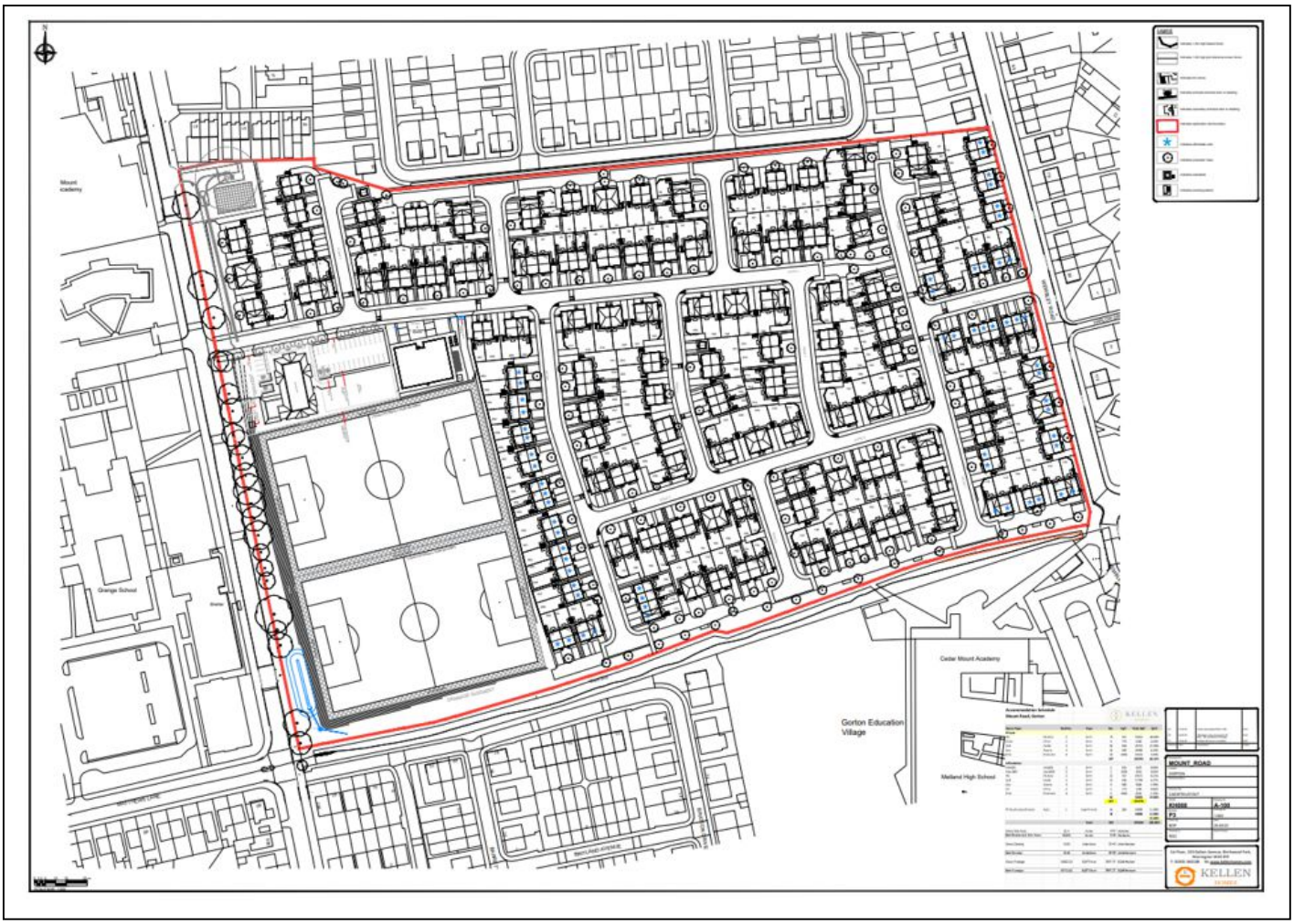


Flood Risk Assessment & Drainage Strategy for a Proposed Development of the Land at Mount Road, Gorton, Manchester, M18 7SU. Rev. 7

Contract Ref: FD056

Kellen Homes and Greater Manchester Youth Federation (GMYF)

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Quality Assurance Record

Contributors for Townsend Water Engineering Limited:

Name	Role
Charles Townsend	Project Manager
Alice Osborne	Assistant Flood Risk Analyst

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Limitation of Liability and Use

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1. INTRODUCTION

1.1 Purpose of this Report

This Flood Risk Assessment (FRA) and Drainage Strategy has been prepared by Townsend Water Engineering on behalf of Kellen Homes and the Greater Manchester Youth Federation ("GMYF") and is submitted in support of an application for full planning permission at Land at Mount Road, Gorton ("the site"). The description of the development is as follows:

Full planning application proposing the erection of a youth, sports and community hub (Use Class E (d)(g)), F2(b)), 2 no. football pitches combined netball and basketball court, cricket strip (Use Class F2 (c)), a two storey apartment building comprising 36no. apartments for young person's accommodation (Use Class C3) and 267 no dwelling houses (Use Class C3a), with associated landscaping, public realm, ecological mitigation, refuse storage, drainage car parking and other associated works, with access from Wembley Road and Mount Road.

The application site is owned by GMYF in its entirety. GMYF is a charity, originating from the mid-1800s, who work with a wide variety of voluntary youth groups and projects throughout the most disadvantaged communities of Greater Manchester. GMYF's aim is to provide as many opportunities as possible for young people to grow and be the best that they can be, helping them to move beyond their boundaries. In simple terms, it is about getting young people off the streets, into clubs and doing something positive with their time.

The application site was previously in use as football pitches but has been vacant and underutilised since 2019 with no public access. GMYF selected Kellen Homes as their developer partner and together, with their professional teams, they have developed proposals for the site which will secure its future as a youth, community and sports hub whilst also providing much needed housing in Gorton.

The proposed development is described fully in the Design and Access Statement prepared by Gillespies and presented on the application drawings. The application proposals have been developed in consultation with Manchester City Council ("MCC") Officers and other key stakeholders.

The report is based on the available flood risk information for the site detailed in Section 1.2 and prepared in accordance with the planning policy requirements set out in Section 1.3. The scope of the FRA is consistent with the 'Site Specific Flood Risk Assessment Checklist' from the National Planning Policy Framework (NPPF) and accompanying Planning Practice Guidance (PPG):

https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessment-checklist-section

1.2 Sources of Information and Consultation

This Report has been informed by:

- Existing Site Plan drawings and respective topographic plan delivered by *Kellen Homes*;
- BGS website http://mapapps.bgs.ac.uk/geologyofbritain/home.html?mode=boreholes;
- Defra Magic Map https://magic.defra.gov.uk/magicmap.aspx;
- Cranfield University Soil Mapping http://www.landis.org.uk/soilscapes/;

- The EA online flood maps;
- Flood Zone Map https://flood-map-for-planning.service.gov.uk/; and
- Flood Risk Map: https://flood-warning-information.service.gov.uk/long-term-flood-risk/.

1.3 Policy Context

This report has been prepared in accordance with the relevant national, regional and local planning policy and statutory guidance as follows:

- National policy contained within the National Planning Policy Framework (NPPF) dated July 2021, issued by former Ministry of Housing, Communities and Local Government with reference to Section 14 'Meeting the challenge of climate change, flooding and coastal change';
- The NPPF Planning Practice Guidance (PPG) released in March 2014 ('Flood Risk and Coastal Change' section) and updated in February 2016 to incorporate the EA 'Flood Risk Assessments: Climate Change Allowances' guidance;
- Salford City Council, Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA, LEVEL 1 SFRA, March 2010;
- Salford City Council, Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA, LEVEL 2 SFRA, March 2011; and
- Strategic Flood Risk Assessment for Greater Manchester March 2011.

1.4 Scoping

Consultation was undertaken with Manchester City Council in regards to agreeing the surface water discharge. The emails and confirmation of the discharge can be found in Appendix B.

1.5 Structure of this Report

The Report has been prepared based on the following structure:

- Section 2 refers to spatial planning considerations by reference to the proposed land use, flood zoning and NPPF vulnerability;
- Section 3 presents the assessment of existing flood risk at the site;
- Section 4 presents the proposed development and findings of flooding;
- Section 5 presents the drainage strategy; and
- Section 6 provides a summary of the assessments.

Additional Appendices are provided that deal with the following:

- Appendix A Topographical Survey;
- Appendix B Consultation with Manchester City Council; and
- Appendix C CCTV Survey
- Appendix D Manning Equation
- Appendix E InfoDrainage Results.

2. SPATIAL PLANNING CONSIDERATION

2.1 Location and Background

The proposed development is for full planning application proposing the erection of a youth, sports and community hub (Use Class E (d)(g)), F2(b)), 2 no. football pitches combined netball and basketball court, cricket strip (Use Class F2 (c)), a two storey apartment building comprising 36no. apartments for young person's accommodation (Use Class C3) and 267 no dwelling houses (Use Class C3a), with associated landscaping, public realm, ecological mitigation, refuse storage, drainage car parking and other associated works, with access from Wembley Road and Mount Road.

The location of the proposed development site is shown in Figure 1 and Figure 2, with location details found in Table 1. The site is located on Mount Road, Gorton, Manchester, M18 7SU (Grid Ref: 388291, 394995). (Table 1: Site Details).

There is a watercourse that runs East to West on the Southern border called Nico Ditch.

Nico Ditch is culverted from Mount Road.

The site comprises an area of land at Mount Road, situated within Gorton, a predominantly residential area located to the west of Manchester City Centre.

The existing site is vacant, with no public access, having previously been used as playing pitches until 2019. The site comprises 9.07ha and is rectangular in shape that is majority grass land, aside from an area of hard standing, where the former changing facilities once stood. The former vehicular access is from Mount Road.

The northern boundary of the site sits adjacent to a residential development build comprising of terraced and semi-detached properties, with Mannering Street running in between, separated by fencing. To the east is Wembley Road, which hosts a number of semidetached dwellings, with mature trees lining the site boundary. To the west is Mount Road, also lined with fencing and trees, with Gorton Primary School, Manchester Boxing Centre and Nutsford Vale Park adjacent to the street. To the south lies a footway which connects Mount Road to Wembley Road. Further south is Cedar Mount Academy.

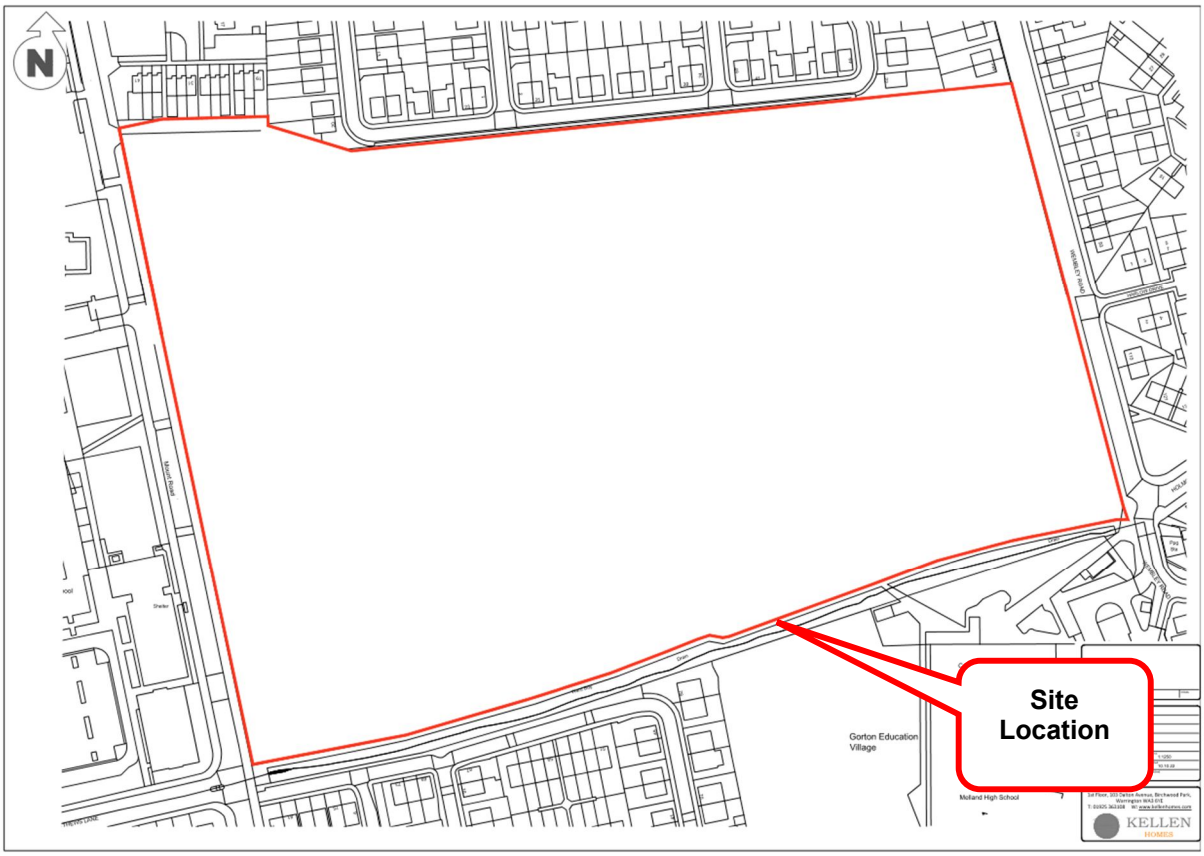


Figure 1: Site Location (Source: Bing)

Table 1: Site Details

Reference	Value
OS X (Eastings)	388291
OS Y (Northings)	394995
Nearest Post Code	M18 7SU
Nat. Grid	SJ882949 / SJ8829194995

Grid reference details taken from the site https://www.streetmap.co.uk/



Figure 2: Aerial View of the site (Source: Google Maps)

2.2 Topography

The existing ground elevations on site is shown in the topographic drawing (Appendix A) .It indicates that the site is gently sloping from the North-West, with lower ground located at the discharge point of Nico Ditch, in the South- East. Ground levels vary between 61.407mAOD and 64.184mAOD.

2.3 Geology and Soil

The geology at the site has been obtained from the British Geological Survey (BGS) website. The bedrock beneath the site is described as Chester Sandstone The superficial geology of the site is described as Till, Devensian.

Due to the ground being Till, it is unlikely that soakaways will be feasible at the site.

According to Soilscapes website, the soil conditions are slowly permeable, seasonally wet, acid loamy and clayey soils. This indicates that the drainage is impeded.

According to the soakaway tests, the site does not infiltrate. Please see the geo-environmental report.

2.4 Flood Zone

The proposed site is within Flood Zone 1 (an area at low risk of flooding). Flood Zone 1 has a return period of above the 1 in 1000 year event. Below is the map indicating the flood nodes on site (figure 3).

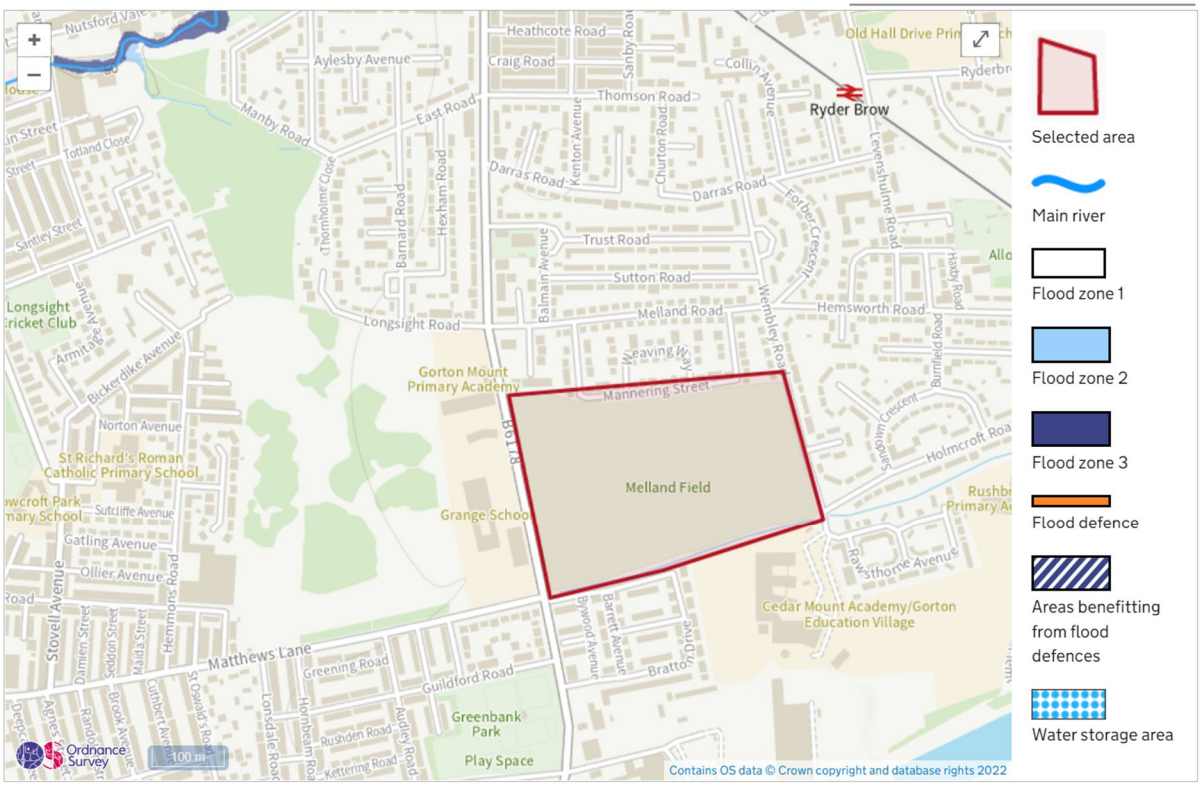


Figure 3: Flood Map from the Environment Agency

2.5 NPPF Vulnerability

The development will be classed as 'More Vulnerable' under the NPPF vulnerability classification (Table 2). The flood risk vulnerability and flood zone compatibility are displayed in Table 3:Flood Risk Vulnerability and flood zone compatibility (Source NPPF Technical Guide). As noted in Section 2.4, the site is within Flood Zone 1 and has minimal surface water flooding according to the EA flood risk maps (fluvial and tidal).

Table 2:Flood Risk Vulnerability Classification (Source: NPPF Technical Guide)

More vulnerable (MV)
Hospitals, residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels
Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
Non–residential uses for health services, nurseries and educational establishments.
Landfill and sites used for waste management facilities for hazardous waste.
Sites used for holiday or short let caravans and camping, subject to a specific warning and evacuation plan.

Table 3:Flood Risk Vulnerability and flood zone compatibility (Source NPPF Technical Guide)

Flood Zone	**Definition**	**Essential Infrastructure**	**Water compatible**	**Highly Vulnerable**	**More Vulnerable**	**Less Vulnerable**
1	T>1,000	✔	✔	✔	✔	✔
2	100<T_{fluv}<1,000 200<T_{tidal}<1,000	✔	✔	Exc. Test	✔	✔
3a	T_{fluv}<100 T_{tidal}<200	Exc. Test	✔	✕	Exc. Test	✔
3b (functional floodplain)	T_{fluv}<20	Exc. Test	✔	✕	✕	✕

As the development refers to dwellings and community and sports facilities (More Vulnerable) and it is located in Flood Zone 1 and low surface water flooding according to Table 3:Flood Risk Vulnerability and flood zone compatibility (Source NPPF Technical Guide), the sequential test is passed and there is no need for an exception test.

