9	SURCHARGED

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	1	
1.001	2	

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