2.6 Climate Change Allowances

Figure 4:Peak rainfall intensity allowance in small and urban catchments (use 1961 to 1990 baseline) shows anticipated changes in small catchments, recommending a progressive increase, reaching 45% for the 'Upper End' allowance by 2125. This allowance would be recommended for this proposed development, which is classified as 'More Vulnerable' and has been taken to have a 100-year design life. The 45% climate change allowance is based on the 90th percentile, meaning that there is a 90% chance that rainfall will not increase by more than the 45% increment.

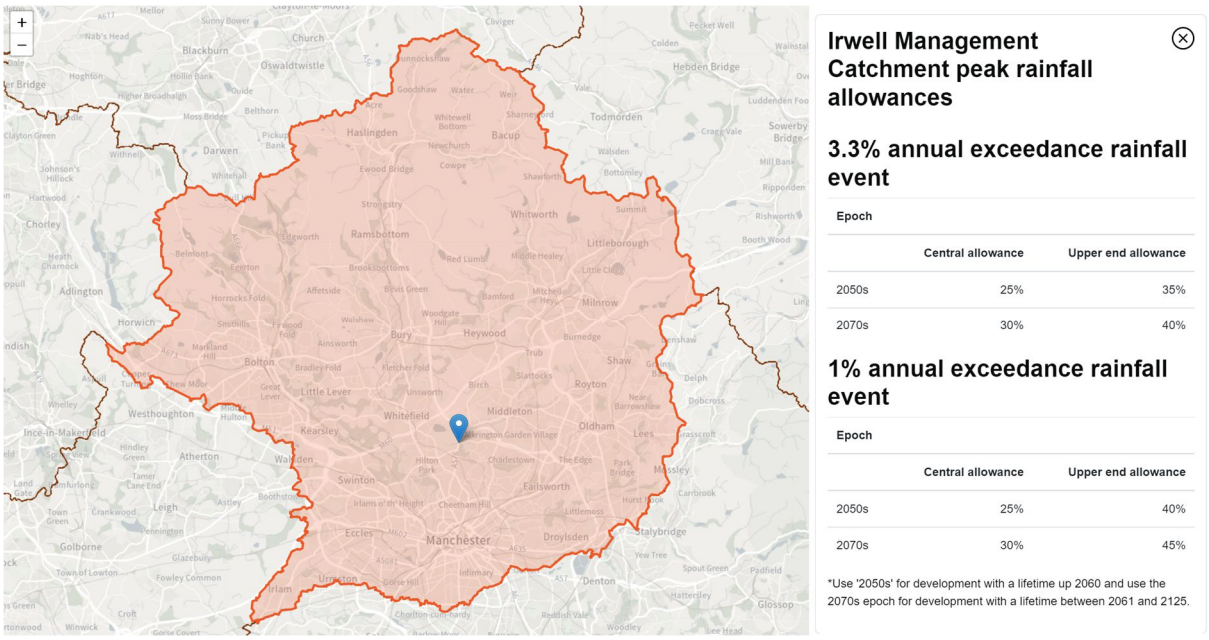


Figure 4:Peak rainfall intensity allowance in small and urban catchments (use 1961 to 1990 baseline)

3. FLOOD HAZARD FOR EXISTING SITE

3.1 Source of Flood Risk

Flood sources and their possibilities at the site are described below.

3.1.1 Flood Risk from Fluvial Sources

As mentioned previously, the site is within a Flood Zone 1 and does not flood in the 1 in 1000 year event.

The site is considered to be at low risk of fluvial flooding

3.1.2 Surface Water

The EA surface flood extents and flood depths (Figure 5) have been obtained from the EA open dataset. The majority of the site is at low risk of flooding (higher probablity than the 0.1% AEP event). The only parts that are at high flood risk are around Nico Ditch. As the proposed development will not be built in Nico Ditch, the surface water flooding from Nico Ditch should be of minimal risk to the site.

There are some small areas of surface water flooding in the North of the site. These are likely caused by low points in the site and will be infilled in the proposed development.

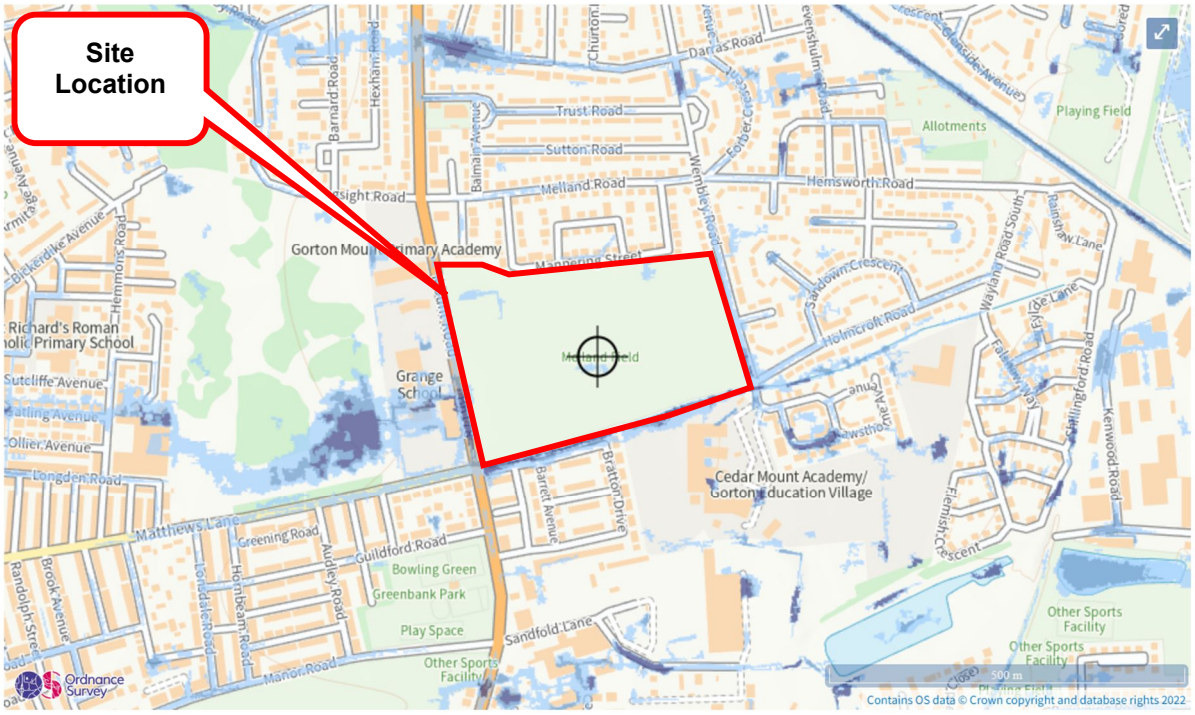


Figure 5: 0.1% AEP Surface Water Depth (Source: EA Open Dataset)

The risk of flooding from surface water is low.

3.1.3 Flood Risk from Reservoir /Canals / Other Artificial Sources

The EA Extent of Flooding from Reservoirs map (Figure 6:Extent of Flooding from Reservoirs (Source; EA Flood Warning Information Service)), based only on large reservoirs (over 25,000 m^3 of water), shows that some of the site is within potential risk of flooding in the event of a breach from reservoirs when the rivers are in flood as well. Flooding from a reservoir is considered to be extremely unlikely and the risk of flooding to the site considered to be low.

There is no flood risk from canals or other artificial sources as there are no canals or artificial sources within the vicinity of the site.

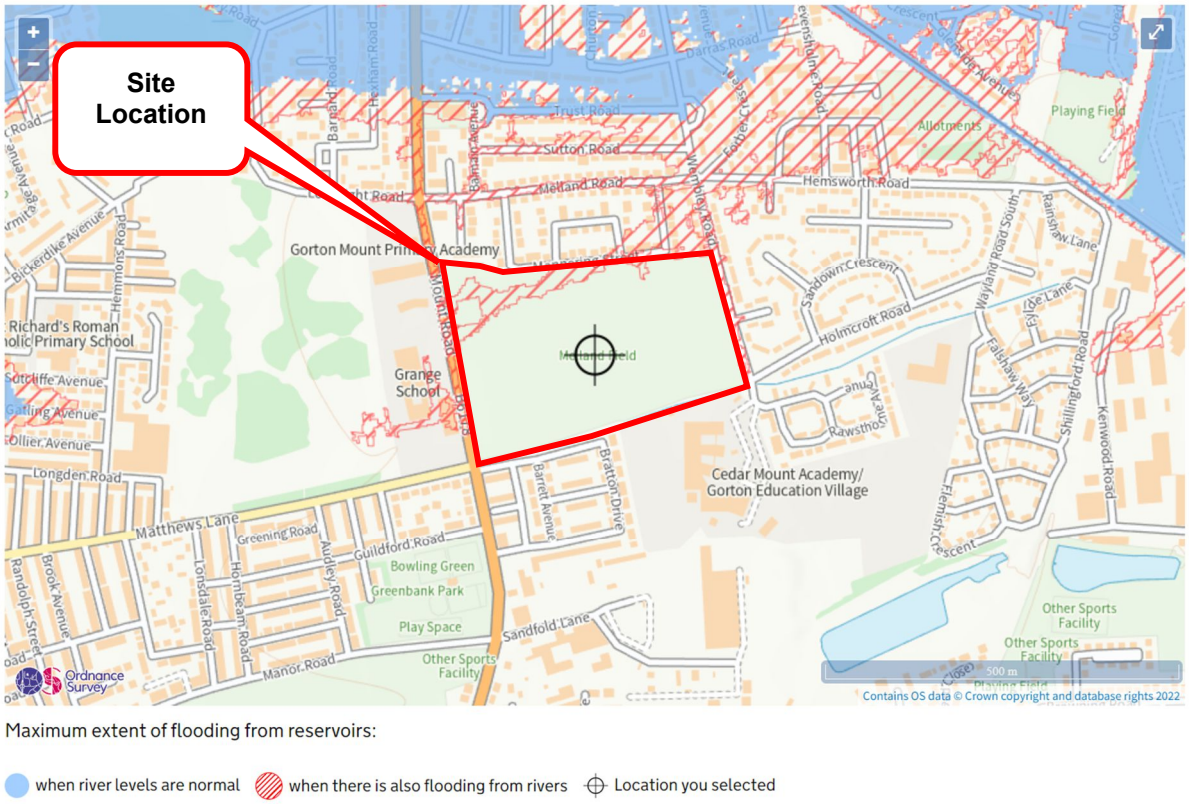


Figure 6:Extent of Flooding from Reservoirs (Source; EA Flood Warning Information Service)

3.1.4 Flood Risk from Groundwater

According to the SFRA Level 1 for Manchester, there is no history of groundwater flooding in this area.

3.1.5 Flood Risk from Sewers

According to the SFRA Level 1 for Manchester, there is no history of sewer flooding on the site as there are no public sewers crossing the site.

3.2 Existing Surface Water Drainage Arrangements

Existing surface runoff from the site likely drains to Nico Ditch. The site is a greenfield site.

4. ASSESSMENT OF FLOOD RISK FOR PROPOSED DEVELOPMENT

4.1 Development Proposals

The proposed development is for full planning application proposing the erection of a youth, sports and community hub (Use Class E (d)(g)), F2(b)), 2 no. football pitches combined netball and basketball court, cricket strip (Use Class F2 (c)), a two storey apartment building comprising 36no. apartments for young person's accommodation (Use Class C3) and 267 no dwelling houses (Use Class C3a), with associated landscaping, public realm, ecological mitigation, refuse storage, drainage car parking and other associated works, with access from Wembley Road and Mount Road.As shown on the indicative masterplan Figure 7.

The development area is 9.07ha and the impermeable area has been assessed as 6.28ha.



Figure 7: Proposed Site (Source: Client)

4.2 Fluvial Flood Management

The proposed site is in a Flood Zone 1 and is at low of risk of flooding. The proposed housing and sports pitches are 6m away from the ditch.

The site is at low risk of fluvial flooding.

4.3 Surface Water flooding

The site is not at risk of surface water flooding up to and including the 1 in 100 year event. With the inclusion of a new and working drainage system with attenuation up to and including the 1 in 100 year event plus climate change (45%), the site is at low risk of surface water flooding.

5. DRAINAGE STRATEGY

5.1 Existing Drainage Arrangements

5.1.1 Surface Water

The existing site is a greenfield site. The surface water is assumed to go to the Nico Ditch.

5.1.2 Foul Water

From the pre-planning enquiry with United Utilities Water, it was advised that 'foul flow from this site will be allowed to drain into the public foul water/combined sewer system at an unrestricted rate'.

5.2 Infiltration Rates

It is considered that infiltration is unlikely to be feasible. According to the BGS website the proposed site is underlain by glacial till. Furthermore, soakaway tests have been undertaken and indicate that soakaways are not feasible.

5.3 Run-off

The peak rates have been agreed with the Lead Local Flood Authority for the proposed housing and the discharge has been set at variable discharge rates. Please see in table 4 the allowable discharge rates for the housing, community area. The proposed pitches will drain at 8.4l/s in all events:

Table 4: Agreed Discharge rates

Return Period	Housing section of site, Discharge Rates (l/s)	Sports Pitches Discharge (l/s)	Total Discharge
1 in 1 year event	31.0	8.4	39.4
1 in 30 year event	60.3	8.4	68.7
1 in 100 year event	74.0	8.4	82.4

Please see appendix B for the confirmation of the discharge.

5.4 Capacity of Sewers.

The LLFA have asked us to confirm there is capacity in the sewer system for additional flow from the proposed development. Therefore, we have undertaken a CCTV survey to investigate the capacity of the sewers under Mount Road and Wembley Road. Please see Appendix C for the CCTV surveys of Wembley Road and Mount Road.

The proposed culverts initial design was for a culvert of 375mm and a slope of 0.00536. However, according to the CCTV survey, Wembley Road is actually a 450mm diameter pipe instead of 375mm and the culvert is flatter than the assumption (the slope is 0.0025 instead of 0.00536). Therefore, the discharge of the culvert under Wembley Road is 183l/s.

The CCTV surveys confirm that the culvert under Mount Road is a 450mm pipe and then turns into a 525mm pipe under Matthew Lane, therefore, it has a greater capacity than what was assumed.

The pipes under Mount Road have a larger capacity than the originally assumed calculations, therefore, the pipes have enough capacity.

5.5 Capacity of Nico Ditch

As agreed with the LLFA, a capacity check of Nico Ditch is undertaken in the FRA:

The total capacity of the ditch is 3200l/s, please see appendix D for the calculations. As in section 5.5, the total discharge in the ditch is 183l/s because of the upstream constriction of the culvert under Wembley Street. Therefore, adding 58.4l/s to the channel is unlikely to cause flooding to the surrounding area.

5.6 Surface Water Drainage Strategy

5.6.1 Hierarchy of Discharge

As detailed in section 3.3, infiltration is not feasible at this site. As noted previously, there is a ditch on the Southern border. Therefore, the surface water from the site will discharge to Nico Ditch.

5.6.2 Sizing of SUDS Features

As discussed in section 4.1 of this report, the proposed impermeable surface area of the dwellings, sports pitches and associated features is 6.28ha. It is intended that the proposed surface water system will be adopted by United Utilities. Infiltration SUDS systems have been discounted as the ground does not infiltrate. Attenuation ponds are not a feasible option on this site given the complexity of the multi-phase, and multi-use delivery, coupled with overall planning considerations and an accepted viability position. It should be noted that the applicant's viability has been independently assessed by the Local Authority. A single attenuation basin is proposed within the area to be retained and managed by GMYF.

The drainage will be split into 2 catchments, one will be for the football pitches and the other will be for the housing and impermeable area. Variable greenfield rates have been agreed with Manchester City Council for the proposed dwelling and building and associated road etc. The sport pitches will drain at 8.4l/s in all events.

The maximum discharge for the housing section of the site will be variable greenfield rates of 30.3l/s, 60.3 l/s and up to 74l/s as indicated in table 4. The discharge for the fields and the sport facilities will be 8.4l/s (greenfield rates). The storage will be held in oversized pipes up to and including the 1 in 100 year event plus 45% climate change for the housing section of the site. A swale of approximately 70m^3 will be installed to hold the surface water for the pitches.

Due to the levels in the north-west corner of site, a surface water pumping station is required to drain the houses within this part of the development. The rising main from the pump station will discharge to the onsite gravity surface water system, which as previously mentioned will discharge to the watercourse in the junction of Mount Road / Matthews Lane at the agreed discharge rates. It is intended that the pumping station will be adopted by a "statutory water and sewage company" who are regulated by Ofwat (i.e. United Utilities, ICOSA, IWNL or similar).

Modelling of the surface water runoff to the design parameters was carried out using the Source Control of Info Drainage, an industry leading software which allows design and analysis of SuDS features. Micro Drainage modelling results. Appendix E. The following conservative assumptions and design parameters have been set within the Hydraulic model for the housing section of the site:

- Dwellings, walkways, parking spaces and access roads area equals 6.28ha;

- Rainfall intensity was obtained using the Flood Studies Report (FSR) methodology and increased by 45%, the upper end allowance for climate change over the 100 years design life of the proposed residential development, in line with the requirements of the NPPF;
- No runoff loss has been assumed in the modelling, therefore, all the design rainfall landing on the impermeable surfaces is expected to reach the detention basin;
- As per the conclusions in Section 3.3, the soil has been modelled with an infiltration rate of zero (0.0) m/hr;
- Hydro-Breaks have been used to restrict the total discharge to 31.0l/s, 60.3l/s and 74.0l/s for the residential areas and the 8.4l/s is based on the sports pitches. Therefore the sports connections will connect via its own hydrobrake manhole which will be located upstream of S2. The detailed design of the sports pitches will be prepared and submitted by Youth Federation. The sports pitches will drain at 8.4l/s;
- The required storage is indicated within appendix E up to and including 1 in 100 year event plus climate change for all the site, except for the sport pitches; and
- The sports pitches will have a swale which can hold 70m^3.

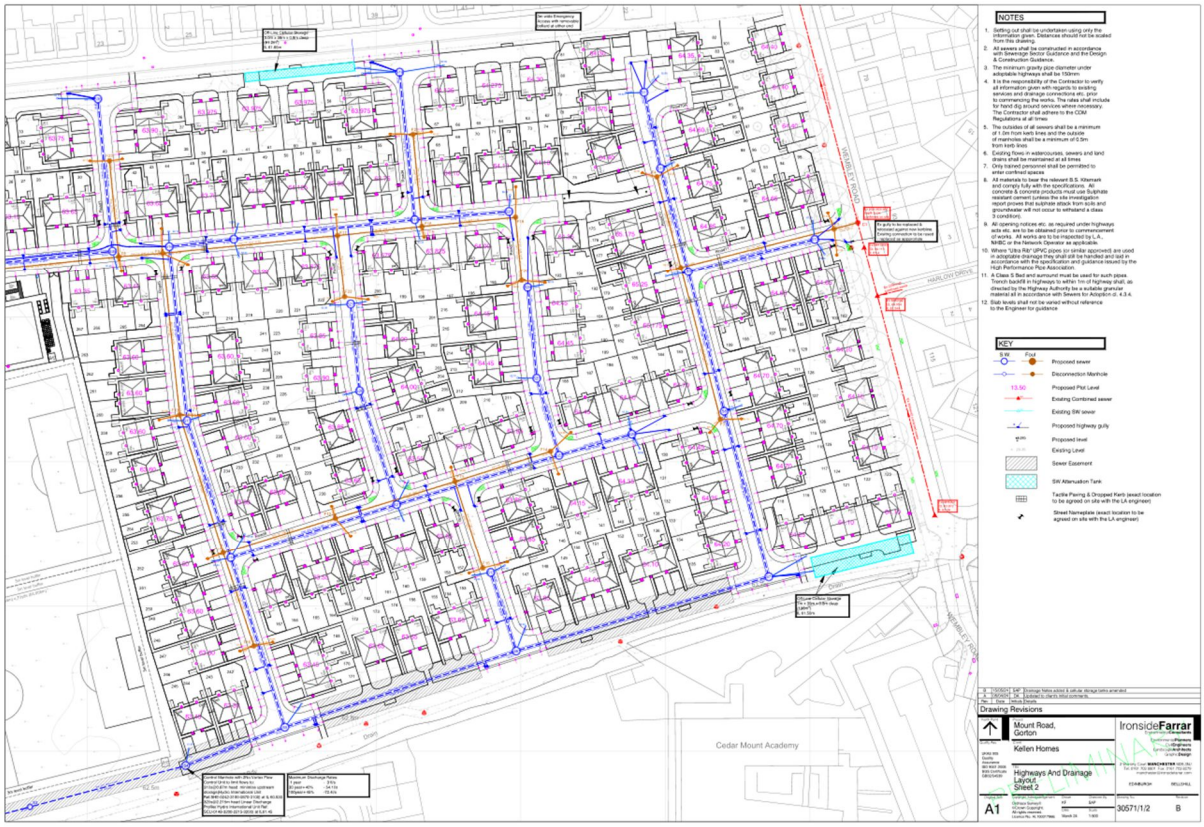




Figure 8: Proposed Drainage Strategy

5.6.3 Maintenance Plan

Structures which manage surface water runoff require little maintenance, however a regular maintenance schedule e.g. after heavy rainfall, should be established by the site owners to reduce the risk of blockage within the drainage system and ensure the design remains in good working order. It is proposed to offer this up for adoption.

Table 5: Operation and Maintenance Requirements for Oversize Pipes

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

6. SUMMARY & CONCLUSIONS

A summary of the main conclusions for the FRA is presented below:

- The proposed development is for full planning application proposing the erection of a youth, sports and community hub (Use Class E (d)(g)), F2(b)), 2 no. football pitches combined netball and basketball court, cricket strip (Use Class F2 (c)), a two storey apartment building comprising 36no. apartments for young person's accommodation (Use Class C3) and 267 no dwelling houses (Use Class C3a), with associated landscaping, public realm, ecological mitigation, refuse storage, drainage car parking and other associated works, with access from Wembley Road and Mount Road.
- The Grid Reference is 388291, 394995;
- The development site is approximately 9.07ha and is a greenfield site;
- The developable area will be 6.28ha;
- There is a ditch on the Southern boundary called Nico Ditch. This flows from East to West;
- The site lays at a low risk of fluvial, surface water, groundwater and infrastructure flooding;
- It appears infiltration will not be feasible due to the ground conditions. These have been confirmed by the soakaway tests;
- It is proposed to discharge the surface water into Nico Ditch;
- A surface water pump will be required due to levels. This will be adopted by United Utilities;
- The discharge will be restricted to variable greenfield rates;
- The proposed development will be split into two catchments, the sports pitches will be one catchment and the other will be the housing, community hub, youth accommodation and roads. The discharge will be split; the 31.0l/s 60.3l/s and 74.0l/s discharge rates are based on the residential areas and the 8.4 l/s is based on the sports pitches therefore the sports pitch connection will connect via its own hydrobrake manhole which will be located upstream of S2. The detailed design of the sports pitches will be prepared and submitted by Youth Federation; and
- The site will be required to have attenuation up to and including the 1 in 100 year event plus climate change of 45% for the surface water. This will be kept in oversized pipes because Attenuation ponds are not a feasible option on this site given the complexity of the multi-phase, and multi-use delivery, coupled with overall planning considerations and an accepted viability position. It should be noted that the applicant's viability has been independently assessed by the Local Authority

7. REFERENCES

Author	Date	Title/Description
Department for Communities and Local Government	Mar 2012	Technical Guidance to the National Planning Policy Framework
Ministry of Housing, Communities and Local Government.	July 2021	National Planning Policy Framework
Manchester City Council	Mar 2010	Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA, LEVEL 1 SFRA
Manchester City Council	Mar 2011	Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA, LEVEL 2 SFRA
Manchester City Council	May 2015	Salford Local Flood Risk Management Strategy
Environment Agency	May 2022	Climate Change Guidance for Flood Risk Assessment

Appendix A: Topographical Survey



Topographical Survey Legend

BIn	Litter bin	TL	Tie line
Bol	Bollard	TP	Telegraph pole
Bol	Bollard	TPS	Tactile paving stairs
BS	Bus stop	TS	Traffic signal light
BT	British telecom ic	TV	Television cover
CPS	Concrete paving slabs	VP	Vent pipe
DM	Dim	WM	Water meter
Elec	Electrical ic	WO	Wash Out
EP	Elec. pole	UTL	Unable to lift
ER	Earth rod		Fence annotation
FH	Fire Hydrant	B/W	Barbed wire
FP	Footpath	C/B	Close boarded
FT	Floodlight	C/I	Corrugated iron
G	Gully	C/L	Chain link
GP	Gate post	C/P	Concrete panel
GV	Gas valve	H/R	Hand rail
IC	Inspection cover	I/R	Iron railings
JB	Junction box	O/B	Open boarded
LB	Letter box	P/C	Post & chain
LB	Letter box	P/R	Post & rail
LP	Lamp post	P/W	Post & wire
MH	Utility marker	W/M	Wire mesh
MP	Mile post		Level prefix descriptions
NP	Name plate	BL	Bed level
P	Post	CL	Cover level
PM	Parking meter	EH	Eaves level
RE	Rodding eye	FL	Floor level
RP	Road pin	P	Parapet level
rwp	Rain water pipe	PL	Parapet level
SP	Sign post	RH	Roofridge level
ST	Stop tap	SL	Soffit level
SB	Service Box	Spr	Arch springing level
TC	Traffic cone	TH	Trial hole/cover
TCB	Telephone call box	WH	Wall height
TH	Trial Hole	WL	Water level

BENCH MARK INFORMATION

All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

NOTES

ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN

DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED WITH LOCAL AUTHORITY RECORDS PRIOR TO WORK COMMENCING

Levels defining edge of carriageway are observed at channel (bottom of kerb). Unless otherwise stated.

TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE THE AVERAGE SPREAD. THE DRIP LINE LAYER DENOTES THE TREES EXTREMITY

SURVEY STATIONS

stn1	388552.512	394966.948	64.005
stn1a	388467.626	394949.667	63.803
stn1b	388434.391	394937.743	63.490
stn1c	388366.509	394913.211	62.810
stn1d	388346.443	394909.446	62.943
stn1e	388330.149	394901.915	62.967
stn1f	388280.869	394885.259	62.714
stn1g	388239.831	394873.742	62.263
stn1h	388210.834	394866.697	62.021
stn1i	388158.355	394857.148	61.253
stn1j	388141.254	394942.369	60.946
stn1k	388118.355	395052.608	61.519
stn1l	388088.626	395144.981	62.005
stn1m	388173.002	395084.499	62.217
stn2	388514.182	395074.246	64.106
stn2a	388496.098	395143.994	64.104
stn3	388490.129	395162.952	64.176
jr1	388504.943	395109.642	64.101

REVISIONS

REV.	DESCRIPTION	SURVEYED	DRAWN	DATE

JLP Surveying

JLP Surveying Consultants Ltd,
Suite 45 Rodney House,
King Street,
Wigan
WN1 1BT
Tel - 01942 243313
Fax - 01942 492230
Mobile - 07710 428498
EMAIL - peterhouston@jlpsurveys.com

PROJECT
Mount Road
Gorton

DRAWING TITLE
Topographical Land Survey

SCALE	SHEET SIZE	No. of SHEETS	DATE	REVISION
1 : 500	A0	1	13.07.2022	

DRAWING NUMBER
S22-631

Appendix B: Agreements with Manchester City Council

Charles Townsend

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Sent: 12 September 2022 12:17
To: Charles Townsend
Subject: RE: Proposed development at Mount Road, Gorton M19 3ET

External (floodriskmanagement@manchester.gov.uk)

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Good afternoon Charles,

I can confirm that, in principle, your proposed strategy – to discharge at variable rates for the 1 yr, 30 yr, and 100 yr(+CC) at the restricted rates contained in your email below, is acceptable to MCC.

This is acceptable in principle, on the basis that:

- Infiltration will be prioritised and only if infeasible, strategy will progress down the hierarchy to discharge into ordinary watercourse.
- Full copies of your detailed capacity calculations will be presented to support the feasibility you have outlined here.
- Your submission will include CCTV survey of the section of culvert which is not recorded in the MCC survey (between the Site and Matthews Lane, passing under Mount Road). This must demonstrate that both the condition and capacity are fit to serve your proposals, with any updates to your capacity calculations made as necessary.
- Your submission will present appropriate survey of the open channel and culvert inlet, with an assessment that demonstrates they are fit to receive the flows from Site.

Kind Regards,

Laura

Laura Peacock
Flood Risk Engineer – LLFA

Highways Service,
Growth and Neighbourhoods Directorate
Manchester City Council
PO Box 532
Town Hall
Manchester
M60 2LA
Web: http://www.manchester.gov.uk

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[redacted]

Hello Laura, hope you are well.

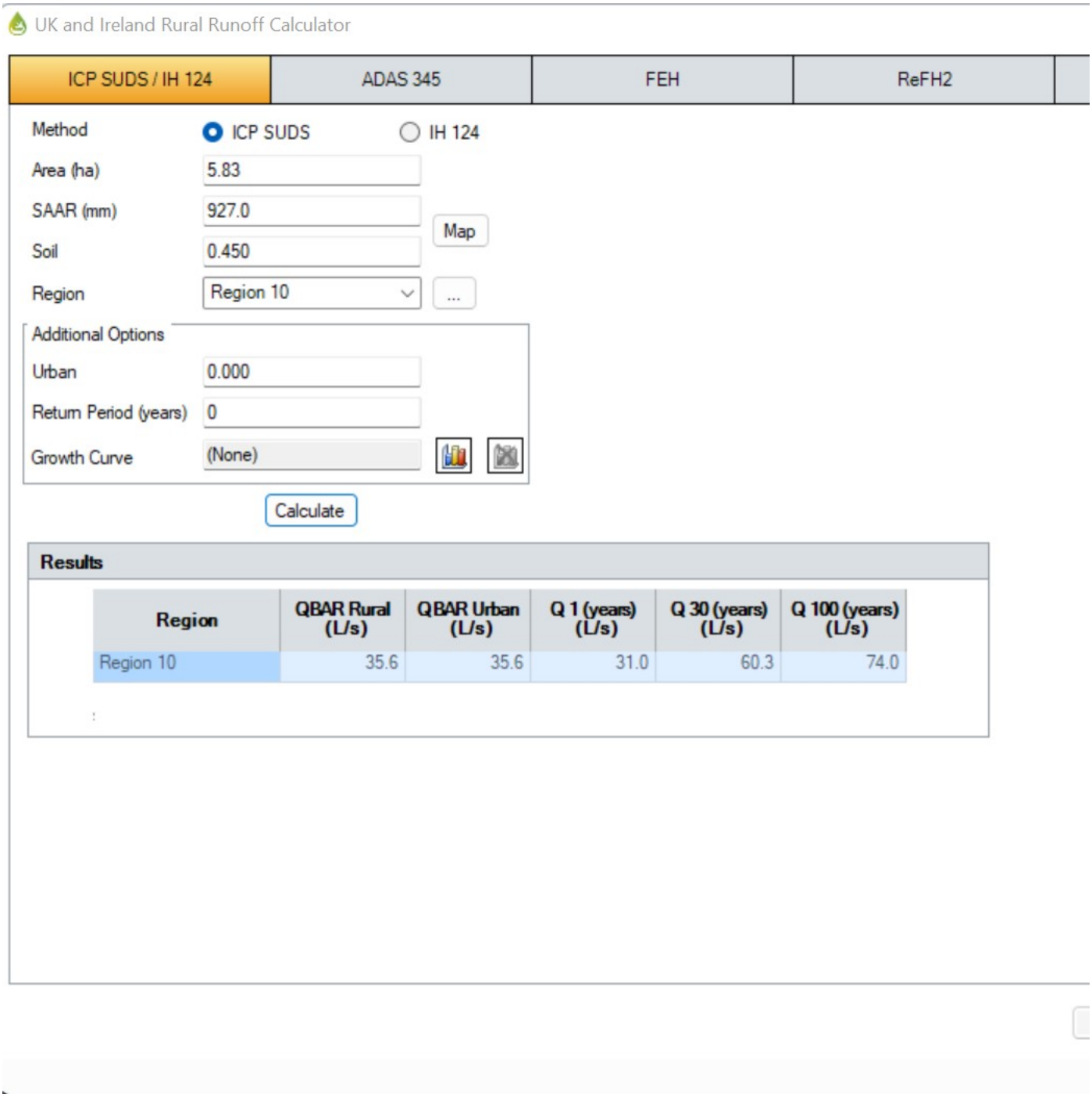
Please find below our findings.

Mount Road development has mount road to the west and Wembley Road to the east. There is a ditch on the southern boundary flowing from east under Wembley Road and then into a culvert under mount road. There is a 375mm culvert under Wembley Road and it has a slope of 0.00536 (this has been taken form the topographical survey please see attached). According to the Tables for the hydraulic design of pipes, sewers and channels that would give a full bore discharge of 161l/s. There is no history of flooding to this is the maximum discharge to enter the ditch from the rest of the catchment.

Mount Street culvert is a 450mm diameter and has a slope of 0.0538. The invert of the exit pipe is 60.101mAOD and the invert of the next section of the culvert is 59.202 (this has been calculated by the invert from the information taken from Manchester city council and the topographical survey, please see attached). This gives a full bore discharge of 828.77l/s.

This means that the excess capacity left in the culvert once you discount the upstream amount under Mount Road is approximately 667.77l/s.

As per your guidance we will be discharge at variable greenfield rates into the ditch. Please see below the greenfield rates for the proposed site .



This means that you still have approximately 600l/s capacity in the system in the 1% AEP event.

Please can you confirm this is acceptable.

Kind regards
Charles

[redacted]

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>

[redacted]

Good Morning Charles,

I hope you are well, please find attached results of your data screen. Results are text & enclosures from p.3 onwards.

We also attach the SuDS guidance for developers.

Please note again the advice in the email below in addition to the advice given by text in the Data Screen.

Should you have any queries, please do not hesitate to contact us.

Kind Regards,
Laura

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Sent: 02 August 2022 10:31
[redacted]

Good morning Charles,

Thank you for your email.

We would expect infiltration testing to prove/discount infiltration as a discharge option (as per your email below).

If infiltration is discounted, we would encourage consideration of the ordinary watercourse for discharge in-line with the Drainage Hierarchy.

We note this is a large site (appears to be around 9 Ha).

The discharge rates() must be greenfield rate(s). The watercourse enters culvert beneath the highway a short distance from the site. **Given the size of this site potentially discharging into the culvert, we would want to see the capacity of the culvert considered before we could agree to fix a discharge rate.** We have partial survey of this culvert including dimensions available; this could be issued to you as part of our Data Screening Service (please enquire if desired).

The subject section of watercourse & inlet to the culvert would also need to be surveyed by the applicant to evaluate fitness to receive the flows.

Presuming the above can be satisfied in your submission, to connect to the watercourse would require obtaining of Land Drainage Consent from the LLFA, which is best-timed with submission of a finalised Planning Application.

I hope this is of assistance. Should you have further queries please do not hesitate to contact us.

Kind Regards,
Laura

[redacted]

Dear Laura,

Hope you are well. I have a new site called Mount Road, Gorton that I am looking at for feasibility. We have two layout opitions but depends on how many football pitches we are required to supply for goals England. I have reviewed the soilscapes and there appears to be impeded drainage so likely infiltration will not work. I have requested infiltration tests to be undertaken when the SI is done.

However, there is a watercourse at the southern end of the site, the client owns the bank so I would like to drain to the watercourse. The site is predominately greenfield, there for the discharge rates, I will be designing to variable greenfield rates? Is that correct.

Please see attached the layouts and I am investigating if there is any brownfield on the site.

If you have any queires please do not hesitate to contact me.

Kind regards
Charles

[redacted]

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Appendix C: CCTV Surveys



IWJS

INDUSTRIAL WATER JETTING SYSTEMS

CCTV SURVEY INSPECTION REPORT

Client:	Kellen Homes Limited
Location:	Mount Road / Matthews Lane Junction, Manchester
Date Issued:	03.10.2022



Industrial Water Jetting Systems Ltd

Dickens House, Old Stowmarket Road, Woolpit, Bury St. Edmunds IP22 9QS

Tel: 01359 242606 Fax: 01359 242 621

Web: www.iwjs.co.uk Email: surveys@iwjs.co.uk

WEB PROJECT
CLICK TO OPEN THIS PROJECT

Project

Project Name:	2022_09_27 Kellon Holmes Mount Road Manchester M Sweeney
Project Date:	27/09/2022
Inspection Standard:	MSCC5 Sewers & Drainage GB (SRM5 Scoring)

[redacted]

Table of Contents

Project Name	Project Number	Project Date
2022_09_27 Kellon Holmes Mount Road Manchester M Sweeney		27/09/2022

Project Information P-1

Scoring Summary P-2

Section Item 1: SJ88941803 > SJ88940804 (SJ88941803X) 1

Section Item 2: SJ88941802 > SJ88941803 (SJ88941802X) 3

Section Item 3: SJ88941805 > SJ88941802 (SJ88941805X) 4

Section Item 5: 1806 > 1800 (1806X) 6

Section Item 17: 1800 > 1900 (1800X) 11

[redacted]

Project Information

Project Name	Project Number	Project Date
2022_09_27 Kellon Holmes Mount Road Manchester M Sweeney		27/09/2022

Site

Company: Kellen Homes Limited
Street: Mount Road / Matthews Lane Junction
Town or City: Manchester
County: Greater Manchester
Post Code: M19 3ES

Contractor

Company: IWJS
Contact: Aden Halliwell
Department: Account Executive North
Street: Unit 10 Huntsman Drive
Town or City: North Bank Industrial Estate, Irlam
County: Greater Manchester

[redacted]

[redacted]

Scoring Summary

Project Name	Project Number	Project Date
2022_09_27 Kellon Holmes Mount Road Manchester M Sweeney		27/09/2022

Structural Defects

Grade 3: Best practice suggests consideration should be given to repairs in the medium term.

Grade 4: Best practice suggests consideration should be given to repairs to avoid a potential collapse.

Grade 5: Best practice suggests that this pipe is at risk of collapse at any time. Urgent consideration should be given to repairs to avoid total failure.

Section	PLR	Grade	Description
5	1806X	3	Fracture, longitudinal at joint at 10 o'clock

Service / Operational Condition

Grade 3: Best practice suggests consideration should be given to maintenance activities in the medium term.

Grade 4: Best practice suggests consideration should be given to maintenance activity to avoid potential blockages.

Grade 5: Best practice suggests that this pipe is at a high risk of backing up or causing flooding.

Section	PLR	Grade	Description
5	1806X	4	Multiple defects

Abandoned Surveys

Section	PLR	Description
All inspections complete, none are abandoned.		

Information

These scoring summaries are based on the SRM grading from the WRc.

Section Inspection - 28/09/2022 - SJ88941803X

WEB PROJECT
CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	28/09/22	10:12	Not Specified	No Rain Or Snow	Yes	SJ88941803X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
M Sweeney	FL65 CZR	Small Crawler	Not Specified	Public Sewer	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	SJ88941803
Road:	Matthews Lane	**Inspected Length:**	66.41 m	**Upstream Pipe Depth:**	1.990 m
Location:	Road	**Total Length:**	66.41 m	**Downstream Node:**	SJ88940804
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	1.840 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	525 mm
Flow Control:	No flow control	**Material:**	Concrete
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:573

Depth: 1.84 m
SJ88940804



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	WL	Water level, 10% of the vertical dimension	00:00:00	SJ88941803X_1d75adcb-c7fe-	
0.00	MH	Start node, manhole, reference: SJ88940804	00:00:00	SJ88941803X_ea1be22b-1efd-	
3.22	JN	Junction at 10 o'clock, 100mm dia	00:00:15	SJ88941803X_c0c94688-e76e	
22.96	JN	Junction at 10 o'clock, 100mm dia	00:01:21		
42.83	JN	Junction at 10 o'clock, 100mm dia	00:02:22		
58.72	JN	Junction at 10 o'clock, 100mm dia	00:03:14		
66.41	MHF	Finish node, manhole, reference: SJ88941803	00:04:47	SJ88941803X_93a24e74-2009	

SJ88941803
Depth: 1.99 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

Section Pictures - 28/09/2022 - SJ88941803X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Upstream	SJ88941803X		



SJ88941803X_1d75adcb-c7fe-4d48-a474-f0faedecdae1_20220927_103339_044.jpg, 00:00:00, 0.00 m
Water level, 10% of the vertical dimension



SJ88941803X_ea1be22b-1efd-4fcd-8928-d142ae7d459c_20220927_103418_514.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: SJ88940804



SJ88941803X_c0c94688-e76e-4f20-9ee8-fb0a37806af4_20220927_114955_144.jpg, 00:00:15, 3.22 m
Junction at 10 o'clock, 100mm dia



SJ88941803X_93a24e74-2009-450f-8357-a82edc313949_20220928_101848_976.jpg, 00:04:47, 66.41 m
Finish node, manhole, reference: SJ88941803

[redacted]

Section Inspection - 28/09/2022 - SJ88941802X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	28/09/22	10:35	Not Specified	No Rain Or Snow	Yes	SJ88941802X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
M Sweeney	FL65 CZR	Small Crawler	Not Specified	Public Sewer	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	SJ88941802
Road:	Matthews Lane	**Inspected Length:**	7.59 m	**Upstream Pipe Depth:**	1.090 m
Location:	Road	**Total Length:**	7.59 m	**Downstream Node:**	SJ88941803
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	1.990 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Flow Control:	No flow control	**Material:**	Concrete
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:66	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 1.99 m						
SJ88941803						
	0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
	0.00	MH	Start node, manhole, reference: SJ88941803	00:04:54		
	7.59	MHF	Finish node, manhole, reference: SJ88941802	00:00:36		
SJ88941802						
Depth: 1.09 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

Section Inspection - 28/09/2022 - SJ88941805X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	1	28/09/22	10:40	Not Specified	No Rain Or Snow	Yes	SJ88941805X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
M Sweeney	FL65 CZR	Small Crawler	Not Specified	Public Sewer	Not Specified

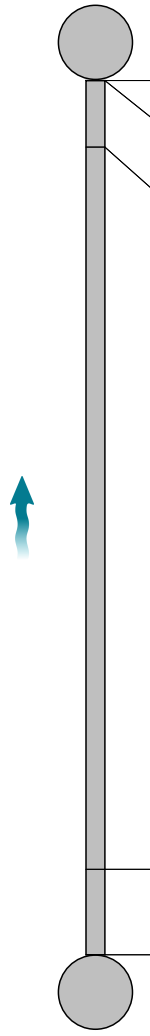
Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	SJ88941805
Road:	Matthews Lane	**Inspected Length:**	13.07 m	**Upstream Pipe Depth:**	1.000 m
Location:	Road	**Total Length:**	13.07 m	**Downstream Node:**	SJ88941802
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	1.020 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Flow Control:	No flow control	**Material:**	Concrete
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:113

Depth: 1.02 m
SJ88941802



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
0.00	MH	Start node, manhole, reference: SJ88941802	00:00:43		
1.00	REM	General remark: 1805 pipe refrence incorrect on video header.	00:00:00		
11.79	OJL	Open joint, large	00:00:49	SJ88940805X_5ca7bbb9-f1d1-	1
13.07	OFF	Finish node, outfall, reference: SJ88941805: Wheel cap stuck in joint	00:02:37	SJ88940805X_ac503a45-dfee-	

SJ88941805
Depth: 1.00 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**
1	2.0	0.2	2.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 28/09/2022 - SJ88941805X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Upstream	SJ88941805X		



SJ88940805X_5ca7bbb9-f1d1-407e-8be2-d825bb2092e7_20220928_104059_034.jpg, 00:00:49, 11.79 m
Open joint, large



SJ88940805X_ac503a45-dfee-4c39-9e3b-cc369740257c_20220928_104412_850.jpg, 00:02:37, 13.07 m
Finish node, outfall, reference: SJ88941805, Wheel cap stuck in joint

Section Inspection - 30/09/2022 - 1806X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
5	1	30/09/22	21:56	209300	Rain	Yes	1806X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
A.EAGLESOME	FG64 FLM	Crawler	Not Specified	Public Sewer	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	1806
Road:	Mount Road	**Inspected Length:**	52.67 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	52.67 m	**Downstream Node:**	1800
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:455



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: 1800	00:00:02		
0.00	WL	Water level, 5% of the vertical dimension	00:00:03	1806X_91d906b1-afdf-4ecb-87	
3.88	FLJ	Fracture, longitudinal at joint at 10 o'clock	00:00:34	1806X_e645f7e7-a4fc-4147-82	3 / 2
8.45	JN	Junction at 10 o'clock, 100mm dia	00:01:02	1806X_39fa13ce-1acd-4c8b-a8	
8.80	RTJ	Roots, tap at joint	00:01:10		4
8.80	JN	Junction at 2 o'clock, 100mm dia	00:01:11	1806X_73772c69-e2e8-40de-8	
22.14	REM	General remark: BURRIED MH	00:02:34	1806X_d33ed561-e523-445b-a	
27.07	CLJ	Crack, longitudinal at joint at 12 o'clock	00:03:05	1806X_dc51b778-2630-453c-b	2 / 2
27.55	CCJ	Crack, circumferential at joint from 11 o'clock to 3 o'clock	00:03:14	1806X_451e1ede-1be7-4b8d-9	2 / 2
28.24	JDL	Joint displaced, large	00:03:20	1806X_20d4a306-4fae-4cfa-bb	1 / 4
32.83	JN	Junction at 10 o'clock, 100mm dia	00:03:45	1806X_e84cfe6e-e7b0-4127-a	
33.36	JN	Junction at 2 o'clock, 100mm dia	00:03:55	1806X_f5080473-29f4-4230-ba	
51.50	JN	Junction at 10 o'clock, 100mm dia	00:05:50	1806X_b1efa65e-89c3-41dd-8	
52.00	JN	Junction at 2 o'clock, 100mm dia	00:06:00	1806X_ba08d809-de02-408f-b6	
52.67	OCF	Finish node, other special chamber, reference: 1806: PAST THE 450 CONCRETE LINE AS SHOWED ON THE PLANS	00:10:17	1806X_0340ea82-3681-443a-8	

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**
4	40.0	1.2	62.0	3.0	5	5.0	0.2	13.0	4.0

Section Pictures - 30/09/2022 - 1806X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Upstream	1806X	209300	209300



1806X_91d906b1-afdf-4ecb-87a4-872a0821b16d_20220930_215631_136.jpg, 00:00:03, 0.00 m
Water level, 5% of the vertical dimension



1806X_e645f7e7-a4fc-4147-8274-250ac88fb9db_20220930_215703_231.jpg, 00:00:34, 3.88 m
Fracture, longitudinal at joint at 10 o'clock



1806X_39fa13ce-1acd-4c8b-a86d-f854ff836aed_20220930_215737_356.jpg, 00:01:02, 8.45 m
Junction at 10 o'clock, 100mm dia



1806X_73772c69-e2e8-40de-8245-ccf91f8427e8_20220930_215802_944.jpg, 00:01:11, 8.80 m
Junction at 2 o'clock, 100mm dia

Section Pictures - 30/09/2022 - 1806X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Upstream	1806X	209300	209300



1806X_d33ed561-e523-445b-ae87-d39be98cc065_20220930_215928_766.jpg, 00:02:34, 22.14 m
General remark, BURRIED MH



1806X_dc51b778-2630-453c-bef5-8a7f143e6c8b_20220930_220004_889.jpg, 00:03:05, 27.07 m
Crack, longitudinal at joint at 12 o'clock



1806X_451e1ede-1be7-4b8d-949a-bef220157280_20220930_220020_356.jpg, 00:03:14, 27.55 m
Crack, circumferential at joint from 11 o'clock to 3 o'clock



1806X_20d4a306-4fae-4cfa-bb48-fd2ecdfb1340_20220930_220028_447.jpg, 00:03:20, 28.24 m
Joint displaced, large

Section Pictures - 30/09/2022 - 1806X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Upstream	1806X	209300	209300



1806X_e84cfe6e-e7b0-4127-aca6-47dfc2fe5262_20220930_220100_368.jpg, 00:03:45, 32.83 m
Junction at 10 o'clock, 100mm dia



1806X_f5080473-29f4-4230-ba15-27e0c1254cef_20220930_220116_188.jpg, 00:03:55, 33.36 m
Junction at 2 o'clock, 100mm dia



1806X_b1efa65e-89c3-41dd-8789-6e1de024ebba_20220930_220317_325.jpg, 00:05:50, 51.50 m
Junction at 10 o'clock, 100mm dia



1806X_ba08d809-de02-408f-b6b3-5e5a222d7ef0_20220930_220333_162.jpg, 00:06:00, 52.00 m
Junction at 2 o'clock, 100mm dia

Section Pictures - 30/09/2022 - 1806X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Upstream	1806X	209300	209300



1806X_0340ea82-3681-443a-8375-66314165aed5_20220930_220822_851.jpg, 00:10:17, 52.67 m
Finish node, other special chamber, reference: 1806, PAST THE 450 CONCRETE LINE AS SHOWED ON THE PLANS

Section Inspection - 30/09/2022 - 1800X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
17	2	30/09/22	21:34	209300	Rain	Yes	1800X

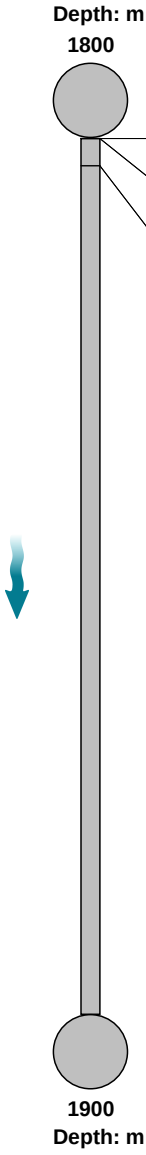
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
A.EAGLESOME	FG64 FLM	Crawler	Not Specified	Public Sewer	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	1800
Road:	Mount Road	**Inspected Length:**	2.58 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	80.75 m	**Downstream Node:**	1900
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:697



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: 1800	00:00:02		
0.00	WL	Water level, 5% of the vertical dimension	00:00:02		
2.58	OCF	Finish node, other special chamber, reference: 1900: OVERLAP COMPLETE	00:00:15	1800X_f9602f00-e703-4ca7-86	

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

Section Pictures - 30/09/2022 - 1800X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
17	Downstream	1800X	209300	209300



1800X_f9602f00-e703-4ca7-86a9-1e46455ce648_20220930_213523_724.jpg, 00:00:15, 2.58 m
Finish node, other special chamber, reference: 1900,
OVERLAP COMPLETE

Section Inspection - 30/09/2022 - 1800X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
17	1	30/09/22	20:47	209300	Rain	Yes	1800X

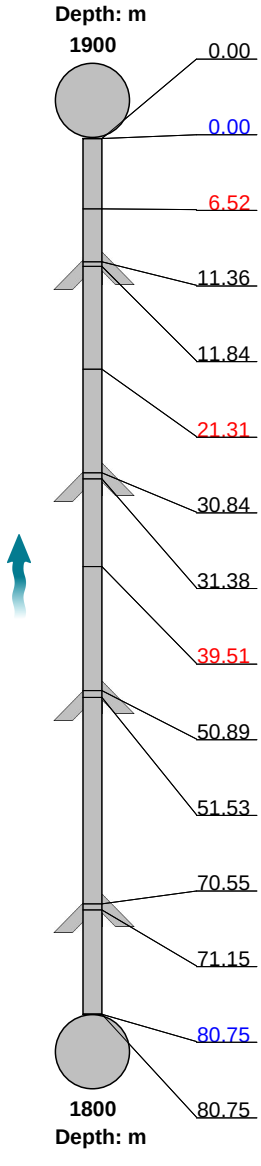
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
A.EAGLESOME	FG64 FLM	Crawler	Not Specified	Public Sewer	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	1800
Road:	Mount Road	**Inspected Length:**	80.75 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	80.75 m	**Downstream Node:**	1900
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:697



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: 1900	00:00:09		
0.00	WL	Water level, 5% of the vertical dimension	00:00:09	1800X_ac4c5039-5e4a-470d-9	
6.52	CLJ	Crack, longitudinal at joint at 3 o'clock	00:00:43	1800X_75179a56-8efe-434b-98	2 / 2
11.36	JN	Junction at 10 o'clock, 100mm dia	00:01:29	1800X_e842beb4-1d4d-4bf0-be	
11.84	JN	Junction at 2 o'clock, 100mm dia	00:01:39	1800X_7668b5de-6f31-4538-a	
21.31	CCJ	Crack, circumferential at joint from 12 o'clock to 1 o'clock	00:02:30	1800X_b03c6e13-d98d-4b20-a	2 / 2
30.84	JN	Junction at 10 o'clock, 100mm dia	00:03:15	1800X_abc0427f-e784-48e3-8	
31.38	JN	Junction at 2 o'clock, 100mm dia	00:03:24	1800X_58d941ff-b2a2-4644-98	
39.51	CCJ	Crack, circumferential at joint from 11 o'clock to 3 o'clock	00:04:02	1800X_ed6dac8c-2628-4532-b	2 / 2
50.89	JN	Junction at 10 o'clock, 100mm dia	00:04:56	1800X_029b7f84-0275-44a1-a	
51.53	JN	Junction at 2 o'clock, 100mm dia	00:05:05	1800X_c49c97aa-b8d5-4622-8	
70.55	JN	Junction at 10 o'clock, 100mm dia	00:06:30	1800X_788c2475-2e98-4186-8	
71.15	JN	Junction at 2 o'clock, 100mm dia	00:06:39	1800X_631ee764-03a7-47cf-a9	
80.75	REM	General remark: WILL REMOVE WHEN WET UP ON NEXT MH. WILL DO A 2M OVERLAP	00:07:28	1800X_5625f658-737d-4d08-bf	
80.75	MHF	Finish node, manhole, reference: 1800	00:07:32	1800X_5a40bf3d-842f-4837-a7	

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**
3	10.0	0.4	30.0	2.0	3	1.0	0.0	3.0	2.0

Section Pictures - 30/09/2022 - 1800X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
17	Upstream	1800X	209300	209300



1800X_ac4c5039-5e4a-470d-92ea-ce3433cd9c00_20220930_204752_238.jpg, 00:00:09, 0.00 m
Water level, 5% of the vertical dimension



1800X_75179a56-8efe-434b-98fc-849bf1a7a05e_20220930_204826_758.jpg, 00:00:43, 6.52 m
Crack, longitudinal at joint at 3 o'clock



1800X_e842beb4-1d4d-4bf0-be93-36f47082f123_20220930_204918_619.jpg, 00:01:29, 11.36 m
Junction at 10 o'clock, 100mm dia



1800X_7668b5de-6f31-4538-ac03-3eedfedee815_20220930_204936_737.jpg, 00:01:39, 11.84 m
Junction at 2 o'clock, 100mm dia

Section Pictures - 30/09/2022 - 1800X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
17	Upstream	1800X	209300	209300



1800X_b03c6e13-d98d-4b20-a09a-c4063cf17269_20220930_205040_859.jpg, 00:02:30, 21.31 m
Crack, circumferential at joint from 12 o'clock to 1 o'clock



1800X_abc0427f-e784-48e3-8e99-78860c008d82_20220930_205130_153.jpg, 00:03:15, 30.84 m
Junction at 10 o'clock, 100mm dia



1800X_58d941ff-b2a2-4644-9864-b18a776333a1_20220930_205149_805.jpg, 00:03:24, 31.38 m
Junction at 2 o'clock, 100mm dia



1800X_ed6dac8c-2628-4532-b70b-c20063a2613f_20220930_205233_295.jpg, 00:04:02, 39.51 m
Crack, circumferential at joint from 11 o'clock to 3 o'clock

Section Pictures - 30/09/2022 - 1800X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
17	Upstream	1800X	209300	209300



1800X_029b7f84-0275-44a1-a8e8-3e664f4553c2_20220930_205332_462.jpg, 00:04:56, 50.89 m
Junction at 10 o'clock, 100mm dia



1800X_c49c97aa-b8d5-4622-8e76-7e75b48c4fa1_20220930_205347_975.jpg, 00:05:05, 51.53 m
Junction at 2 o'clock, 100mm dia



1800X_788c2475-2e98-4186-84c1-2a729e9c6549_20220930_205519_228.jpg, 00:06:30, 70.55 m
Junction at 10 o'clock, 100mm dia



1800X_631ee764-03a7-47cf-a94e-550eef94ce8d_20220930_205535_451.jpg, 00:06:39, 71.15 m
Junction at 2 o'clock, 100mm dia

Section Pictures - 30/09/2022 - 1800X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
17	Upstream	1800X	209300	209300



1800X_5625f658-737d-4d08-bf0f-940b4a4ec341_20220930_205654_271.jpg, 00:07:28, 80.75 m
General remark, WILL REMOVE WHEN WET UP ON NEXT MH. WILL DO A 2M OVERLAP



1800X_5a40bf3d-842f-4837-a7ac-91f7a9521309_20220930_205710_875.jpg, 00:07:32, 80.75 m
Finish node, manhole, reference: 1800

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Project No.	209300
Survey Date.	30/09/2022
Surveyor.	A.EAGLESOME / N.MORTON

Asset Survey Card

Asset ID: 804 eg: MH, CP, GY

Staus : PU Asset Type : MH Function: SW Cover Level:

Location: MATTHEWS LANE, M19 3ES

Town: MANCHESTER

COVER DETAILS

[Y] Square [ ] Rectangle [ ] Triangle [ ] Dbl Triangle [ ] Circular [ ] Other [ ] Other

[Y] Hinged [ ] Lockable [ ] Grating [ ] Cover Duty 600 x 600 Size (mm)

PIPE DETAILS

Incoming Pipes

Pipe	Depth from Cover (m)	Upstream / Downstream Ref	Shape	Size (mm) Height		Width	Pipe Mat	Lining Mat	Soffit Level (m)	Invert Level (m)
A	1.35		C	525	x		CON			
B					x					
C					x					
D					x					
E					x					
F					x					

Outgoing Pipes

X	1.35		C	525	x		CON			
Y					x					

MANHOLE CONSTRUCTION DETAILS

Shaft

450 x 450 Size (mm) 0.2 Depth (m) No. of Reg Courses Soffit

Chamber

900 x 900 Size (mm) N Side Entry N OX / H2S / METH Toxic atmosphere N Evidence of Surcharge

[Y] Pre Cast Concrete [ ] Insitu Concrete [ ] Brick [ ] GRP [ ] Reducing Slab

2 Step Irons [N] Ladder 0 No. of Landings 10 Depth of Flow (mm) 5 Depth of Silt (mm)

ADDITIONAL CONSTRUCTION DETAILS

[ ] Flap Valve [ ] Orifice [ ] Sluice Gate [ ] Weir [ ] Screens [ ] Penstock [ ] Flume [ ] H/Wall

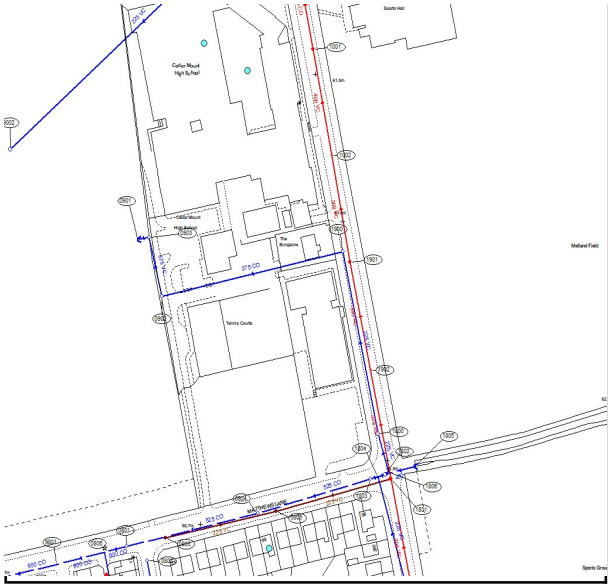
CONDITION INFORMATION (Specify in Remark)

	Cover	Shaft	Irons/Ladder	Chamber	Benching	Channel
OK	Y	Y	Y	Y	Y	Y
Needs Attention						
Urgent Attention						

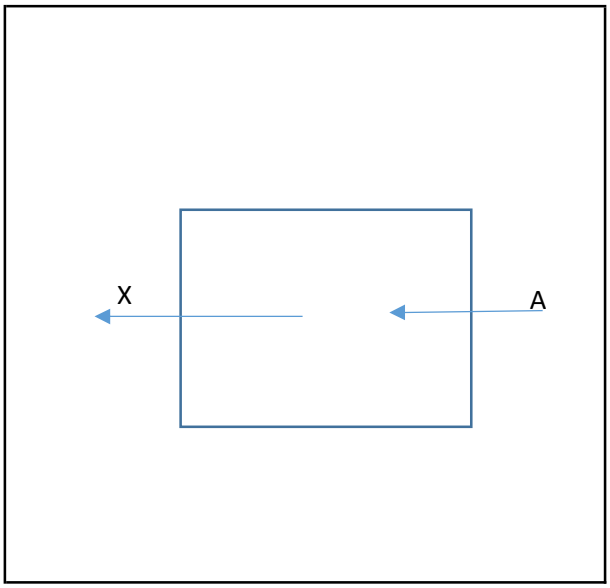
Remark: UNABLE TO GET COVER LEVEL DUE TO NO GPS ONSITE

See Overleaf for Key

LOCATION SKETCH



PLAN OF MANHOLE



LOCATION PHOTO



INTERNAL PHOTO



STATUS	PU : Public	PR : Private	WC : Culverted Watercourse	}	Applies to main outlet
	24 : Section 24	HD : Highway Drain			
FUNCTION	F : Foul	C : Combined	S : Surface Water	}	Applies to main outlet
MANHOLE TYPE	IF : Infall	MH : Manhole	CP : Catchpit		
	LH : Lamphole	RE : Rodding Eye	SO : Storm Overflow		
	GU : Gully	OF : Outfall	SA : Soakaway		
COVER DUTY	L : Light Duty	M : Medium Duty	H : Heavy Duty		
SHAPE	C : Circular	E : Egg	R : Rectangular		
	S : Square	T : Trapezoidal	A : Arched		
	B : Barrel	H : Horseshoe (Inverted U)	U : U-shaped with flat top		
	X : Other (state in words)				
PIPE (OR LINING) MATERIAL	AK : Alkathene	AC : Asbestos Cement	BR : Brick		
	CI : Cast Iron	SI : Spun (Grey) Iron	CO : Concrete		
	CSB : Concrete Segments (Bolted)	CSU : Concrete Segments (Unbolted)	CC : Concrete Box Culvert		
	DI : Ductile Iron	GRC : Glass Reinforced Concrete	GRP : Glass Reinforced Plastic		
	PSC : Plastic/Steel Composite	PVC : Polyvinyl Chloride	PE : Polyethylene		
	RPM : Reinforced Plastic Matrix	ST : Steel	VC : Vitrified Clay		
	PP : Polypropylene	PF : Pitch Fibre	MAC : Masonry, Coursed		
	MAR : Masonry, Randon Courses	XXX : Other (State in remarks)			
LINING	BL : Bitumen	RL : Resin	IS : Insituform		
	CL : Cement	PI : Plastic			

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Project No.	209300
Survey Date.	30/09/2022
Surveyor.	A.EAGLESOME / N.MORTON

Asset Survey Card

Asset ID: 1001 eg: MH, CP, GY

Staus : PU Asset Type : MH Function: CO Cover Level:

Location: MOUNT ROAD, M19 3ES

Town: MANCHESTER

COVER DETAILS

[Y] Square [ ] Rectangle [ ] Triangle [ ] Dbl Triangle [ ] Circular [ ] Other [ ] Other

[ ] Hinged [ ] Lockable [ ] Grating [ ] Cover Duty 600 x 600 Size (mm)

PIPE DETAILS

Incoming Pipes

Pipe	Depth from Cover (m)	Upstream / Downstream Ref	Shape	Size (mm) Height		Width	Pipe Mat	Lining Mat	Soffit Level (m)	Invert Level (m)
A	4.35		C	400	x		VC			
B					x					
C					x					
D					x					
E					x					
F					x					

Outgoing Pipes

X	4.35		C	450	x		VC			
Y					x					

MANHOLE CONSTRUCTION DETAILS

Shaft

600 x 600 Size (mm) 0.3 Depth (m) No. of Reg Courses Soffit

Chamber

600 x 800 Size (mm) N Side Entry N OX / H2S / METH Toxic atmosphere N Evidence of Surcharge

[ ] Pre Cast Concrete [ ] Insitu Concrete [Y] Brick [ ] GRP [ ] Reducing Slab

11 Step Irons [N] Ladder 0 No. of Landings 10 Depth of Flow (mm) 5 Depth of Silt (mm)

ADDITIONAL CONSTRUCTION DETAILS

[ ] Flap Valve [ ] Orifice [ ] Sluice Gate [ ] Weir [ ] Screens [ ] Penstock [ ] Flume [ ] H/Wall

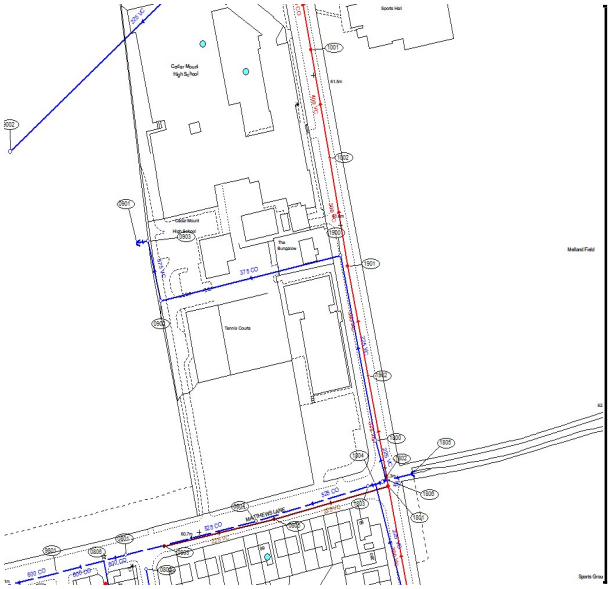
CONDITION INFORMATION (Specify in Remark)

	Cover	Shaft	Irons/Ladder	Chamber	Benching	Channel
OK	Y	Y	Y	Y	Y	Y
Needs Attention						
Urgent Attention						

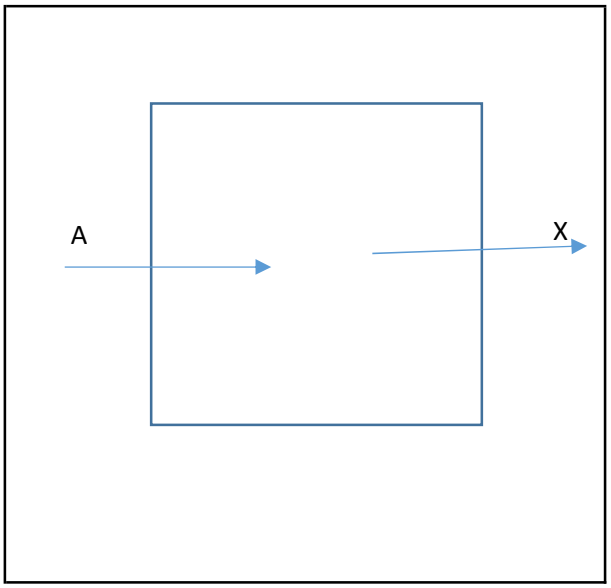
Remark: UNABLE TO GET COVER LEVEL DUE TO NO GPS

See Overleaf for Key

LOCATION SKETCH



PLAN OF MANHOLE



LOCATION PHOTO



INTERNAL PHOTO



STATUS	PU : Public	PR : Private	WC : Culverted Watercourse	}	Applies to main outlet
	24 : Section 24	HD : Highway Drain			
FUNCTION	F : Foul	C : Combined	S : Surface Water	}	Applies to main outlet
MANHOLE TYPE	IF : Infall	MH : Manhole	CP : Catchpit		
	LH : Lamphole	RE : Rodding Eye	SO : Storm Overflow		
	GU : Gully	OF : Outfall	SA : Soakaway		
COVER DUTY	L : Light Duty	M : Medium Duty	H : Heavy Duty		
SHAPE	C : Circular	E : Egg	R : Rectangular		
	S : Square	T : Trapezoidal	A : Arched		
	B : Barrel	H : Horseshoe (Inverted U)	U : U-shaped with flat top		
	X : Other (state in words)				
PIPE (OR LINING) MATERIAL	AK : Alkathene	AC : Asbestos Cement	BR : Brick		
	CI : Cast Iron	SI : Spun (Grey) Iron	CO : Concrete		
	CSB : Concrete Segments (Bolted)	CSU : Concrete Segments (Unbolted)	CC : Concrete Box Culvert		
	DI : Ductile Iron	GRC : Glass Reinforced Concrete	GRP : Glass Reinforced Plastic		
	PSC : Plastic/Steel Composite	PVC : Polyvinyl Chloride	PE : Polyethylene		
	RPM : Reinforced Plastic Matrix	ST : Steel	VC : Vitrified Clay		
	PP : Polypropylene	PF : Pitch Fibre	MAC : Masonry, Coursed		
	MAR : Masonry, Randon Courses	XXX : Other (State in remarks)			
LINING	BL : Bitumen	RL : Resin	IS : Insituform		
	CL : Cement	PI : Plastic			

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Project No.	209300
Survey Date.	30/09/2022
Surveyor.	A.EAGLESOME / N.MORTON

Asset Survey Card

Asset ID: 1801 eg: MH, CP, GY

Staus : PU | Asset Type : MH | Function: CO | Cover Level:

Location: MOUNT ROAD, M19 3ES

Town: MANCHESTER

COVER DETAILS

Y	Square		Rectangle		Triangle		Dbl Triangle		Circular		Other		Other
Y	Hinged		Lockable		Grating		Cover Duty	600	x	600	Size (mm)

PIPE DETAILS

Incoming Pipes

Pipe	Depth from Cover (m)	Upstream / Downstream Ref	Shape	Size (mm) Height		Width	Pipe Mat	Lining Mat	Soffit Level (m)	Invert Level (m)
A	2.65		C	225	x		VC			
B	2.7		C	300	x		VC			
C	2.65		C	225	x		VC			
D					x					
E					x					
F					x					

Outgoing Pipes

X	2.7		C	300	x		VC			
Y					x					

MANHOLE CONSTRUCTION DETAILS

Shaft

450 x 450 Size (mm) | 0.5 Depth (m) | No. of Reg Courses | Soffit

Chamber

600 x 800 Size (mm) | N Side Entry | N OX / H2S / METH Toxic atmosphere | N Evidence of Surcharge

Pre Cast Concrete	Insitu Concrete	Y Brick	GRP	Reducing Slab
5 Step Irons	N Ladder	0 No. of Landings	10 Depth of Flow (mm)	5 Depth of Silt (mm)

ADDITIONAL CONSTRUCTION DETAILS

Flap Valve | Orifice | Sluice Gate | Weir | Screens | Penstock | Flume | H/Wall

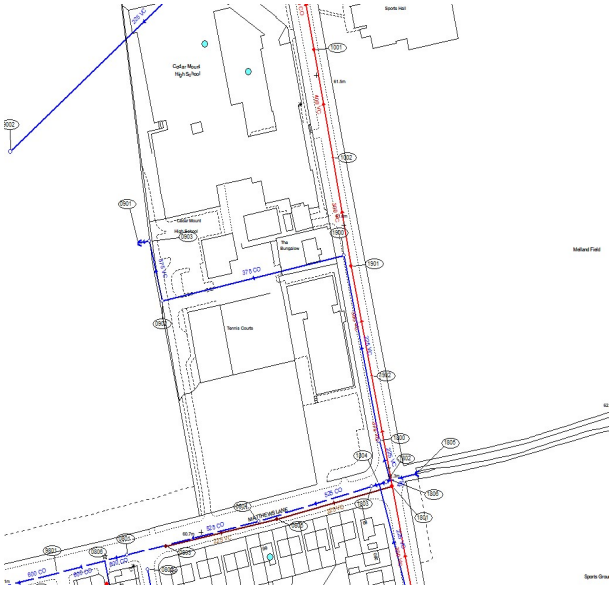
CONDITION INFORMATION (Specify in Remark)

	Cover	Shaft	Irons/Ladder	Chamber	Benching	Channel
OK	Y	Y	Y	Y	Y	Y
Needs Attention						
Urgent Attention						

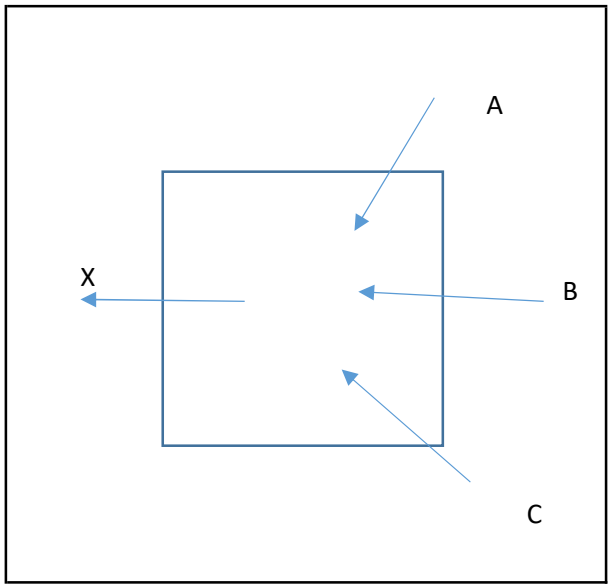
Remark: UNABLE TO GET COVER LEVEL DUE TO NO GPS ONSITE

See Overleaf for Key

LOCATION SKETCH



PLAN OF MANHOLE



LOCATION PHOTO



INTERNAL PHOTO



STATUS	PU	: Public	PR	: Private	WC : Culverted Watercourse	} Applies to main outlet
	24	: Section 24	HD	: Highway Drain		
FUNCTION	F	: Foul	C	: Combined	S : Surface Water	} Applies to main outlet
MANHOLE TYPE	IF	: Infall	MH	: Manhole	CP : Catchpit	
	LH	: Lamphole	RE	: Rodding Eye	SO : Storm Overflow	
	GU	: Gully	OF	: Outfall	SA : Soakaway	
COVER DUTY	L	: Light Duty	M	: Medium Duty	H : Heavy Duty	
SHAPE	C	: Circular	E	: Egg	R : Rectangular	
	S	: Square	T	: Trapezoidal	A : Arched	
	B	: Barrel	H	: Horseshoe (Inverted U)	U : U-shaped with flat top	
	X	: Other (state in words)				
PIPE (OR LINING) MATERIAL	AK	: Alkathene	AC	: Asbestos Cement	BR : Brick	
	CI	: Cast Iron	SI	: Spun (Grey) Iron	CO : Concrete	
	CSB	: Concrete Segments (Bolted)	CSU	: Concrete Segments (Unbolted)	CC : Concrete Box Culvert	
	DI	: Ductile Iron	GRC	: Glass Reinforced Concrete	GRP : Glass Reinforced Plastic	
	PSC	: Plastic/Steel Composite	PVC	: Polyvinyl Chloride	PE : Polyethylene	
	RPM	: Reinforced Plastic Matrix	ST	: Steel	VC : Vitrified Clay	
	PP	: Polypropylene	PF	: Pitch Fibre	MAC : Masonry, Coursed	
	MAR	: Masonry, Randon Courses	XXX	: Other (State in remarks)		
LINING	BL	: Bitumen	RL	: Resin	IS : Insituform	
	CL	: Cement	PI	: Plastic		

IWJS
A part of MGroupServices

Project No.	209300
Survey Date.	30/09/2022
Surveyor.	A.EAGLESOME / N.MORTON

Asset Survey Card

Asset ID: 1901 eg: MH, CP, GY

Staus : PU Asset Type : MH Function: CO Cover Level:

Location: MOUNT ROAD, M19 3ES

Town: MANCHESTER

COVER DETAILS

[Y] Square [ ] Rectangle [ ] Triangle [ ] Dbl Triangle [ ] Circular [ ] Other [ ] Other

[ ] Hinged [ ] Lockable [ ] Grating [ ] Cover Duty 600 x 600 Size (mm)

PIPE DETAILS

Incoming Pipes

Pipe	Depth from Cover (m)	Upstream / Downstream Ref	Shape	Size (mm) Height		Width	Pipe Mat	Lining Mat	Soffit Level (m)	Invert Level (m)
A	3.25		C	300	x		VC			
B					x					
C					x					
D					x					
E					x					
F					x					

Outgoing Pipes

X	3.25		C	400	x		VC			
Y					x					

MANHOLE CONSTRUCTION DETAILS

Shaft

450 x 450 Size (mm) 0.5 Depth (m) No. of Reg Courses Soffit

Chamber

600 x 800 Size (mm) N Side Entry N OX / H2S / METH Toxic atmosphere N Evidence of Surcharge

[ ] Pre Cast Concrete [ ] Insitu Concrete [Y] Brick [ ] GRP [ ] Reducing Slab

7 Step Irons [N] Ladder 0 No. of Landings 10 Depth of Flow (mm) 5 Depth of Silt (mm)

ADDITIONAL CONSTRUCTION DETAILS

[ ] Flap Valve [ ] Orifice [ ] Sluice Gate [ ] Weir [ ] Screens [ ] Penstock [ ] Flume [ ] H/Wall

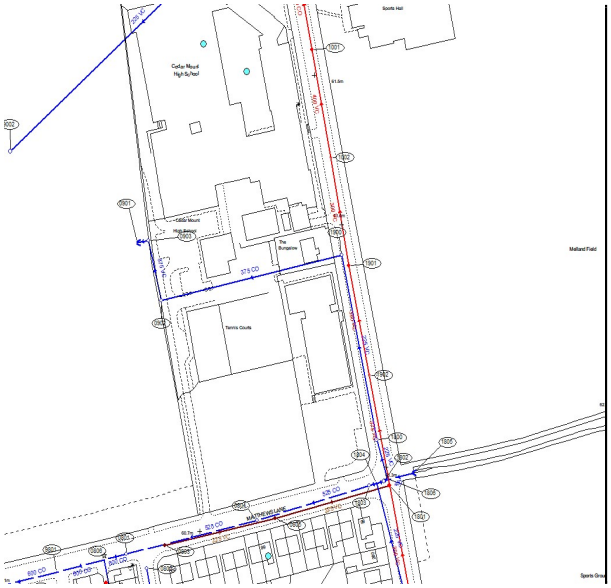
CONDITION INFORMATION (Specify in Remark)

	Cover	Shaft	Irons/Ladder	Chamber	Benching	Channel
OK	Y	Y	Y	Y	Y	Y
Needs Attention						
Urgent Attention						

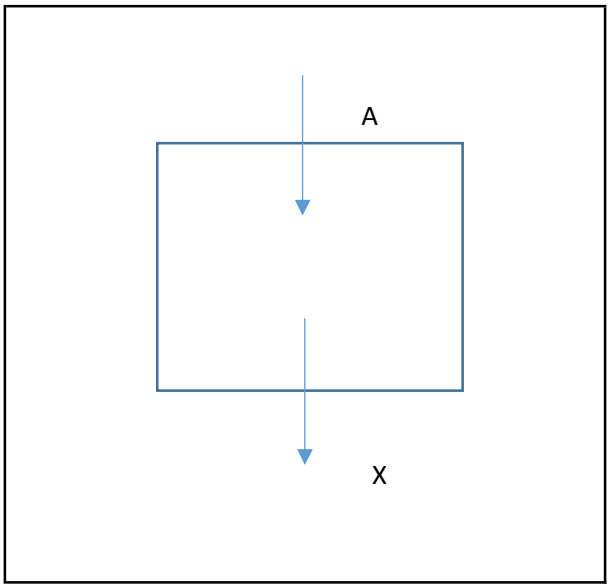
Remark: UNABLE TO GET COVER LEVEL DUE TO NO GPS ONSITE

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LOCATION SKETCH



PLAN OF MANHOLE



LOCATION PHOTO



INTERNAL PHOTO



STATUS	PU : Public	PR : Private	WC : Culverted Watercourse	} Applies to main outlet		
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SHAPE	C : Circular	E : Egg	R : Rectangular			
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	CL : Cement	PI : Plastic				

IWJS Work Record

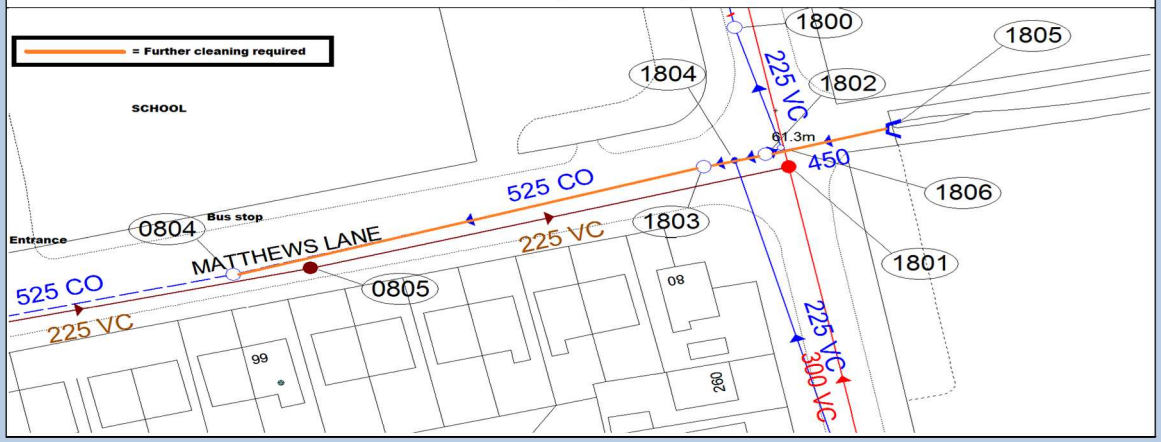
Work Order	209300

TL Number	209300	Day	Tuesday	Date	27/09/2022	Target Time on Site	0800	Actual Time	0800
Address	Matthews Lane Levenshume Manchester					DC Name	Manchester		
Property Occupied?	YES ☐	NO ☑	Property Type	U ☐	R ☐	P ☑	B ☐	I ☐	N ☐
Instructions	DESILT & CCTV SEWERS								
Ganger	M Sweeney	Type of Unit (Tick Box)							
2nd Man	K Adamson / N Browne	CCTV	Recycler	Van Pack	Muller	Tanker	Remote Reel	Flexline	
3rd Man		☑	☐	☐	☐	☐	☐	☑	

REMEMBER TO RING OFFICE OR SITE MANAGER AS SOON AS ANY PROBLEMS ARE ENCOUNTERED ON SITE

Start Time	Finish Time	Activity and Site Details	Hrs	Mins
0800	1500	*Arrived on site and liaised with TM team to set up on MH 0804 on Matthews lane. Due to School and parked vehicles, TM wasn't able to set up till 0930 also having to knock on customer properties to remove parked vehicles out of lane closures position. Once road and traffic had quieten off TM set up two way lights and Type 5 and CCTV unit positioned back to back on MH 0804. CCTV unit then proceeded to take a Pre survey of line in the upstream direction to determine assets condition before cleanse took place. CCTV abandoned approx. 17m u/s due to 20% silt and brick debris. Type 5 unit then proceeded to clean sewer, having to pull off site several times to refill with water that had been lost during cleaning process. CCTV was then attempted while wagon re filled to find line was still heavily silted and further cleaning was still required. Approx. 1445 TM crew was concerned about the school pupils leaving school and permit hours reached to pull down TM and off site for school finishing. Further cleaning req NWD to complete with in working permitted hours (School Times).*	7	

Sketch Plan (include all details)



IWJS Work Record

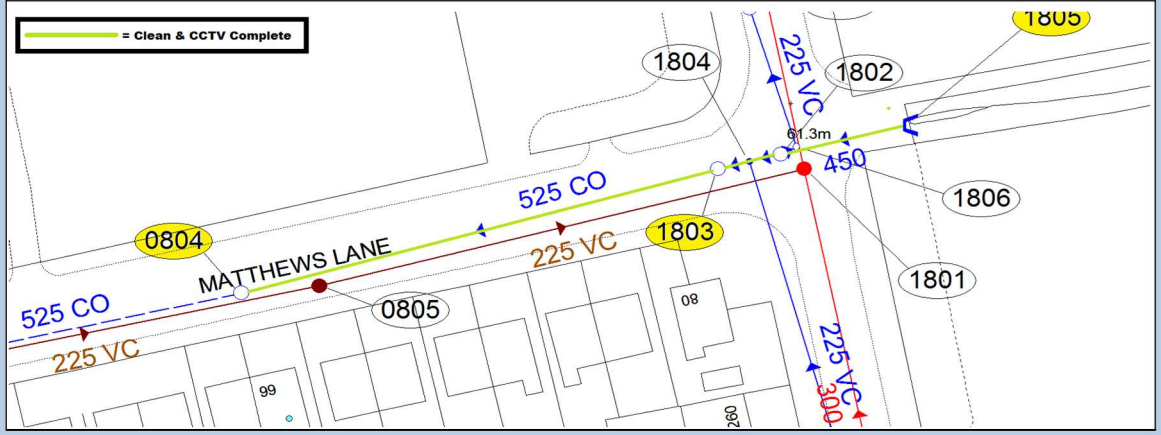
Work Order	209300								
TL Number	209300	Day	Wednesday	Date	28/09/2022	Target Time on Site	0800	Actual Time	0800
Address	Matthews Lane Levenshume Manchester					DC Name	Manchester		
Property Occupied?	YES ☐	NO ☑	Property Type	U ☐	R ☐	P ☑	B ☐	I ☐	N ☐
Instructions	DESILT & CCTV SEWERS								
Ganger	M Sweeney								
2nd Man	K Adamson / N Browne								
3rd Man									

Type of Unit (Tick Box)						
CCTV	Recycler	Van Pack	Muller	Tanker	Remote Reel	Flexline
☑	☐	☐	☐	☐	☐	☑

REMEMBER TO RING OFFICE OR SITE MANAGER AS SOON AS ANY PROBLEMS ARE ENCOUNTERED ON SITE

Start Time	Finish Time	Activity and Site Details	Hrs	Mins
0800	1500	*Arrived on site and liaised with TM team to set up on MH 0804 on Matthews lane. Due to School and parked vehicles, TM wasn't able to set up till 0930 also having to knock on customer properties to remove parked vehicles out of lane closures position. Once road and traffic had quieten off TM set up two way lights and Muller and CCTV unit positioned back to back on MH 0804. Muller unit then proceeded to clean coming to a stop approx. 66m in MH 1803 as incoming levels changed. Full MH entry was req in MH 1803 to feed all equipment trough to inlet outfall due to the busy junction as no Vehicles could set up in day here. Once cleaning was complete, CCTV followed up with full survey up to inlet outfall 1805. Job Complete. Works on Mount Road will require OOH and tm to complete full works required.*	7	

Sketch Plan (include all details)



IWJS Work Record

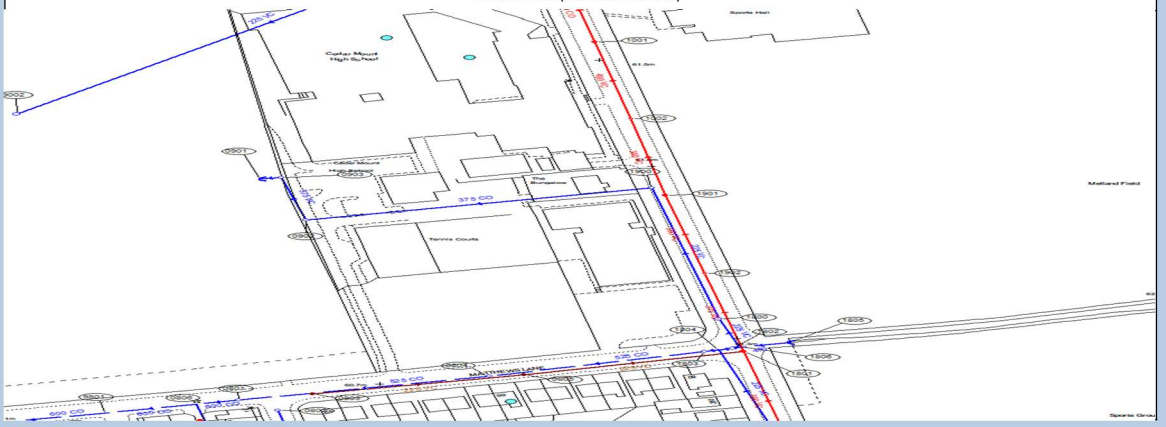
Work Order: 209300

TL Number	209300	Day	Friday	Date	30/09/2022	Target Time on Site	18:30	Actual Time	18:30
Address	MOUNT ROAD / MATTHEWS LANE JUNCTION					DC Name	Manchester		
Instructions	DESILT CCTV AS PER PLANS PROVIDED								
Ganger	A.EAGLESOME - FG64 FLM	Type of Unit (Tick Box)							
2nd Man	N.ROLAND - FN15 FVL	CCTV	Recycler	Van Pack	Muller	Tanker	Remote Reel	Flexline	
3rd Man	N.MORTON / A.JACKSON	■	■	☐	☐	☐	☐	☐	

REMEMBER TO RING OFFICE OR SITE MANAGER AS SOON AS ANY PROBLEMS ARE ENCOUNTERED ON SITE

Start Time	Finish Time	Activity and Site Details	Hrs	Mins
18:30	02:00	*ARRIVED ON SITE AND WAITED FOR TM TO SET UP 3WAY LIGHTS. WE PER EMAIL FROM ARE OFFICE WE SET UP ON MH 1900 AND JETTED U/S TO MH 1800 AND FOLLOWED UP WITH CCTV. WE THEN MOVED TO MH 1800 AND JETTED U/S TO 1806 AND FOLLOWED US WITH CCTV. THE PLAN SHOWES ITS AN OVERFLOW FROM THE OPEN DITCH CULVERT BUT I HAVE CCTV 50M AND THATS 35M PAST WHERE THE PLANS SAY. IT SHOWS THERE IS ANOTHER 225MM COMING IN FROM MOUNT ROAD. I THINK ITS A SEPERATE SYSTEM AND IT FLOWS ALL THE WAY DOWN MOUNT ROAD AND NOTHING TO DO WITH THE DITCH CULVERT. I THEN DONE THE 3 MH CARDS ON THE COMBINED SYSTEM MH'S 0804, 1801, 1801 & 1001. PLEASE FIND ATTACHED DCS WITH ALL PIPE INFORMATION AND PICTURES USING THE PICTURES TAB. ALL VIDEO FOOTAGE HAS BEEN UPLOADED TO WINCAN WEB.*	5	

Sketch Plan (include all details)



Feedback documents available to view and download via the document section on WinCan Web

Cedar Mount

High School

0903

The

Bungalow

1900

61.0m

1901

375 VC

375 CO

0902

Tennis Courts

225 VC

1902

1800

1805

1804

225 VC

1802

61.3m

450

525 CO

1806

0804

MATTHEWS LANE

1803

225 VC

Surveyed past the
450 concrete line

1801

0805

80

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NOTES

1. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE. IF IN DOUBT, ASK.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT CCTV DOCUMENTATION.
3. ALL DIMENSIONS AND LEVELS IN METRES UNLESS NOTED OTHERWISE.
4. PIPE RUNS ARE ASSUMED STRAIGHT BETWEEN CHAMBERS UNLESS OTHERWISE INDICATED.
5. ALL UTILITIES ARE UNDERGROUND EXCEPT WHERE INDICATED.

DRAINAGE/CCTV SURVEY LEGEND

SURVEYED SEWER

Rev	Date	Details of issue / revision	Drw	Rev

ISSUES & REVISIONS

IWJS

Head Office: Dickens House, Old Stowmarket Road, Woolpit, Bury St Edmunds, Suffolk IP30 9QS
Essex Office: 230 Old London Road, Marks Tey, Colchester, Essex CO6 1EN
Lincoln Office: Unit 4, Boundary Lane Enterprise Park, South Hykeham, Lincoln LN6 9NQ
Manchester Office: Unit 10 Huntsman Drive, North Bank Industrial Estate, Irlam, Manchester M44 5EG
Norfolk Office: Green Road, Yaxham Road Industrial Estate, Dereham, Norfolk NR20 3TG

Client

Kellen Homes Limited

Project Title

Mount Road / Matthews Lane Junction
Manchester
M19 3ES

Drawing Title

Drainage system investigation.

Scale	NTS	Drawn	JS
Size	A1	Reviewed	BN

Drawing Status

EXISTING

Drawing No.	Revision
IWJS - 209300	**1**



IWJS

INDUSTRIAL WATER JETTING SYSTEMS

CCTV SURVEY INSPECTION REPORT

Client:	Kellen Homes Limited
Location:	Wembley Road, Manchester
Date Issued:	03.10.2022



Industrial Water Jetting Systems Ltd

Dickens House, Old Stowmarket Road, Woolpit, Bury St. Edmunds IP22 9QS

Tel: 01359 242606 Fax: 01359 242 621

Web: www.iwjs.co.uk Email: surveys@iwjs.co.uk

[redacted]



Project

Project Name:	2022_09_30 Kellen Holmes Wembley Road Manchester M Sweeney
Project Date:	30/09/2022
Inspection Standard:	MSCC5 Sewers & Drainage GB (SRM5 Scoring)

[redacted]

Table of Contents

Project Name	Project Number	Project Date
2022_09_30 Kellen Holmes Wembley Road Manchester M Sweeney		30/09/2022

Project Information P-1

Scoring Summary P-2

Section Item 1: INTLET A > OUTLET B (INTLET AX) 1

[redacted]

Project Information

Project Name	Project Number	Project Date
2022_09_30 Kellen Holmes Wembley Road Manchester M Sweeney		30/09/2022

Site

Company: Kellen Homes Limited
Street: Wembley Road
Town or City: Manchester
County: Greater Manchester
Post Code: M18 7WF

Contractor

Company: IWJS
Contact: Aden Halliwell
Department: Account Executive North
Street: Unit 10 Huntsman Drive
Town or City: North Bank Industrial Estate, Irlam
County: Greater Manchester
Post Code: M44 5EG
Phone: 0161 776 0499
Mobile: 07876026188
Email: Aden.Halliwell@iwjs.co.uk

[redacted]

Scoring Summary

Project Name	Project Number	Project Date
2022_09_30 Kellen Holmes Wembley Road Manchester M Sweeney		30/09/2022

Structural Defects

Grade 3: Best practice suggests consideration should be given to repairs in the medium term.

Grade 4: Best practice suggests consideration should be given to repairs to avoid a potential collapse.

Grade 5: Best practice suggests that this pipe is at risk of collapse at any time. Urgent consideration should be given to repairs to avoid total failure.

Section	PLR	Grade	Description
1	INTLET AX	4	Hole in drain or sewer at 1 o'clock

Service / Operational Condition

Grade 3: Best practice suggests consideration should be given to maintenance activities in the medium term.

Grade 4: Best practice suggests consideration should be given to maintenance activity to avoid potential blockages.

Grade 5: Best practice suggests that this pipe is at a high risk of backing up or causing flooding.

Section	PLR	Grade	Description
1	INTLET AX	2	Multiple defects

Abandoned Surveys

Section	PLR	Description
All inspections complete, none are abandoned.		

Information

These scoring summaries are based on the SRM grading from the WRc.

Section Inspection - 30/09/2022 - INTLET AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	30/09/22	11:42	Not Specified	No Rain Or Snow	Yes	INTLET AX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
M Sweeney	FL65 CZR	Crawler	Not Specified	Watercourse	Not Specified

Town or Village:	Gorton	**Inspection Direction:**	Downstream	**Upstream Node:**	INTLET A
Road:	Wembley Rd / Holmcroft Ro	**Inspected Length:**	23.15 m	**Upstream Pipe Depth:**	0.500 m
Location:	Verge	**Total Length:**	23.15 m	**Downstream Node:**	OUTLET B
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	0.560 m

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:201



Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.50 m **INTLET A**					
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
0.00	OF	Start node, outfall, reference: INTLET A	00:00:00		
6.84	CLJ	Crack, longitudinal at joint at 1 o'clock	00:00:32	INTLET AX_985cdc14-ab1c-	2 / 2
7.10	CLJ	Crack, longitudinal at joint at 1 o'clock	00:00:35	INTLET AX_77a20190-6026-	2 / 2
9.61	CCJ	Crack, circumferential at joint from 7 o'clock to 2 o'clock	00:00:57	INTLET AX_f5102b3f-79a4-4	2 / 2
10.01	CLJ	Crack, longitudinal at joint at 12 o'clock	00:01:05	INTLET AX_841476dd-79d1-	2 / 2
10.72	CXD	Connection defective, connecting pipe is damaged at 10 o'clock, 100mm dia	00:01:19		
10.85	H	Hole in drain or sewer at 1 o'clock	00:01:31	INTLET AX_d01f09fb-9ebd-4	4
13.62	WL	Water level, 15% of the vertical dimension	00:02:02		
14.15	JN	Junction at 10 o'clock, 225mm dia	00:02:20		
23.15	OCF	Finish node, other special chamber, reference: OUTLET B: Outfall	00:02:32		
OUTLET B **Depth: 0.56 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**
5	80.0	8.1	120.0	4.0	4	2.0	0.3	4.0	3.0

Section Pictures - 30/09/2022 - INTLET AX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	INTLET AX		



INTLET
AX_985cdc14-ab1c-42a6-bf18-0c8f684d30e5_20221003_103515_786.jpg, 00:00:32, 6.84 m
Crack, longitudinal at joint at 1 o'clock



INTLET
AX_77a20190-6026-484e-b59f-0a3df12ba4a9_20221003_103517_895.jpg, 00:00:35, 7.10 m
Crack, longitudinal at joint at 1 o'clock



INTLET
AX_f5102b3f-79a4-453f-8185-1060f2d16f07_20221003_103519_994.jpg, 00:00:57, 9.61 m
Crack, circumferential at joint from 7 o'clock to 2 o'clock



INTLET
AX_841476dd-79d1-4be0-bea6-85822c4012bc_20221003_103522_204.jpg, 00:01:05, 10.01 m
Crack, longitudinal at joint at 12 o'clock

Section Pictures - 30/09/2022 - INTLET AX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	INTLET AX		



INTLET
AX_d01f09fb-9ebd-4c5d-a8a6-22f1d014d479_20220930_114430_667.jpg, 00:01:31, 10.85 m
Hole in drain or sewer at 1 o'clock

Project No.	209452
Survey Date.	30/09/2022
Surveyor.	M Sweeney

Asset Survey Card

Asset ID: 4101 eg: MH, CP, GY

Staus : PU | Asset Type : MH | Function: C | Cover Level: 3.35

Location: Wembley Road

Town: Manchester M18 7WF

COVER DETAILS

☒ Square ☐ Rectangle ☐ Triangle ☐ Dbl Triangle ☐ Circular ☐ Other ☐ Other

☒ Hinged ☐ Lockable ☐ Grating ☐ Cover Duty 550 x 450 Size (mm)

PIPE DETAILS

Incoming Pipes

Pipe	Depth from Cover (m)	Upstream / Downstream Ref	Shape	Size (mm) Height		Width	Pipe Mat	Lining Mat	Soffit Level (m)	Invert Level (m)
A	3.31	5002	C	300	x		VC			
B	3.33	4201	C	150	x		VC		0.170	0.020
C					x					
D					x					
E					x					
F					x					

Outgoing Pipes

X	3.35	4201	C	300	x		VC		0.300	0.000
Y					x					

MANHOLE CONSTRUCTION DETAILS

Shaft

541 x 449 Size (mm) | 2.58 Depth (m) | 11 No. of Reg Courses | Soffit

Chamber

449 x 897 Size (mm) | N Side Entry | N OX / H2S / METH Toxic atmosphere | N Evidence of Surcharge

☐ Pre Cast Concrete ☐ Insitu Concrete ☒ Brick N GRP N Reducing Slab

8 Step Irons ☐ Ladder ☐ No. of Landings 30 Depth of Flow (mm) 5 Depth of Silt (mm)

ADDITIONAL CONSTRUCTION DETAILS

☐ Flap Valve ☐ Orifice ☐ Sluice Gate ☐ Weir ☐ Screens ☐ Penstock ☐ Flume ☐ H/Wall

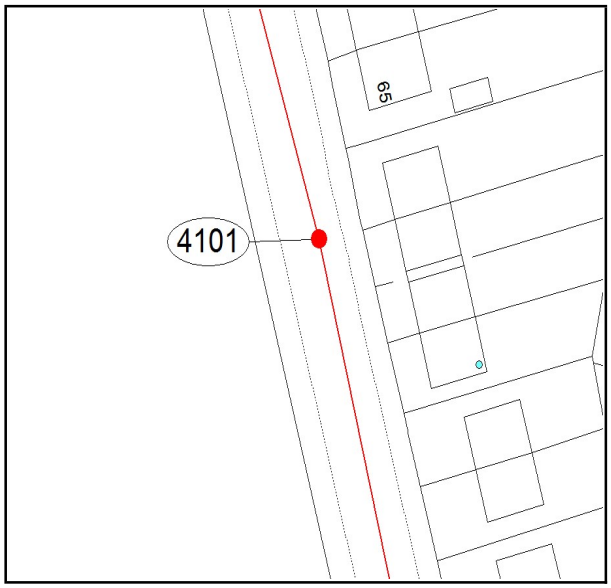
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OK	☒	☒	☒	☒	☒	☒
Needs Attention	☐	☐	☐	☐	☐	☐
Urgent Attention	☐	☐	☐	☐	☐	☐

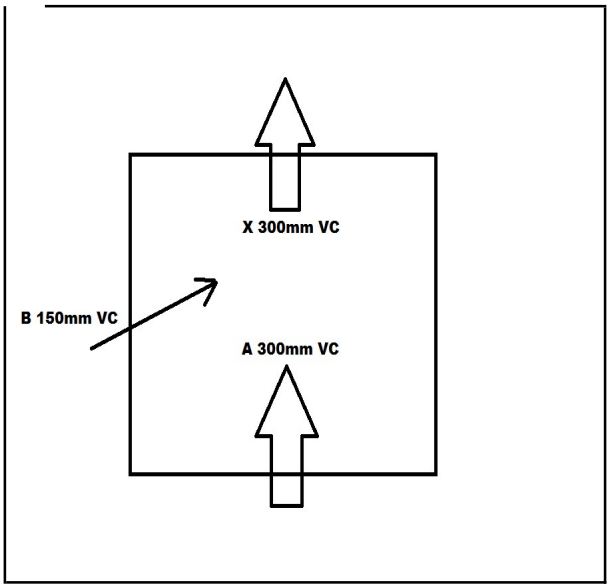
Remark: Rat Bait in MH

See Overleaf for Key

LOCATION SKETCH



PLAN OF MANHOLE



LOCATION PHOTO



INTERNAL PHOTO



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	S : Square	T : Trapezoidal	A : Arched		
	B : Barrel	H : Horseshoe (Inverted U)	U : U-shaped with flat top		
	X : Other (state in words)				
PIPE (OR LINING) MATERIAL	AK : Alkathene	AC : Asbestos Cement	BR : Brick		
	CI : Cast Iron	SI : Spun (Grey) Iron	CO : Concrete		
	CSB : Concrete Segments (Bolted)	CSU : Concrete Segments (Unbolted)	CC : Concrete Box Culvert		
	DI : Ductile Iron	GRC : Glass Reinforced Concrete	GRP : Glass Reinforced Plastic		
	PSC : Plastic/Steel Composite	PVC : Polyvinyl Chloride	PE : Polyethylene		
	RPM : Reinforced Plastic Matrix	ST : Steel	VC : Vitrified Clay		
	PP : Polypropylene	PF : Pitch Fibre	MAC : Masonry, Coursed		
	MAR : Masonry, Randon Courses	XXX : Other (State in remarks)			
LINING	BL : Bitumen	RL : Resin	IS : Insituform		
	CL : Cement	PI : Plastic			

Project No.	209452
Survey Date.	30/09/2022
Surveyor.	M Sweeney

Asset Survey Card

Asset ID: 5002 eg: MH, CP, GY

Staus : PU | Asset Type : MH | Function: C | Cover Level: 2.46

Location: Wembley Road

Town: Manchester M18 7WF

COVER DETAILS

☒ Square ☐ Rectangle ☐ Triangle ☐ Dbl Triangle ☐ Circular ☐ Other ☐ Other

☒ Hinged ☐ Lockable ☐ Grating ☐ Cover Duty 550 x 450 Size (mm)

PIPE DETAILS

Incoming Pipes

Pipe	Depth from Cover (m)	Upstream / Downstream Ref	Shape	Size (mm) Height		Width	Pipe Mat	Lining Mat	Soffit Level (m)	Invert Level (m)
A	2.44	5901	C	300	x		VC			
B	2.31	4101	C	225	x		VC		0.375	0.150
C					x					
D					x					
E					x					
F					x					

Outgoing Pipes

X	2.46	4101	C	300	x		VC		0.300	0.000
Y					x					

MANHOLE CONSTRUCTION DETAILS

Shaft

545 x 440 Size (mm) | 0.37 Depth (m) | 13 No. of Reg Courses | Soffit

Chamber

443 x 499 Size (mm) | N Side Entry | N OX / H2S / METH Toxic atmosphere | N Evidence of Surcharge

☐ Pre Cast Concrete ☐ Insitu Concrete ☒ Brick ☐ GRP ☐ Reducing Slab

3 Step Irons ☐ Ladder ☐ No. of Landings | 20 Depth of Flow (mm) | 5 Depth of Silt (mm)

ADDITIONAL CONSTRUCTION DETAILS

☐ Flap Valve ☐ Orifice ☐ Sluice Gate ☐ Weir ☐ Screens ☐ Penstock ☐ Flume ☐ H/Wall

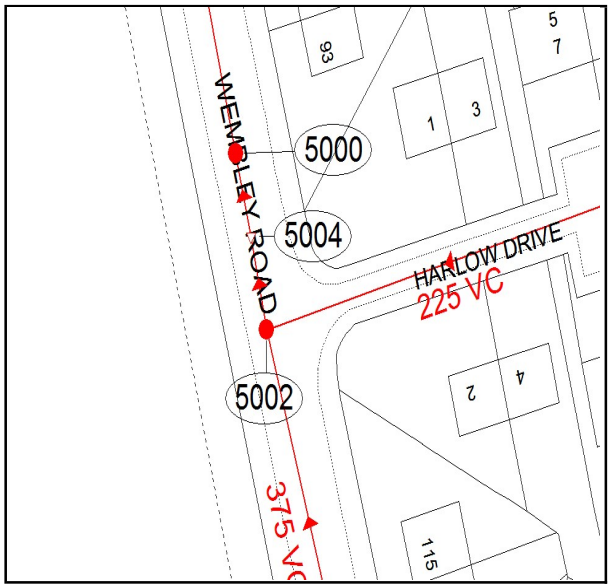
CONDITION INFORMATION (Specify in Remark)

	Cover	Shaft	Irons/Ladder	Chamber	Benching	Channel
OK	☒	☒	☒	☒	☒	☒
Needs Attention	☐	☐	☐	☐	☐	☐
Urgent Attention	☐	☐	☐	☐	☐	☐

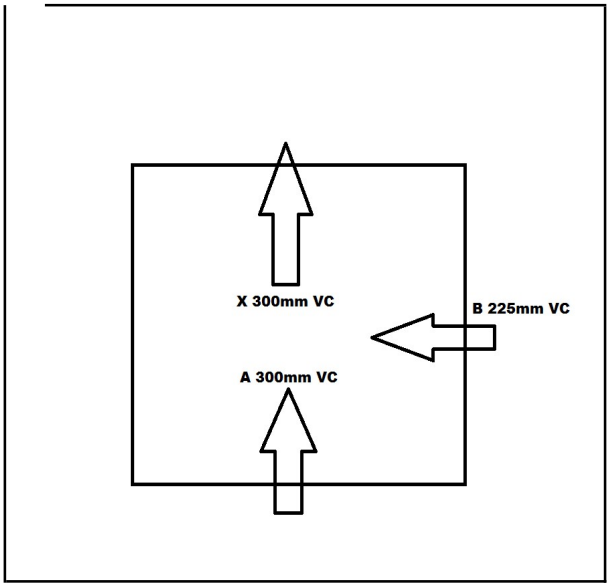
Remark: Rat Bait in MH

See Overleaf for Key

LOCATION SKETCH



PLAN OF MANHOLE



LOCATION PHOTO



INTERNAL PHOTO



STATUS	PU : Public	PR : Private	WC : Culverted Watercourse	}	Applies to main outlet
	24 : Section 24	HD : Highway Drain			
FUNCTION	F : Foul	C : Combined	S : Surface Water	}	Applies to main outlet
MANHOLE TYPE	IF : Infall	MH : Manhole	CP : Catchpit		
	LH : Lamphole	RE : Rodding Eye	SO : Storm Overflow		
	GU : Gully	OF : Outfall	SA : Soakaway		
COVER DUTY	L : Light Duty	M : Medium Duty	H : Heavy Duty		
SHAPE	C : Circular	E : Egg	R : Rectangular		
	S : Square	T : Trapezoidal	A : Arched		
	B : Barrel	H : Horseshoe (Inverted U)	U : U-shaped with flat top		
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	CL : Cement	PI : Plastic			

Project No.	209452
Survey Date.	30/09/2022
Surveyor.	M Sweeney

Asset Survey Card

Asset ID: 5901 eg: MH, CP, GY

Staus : PU | Asset Type : MH | Function: C | Cover Level: 1.79

Location: Wembley Road

Town: Manchester M18 7WF

COVER DETAILS

☐ Square ☐ Rectangle ☐ Triangle ☐ Dbl Triangle ☐ Circular ☐ Other ☐ Other

☐ Hinged ☐ Lockable ☐ Grating ☐ Cover Duty 550 x 450 Size (mm)

PIPE DETAILS

Incoming Pipes

Pipe	Depth from Cover (m)	Upstream / Downstream Ref	Shape	Size (mm) Height		Width	Pipe Mat	Lining Mat	Soffit Level (m)	Invert Level (m)
A	1.77	HOS	C	300	x		VC			
B	1.64	5002	C	1500	x		VC		1.650	0.150
C					x					
D					x					
E					x					
F					x					

Outgoing Pipes

X	1.79		C	300	x		VC		0.300	0.000
Y					x					

MANHOLE CONSTRUCTION DETAILS

Shaft

503 x 444 Size (mm) | 0.24 Depth (m) | 7 No. of Reg Courses | Soffit

Chamber

561 x 881 Size (mm) | N Side Entry | N OX / H2S / METH Toxic atmosphere | N Evidence of Surcharge

☐ Pre Cast Concrete ☐ Insitu Concrete ☐ Brick | N GRP | N Reducing Slab

2 Step Irons ☐ Ladder ☐ No. of Landings | 20 Depth of Flow (mm) | 5 Depth of Silt (mm)

ADDITIONAL CONSTRUCTION DETAILS

☐ Flap Valve ☐ Orifice ☐ Sluice Gate ☐ Weir ☐ Screens ☐ Penstock ☐ Flume ☐ H/Wall

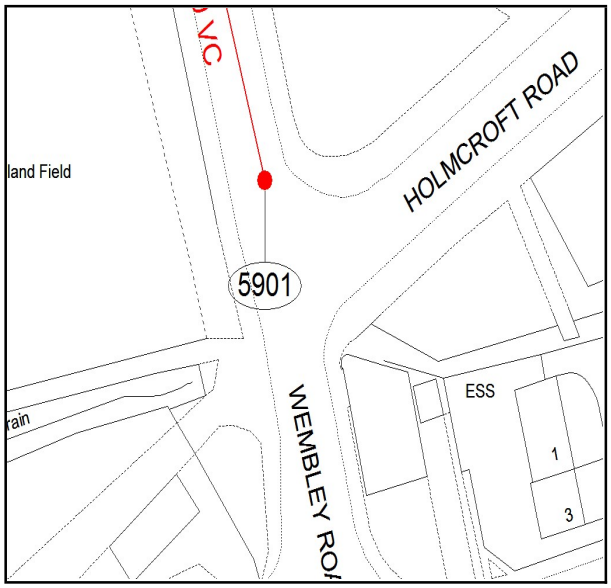
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Needs Attention	☐	☐	☐	☐	☐	☐
Urgent Attention	☐	☐	☐	☐	☐	☐

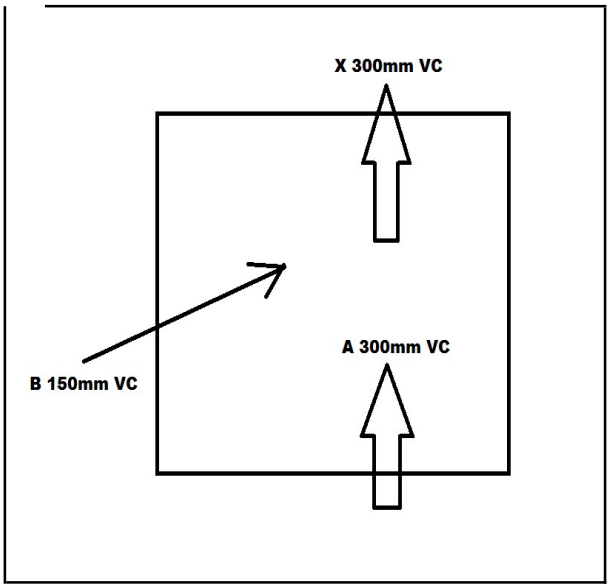
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See Overleaf for Key

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PLAN OF MANHOLE



LOCATION PHOTO



INTERNAL PHOTO



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	MAR : Masonry, Randon Courses	XXX : Other (State in remarks)			
LINING	BL : Bitumen	RL : Resin	IS : Insituform		
	CL : Cement	PI : Plastic			

IWJS Work Record

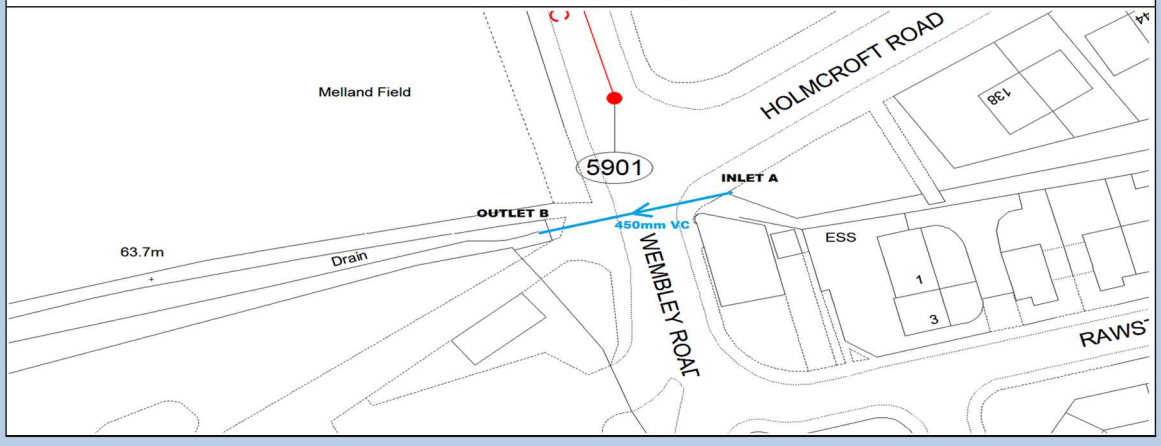
Work Order	209300								
TL Number	209300	Day	Friday	Date	30/09/2022	Target Time on Site	0800	Actual Time	0800
Address	Wembley Road Levenshume Manchester					DC Name	Manchester		
Property Occupied?	YES ☐	NO ☑	Property Type	U ☐	R ☐	P ☑	B ☐	I ☐	N ☐
Instructions	DESILT & CCTV SEWERS								
Ganger	M Sweeney								
2nd Man	J Wilkinson / N Browne								
3rd Man									

Type of Unit (Tick Box)						
CCTV	Recycler	Van Pack	Muller	Tanker	Remote Reel	Flexline
☑	☐	☐	☑	☐	☐	☐

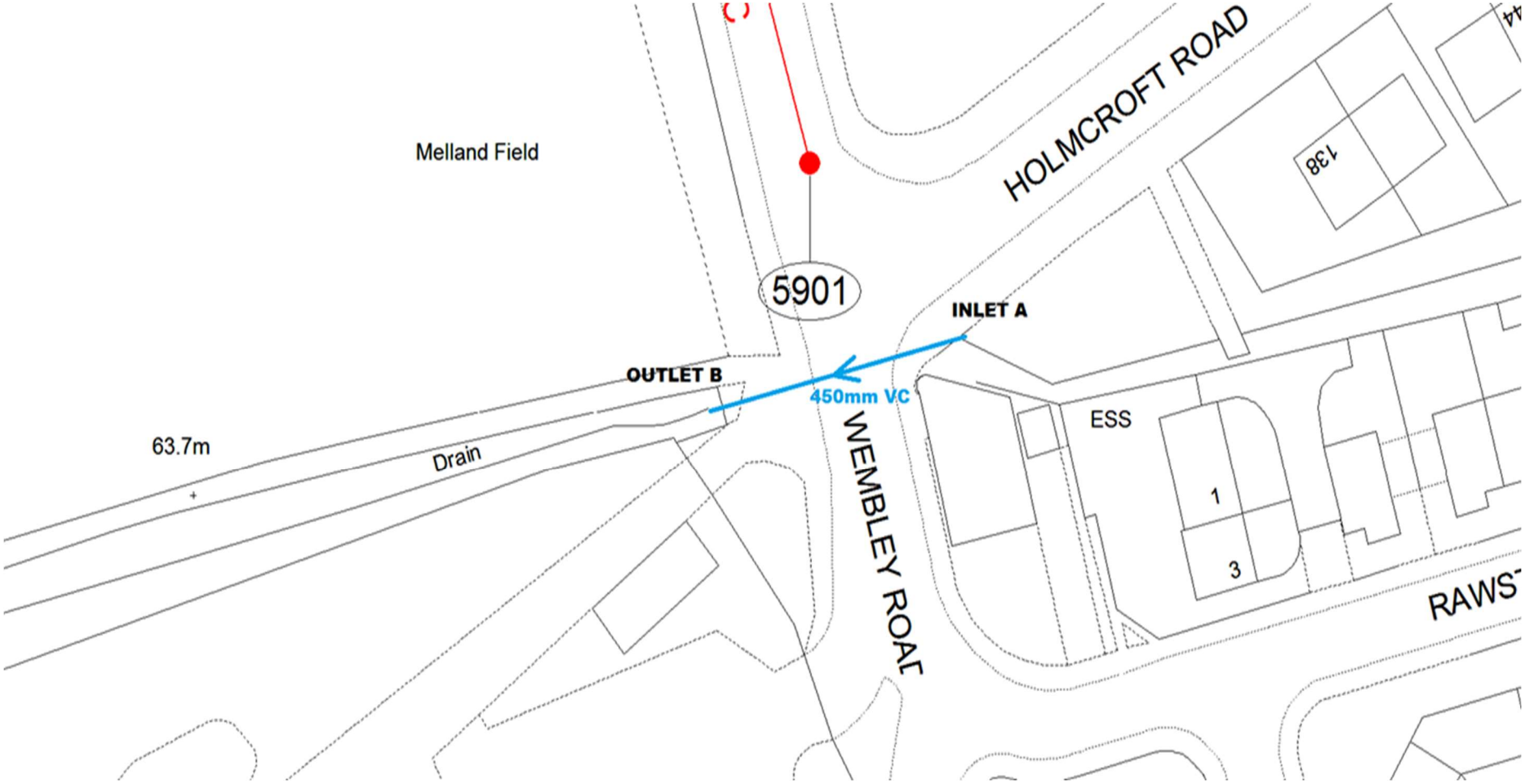
REMEMBER TO RING OFFICE OR SITE MANAGER AS SOON AS ANY PROBLEMS ARE ENCOUNTERED ON SITE

Start Time	Finish Time	Activity and Site Details	Hrs	Mins
0800	1430	*Arrived on site and was informed by client that no works were to be started till 1000 and only until 1430 due to school times and pupils, also passing traffic and buses. Once road and site area had cleared both CCTV and Muller unit set up site. Muller on OUTLET B and CCTV on INLET A. With use of Jet and suction after removing the downstream grate, Muller unit jetted approx. 23m u/s to inlet several times and removing any debris with use of suction. CCTV then followed up with Full CCTV survey from inlet to outlet. CCTV unit then proceeded to complete 3 x MH survey cards 5901-5002-4101. Job Complete.*	6	30

Sketch Plan (include all details)



Feedback documents available to view and download via the document section on WinCan Web



Feedback documents available to view and download via the document section on WinCan Web

Appendix D: Mannings Equation

Manning Equation for the Nico Ditch at

Mount Road, Gorton, M19 3ET

The LLFA have requested that the calculations are undertaken to investigate if the Nico Ditch has capacity for the additional flows from the proposed development.

Therefore please fin below the Mannings Equation to demonstrate the capacity of the ditch.

Information taken from the topographical survey and CCTV.

$$Q = n \times A \times R^{2/3} \times S^{1/2}$$

$$= \frac{1}{0.05} \times 3.37 \times \frac{3.37^{2/3}}{7.03} \times 0.0062^{1/2}$$

$$= 20 \times 3.37 \times 0.61 \times 0.078$$

$$= 3.2\ m^3/s \text{ or } 3{,}200\ l/s$$

Where:

Q = Flow Rate

n = Manning's Roughness Coefficient

A = Cross sectional Area

R = Wetted Perimeter

S = Slope

The total discharge from the upstream is 183 l/s as discussed in Section 5.4. this is the maximum discharge rate that can pass through the Wembley Road Culvert.

The additional discharge from the residential development site is 74 l/s, the sports pitches is 8.4 l/s, therefore the total discharge is 266 l/s.

The capacity of the channel is 3,200 l/s and the discharge is 266 l/s therefore it has enough capacity.

Appendix E: Drainage Calculations and Drainage Design

Charles Townsend

From: [redacted]
Sent:
To: Andy Brown
Subject: 30571/ Mount Road, Gorton - Sports Pitches

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Andrew

Further to our earlier telephone conversation regarding sport pitch drainage – bit of a tricky one as what % run off do you allow for from sports pitch?

The way I have worked is:

Greenfield run off rate for 15000m2 :

1 year	7.1l/s
30 year	13.8l/s
100year	17.0l/s

For the proposed sports pitch assume 10% ? run off

Therefore did a quick storage estimate , using contributing area of 1500m2 to restrict the 100yr+45% run off to 8.5l/s – which gives an estimate attenuation volumes of 49-82m3

Say 70m3

A swale 1m deep, with 1m wide base & 1/3 side slopes has cross sectional area of 4m2

So length of swale required = 17.5m, say 22m ?

Best guess at this stage?

Regards

Stephen Pope
Associate Civil Engineer

[redacted]nchester M28 3NJ

In response to COVID-19, Ironside Farrar have implemented our business continuity plan and are providing uninterrupted service for our clients. Our staff are now home-working with internet based access to business systems, project management and professional practice. The company has full server access including a dedicated OP-Centre internet data sharing platform and operates all standard video conference networks (Powwownow / MS Teams / Zoom / etc). Please continue to contact all staff by email and mobile telephone as noted in the above details and we will continue to provide services and professional support albeit under changed circumstances. Thank you for your continued support.



Please consider the environment before printing this e-mail.
Ironside Farrar Limited is a limited company registered in Scotland, registration number: 109330

Proposed SW Pumping Station to latest Sewerage Sector Guidance. pumping rate 10 l/s Base Level 57.00 (tbc by M & E supplier)

Off-Line Cellular Storage 8m x 20m x 0.8m deep (128m³) IL 60.05m

Off-Line Cellular Storage 3.0m x 38m x 0.8m deep (91.2m³) IL 61.65m

Wet Well

Control Manhole with Vortex Flow Control Unit on outlet to limit flows to: 10l/s@2.5m head minimise upstream storage(F P McCann Unit Ref: FPM-SB1-02500-01000-01000)

Ex MH 0101 CL 61.927

Ex MH 0102 CL 61.864 IL 60.020

Ex MH CL 61.991 IL 60.226

Ex MH CL 62.630 IL 60.400

Ex MH CL 63.694 IL 60.454

Ex MH CL 63.666 IL 60.466

Ex MH CL 63.604 IL 60.604

Ex 300mmØ combined sewer

Ex 225mmØ

Ex MH 1001 CL 61.508 IL 57.02*

Invert level from sewer records. tbc on site

Ex MH 1901 CL 60.923 IL 57.673

Ex MH 1900 CL 60.862 IL

Ex MH 1800 CL 61.036 IL

Ex MH 1802 CL 61.192 IL 60.172

Ex MH 1803 CL 61.35* IL 59.36

Ex MH 1801 CL 61.317 IL 58.617

Ex manhole not on topo survey. Cl & IL tbc on site

Ex MH 1806 CL 61.036 IL

Ex Headwall 1805 CL IL 60.101

225mmØ stub pipe for sports pitch drainage designed by others.Discharge to be restricted to maximum rate of 8.4l/s

Control Manhole with 2No.Vortex Flow Control Unit to limit flows to: 31l/s@0.87m head minimise upstream storage(Hydro International Unit Ref:SHE-0242-3100-0870-3100) at IL 60.530 32l/s@2.215m head Linear Discharge Profile(Hydro International Unit Ref: SCU-0148-3200-2215-3200) at IL61.45

Maximum Discharge Rates:
1 year - 31l/s
30 year+40% - 54.1l/s
100year+45% -72.4l/s

3m level buffer

110yds (100.584m) x 70yds (64.008m)

S/C

Road1 Road2 Road2A* Road3 Road4 Road5 Road6 Road8

Shelter

Drain

Bdy

MANNERING STREET

BRATTON DR

THEWS LANE

NOTES

1. Setting out shall be undertaken using only the information given. Distances should not be scaled from this drawing.
2. All sewers shall be constructed in accordance with Sewerage Sector Guidance and the Design & Construction Guidance.
3. The minimum gravity pipe diameter under adoptable highways shall be 150mm
4. It is the responsibility of the Contractor to verify all information given with regards to existing services and drainage connections etc. prior to commencing the works. The rates shall include for hand dig around services where necessary. The Contractor shall adhere to the CDM Regulations at all times
5. The outsides of all sewers shall be a minimum of 1.0m from kerb lines and the outside of manholes shall be a minimum of 0.5m from kerb lines
6. Existing flows in watercourses, sewers and land drains shall be maintained at all times
7. Only trained personnel shall be permitted to enter confined spaces
8. All materials to bear the relevant B.S. Kitemark and comply fully with the specifications. All concrete & concrete products must use Sulphate resistant cement (unless the site investigation report proves that sulphate attack from soils and groundwater will not occur to withstand a class 3 condition).
9. All opening notices etc. as required under highways acts etc. are to be obtained prior to commencement of works. All works are to be inspected by L.A., NHBC or the Network Operator as applicable.
10. Where "Ultra Rib" UPVC pipes (or similar approved) are used in adoptable drainage they shall still be handled and laid in accordance with the specification and guidance issued by the High Performance Pipe Association.
11. A Class S Bed and surround must be used for such pipes. Trench backfill in highways to within 1m of highway shall, as directed by the Highway Authority be a suitable granular material all in accordance with Sewers for Adoption cl. 4.3.4.
12. Slab levels shall not be varied without reference to the Engineer for guidance

KEY

S.W. Foul

- Proposed sewer
- Disconnection Manhole
- 13.50 Proposed Plot Level
- Existing Combined sewer
- Existing SW sewer
- Proposed highway gully
- 48.270 Proposed level
- × 29.35 Existing Level
- Sewer Easement
- SW Attenuation Tank (refer to Dwg No 30571/12/1-4 for details)
- Tactile Paving & Dropped Kerb (exact location to be agreed on site with the LA engineer)
- Street Nameplate (exact location to be agreed on site with the LA engineer)

Rev	Date	Initials	Details
B	15/05/24	SAP	Drainage Notes added & cellular storage tanks amended
A	05/04/24	DA	Updated to client's initial comments.

Drawing Revisions

North Point

Quality Ass.
UKAS 005 Quality Assurance ISO 9001:2008 SGS Certificate GB02/54539

Project: Mount Road Gorton

Client: Kellen Homes

Title: Highways And Drainage Layout Sheet 1

PRELIMINARY

IronsideFarrar
Environmental**Consultants**
Environmental**Planners**
Civil**Engineers**
Landscape**Architects**
Graphic**Design**
3 Worsley Court **MANCHESTER** M28 3NJ
Tel. 0161 703 8801 Fax. 0161 703 8279
manchester@ironsidefarrar.com
EDINBURGH BELLSHILL

Original Size: A1

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Drawn: KF | Checked By: SAP | Date: March 24 | Scale: 1:500

Drawing No.: 30571/1/1 | Revision: B

Off-Line Cellular Storage
3.0m x 38m x 0.8m deep
(91.2m³)
IL 61.65m

3m wide Emergency Access with removable bollard at either end

Ex pipe size and depth to be confirmed on site

Ex gully to be replaced & relocated against new kerbline. Existing connection to be nused / replaced as appproriate

Ex MH 5000
CL 64.113
IL 61.14

Ex MH5000
CL 66.058
IL 61.544

Ex 225mmØ combined sewer

Ex 375mmØ combined sewer

Ex 300mmØ combined sewer

EXMH5011
CL 63.872
IL 62.29

Off-Line Cellular Storage
7m x 35m x 0.8m deep
(196m³)
IL 61.50m

Control Manhole with 2No.Vortex Flow Control Unit to limit flows to:
31l/s@0.87m head minimise upstream storage(Hydro International Unit Ref:SHE-0242-3100-0870-3100) at IL 60.530
32l/s@2.215m head Linear Discharge Profile(Hydro International Unit Ref: SCU-0148-3200-2215-3200) at IL61.45

Maximum Discharge Rates:
1 year - 31l/s
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100year+45% -72.4l/s

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UKAS 005 Quality Assurance ISO 9001:2008 SGS Certificate GB02/54539

Project
Mount Road, Gorton

Client
Kellen Homes

Title
Highways And Drainage Layout Sheet 2

Original Size
A1

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Drawn KF | Checked By SAP
Date March 24 | Scale 1:500

Drawing No. 30571/1/2 | Revision B

IronsideFarrar
Environmental Consultants
Environmental Planners
Civil Engineers
Landscape Architects
Graphic Design
3 Worsley Court MANCHESTER M28 3NJ
Tel. 0161 703 8801 Fax. 0161 703 8279
manchester@ironsidefarrar.com
EDINBURGH BELLSHILL

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 30571 SW NET 1 240205.SWS

Pipe Sizes 30571 SW NET 1 240205 Manhole Sizes 30571 SW NET 1 240205

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.359	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	0	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	0.75
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for 30571 SW NET 1 240205.SWS

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	26.862	0.067	400.9	0.129	5.00	0.0	0.600	o	1050	Pipe/Conduit	
1.001	37.125	0.093	399.2	0.089	0.00	0.0	0.600	o	1050	Pipe/Conduit	
2.000	45.197	0.113	400.0	0.198	5.00	0.0	0.600	o	1050	Pipe/Conduit	
1.002	49.895	0.125	399.2	0.111	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.003	59.472	0.149	399.1	0.098	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.004	91.009	0.228	399.2	0.123	0.00	0.0	0.600	o	1050	Pipe/Conduit	
3.000	28.429	0.072	394.8	0.161	5.00	0.0	0.600	o	1050	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	0.00	5.26	61.495	0.129	0.0	0.0	0.0	1.71	1484.9	0.0
1.001	0.00	5.62	61.428	0.218	0.0	0.0	0.0	1.72	1488.1	0.0
2.000	0.00	5.44	61.448	0.198	0.0	0.0	0.0	1.72	1486.7	0.0
1.002	0.00	6.10	61.335	0.527	0.0	0.0	0.0	1.72	1488.2	0.0
1.003	0.00	6.68	61.210	0.625	0.0	0.0	0.0	1.72	1488.2	0.0
1.004	0.00	7.56	61.061	0.748	0.0	0.0	0.0	1.72	1488.2	0.0
3.000	0.00	5.27	60.905	0.161	0.0	0.0	0.0	1.73	1496.4	0.0

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Network Design Table for 30571 SW NET 1 240205.SWS

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
1.005	84.263	0.211	399.4	0.129	0.00	0.0	0.600	o	1050	Pipe/Conduit	
4.000	51.187	0.128	399.9	0.230	5.00	0.0	0.600	o	1050	Pipe/Conduit	
5.000	32.738	0.082	399.2	0.102	5.00	0.0	0.600	o	1050	Pipe/Conduit	
4.001	62.960	0.157	401.0	0.095	0.00	0.0	0.600	o	1050	Pipe/Conduit	
4.002	22.445	0.056	400.8	0.160	0.00	0.0	0.600	o	1050	Pipe/Conduit	
4.003	60.754	0.152	399.7	0.102	0.00	10.0	0.600	o	1050	Pipe/Conduit	
4.004	49.885	0.125	399.1	0.156	0.00	0.0	0.600	o	1050	Pipe/Conduit	
6.000	31.593	0.079	399.9	0.111	5.00	0.0	0.600	o	1050	Pipe/Conduit	
6.001	27.712	0.069	401.6	0.040	0.00	0.0	0.600	o	1050	Pipe/Conduit	
7.000	26.240	0.066	397.6	0.137	5.00	0.0	0.600	o	1050	Pipe/Conduit	
6.002	58.701	0.147	399.3	0.071	0.00	0.0	0.600	o	1050	Pipe/Conduit	
8.000	30.128	0.075	401.7	0.094	5.00	0.0	0.600	o	1050	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)
1.005	0.00	8.38	60.833	1.038	0.0	0.0	0.0	1.72	1487.8	0.0
4.000	0.00	5.50	61.394	0.230	0.0	0.0	0.0	1.72	1486.8	0.0
5.000	0.00	5.32	61.348	0.102	0.0	0.0	0.0	1.72	1488.0	0.0
4.001	0.00	6.11	61.266	0.427	0.0	0.0	0.0	1.71	1484.7	0.0
4.002	0.00	6.33	61.109	0.587	0.0	0.0	0.0	1.72	1485.1	0.0
4.003	0.00	6.92	61.053	0.689	10.0	0.0	0.0	1.72	1487.2	10.0
4.004	0.00	7.40	60.901	0.845	10.0	0.0	0.0	1.72	1488.3	10.0
6.000	0.00	5.31	61.222	0.111	0.0	0.0	0.0	1.72	1486.8	0.0
6.001	0.00	5.58	61.143	0.151	0.0	0.0	0.0	1.71	1483.6	0.0
7.000	0.00	5.25	61.140	0.137	0.0	0.0	0.0	1.72	1491.2	0.0
6.002	0.00	6.15	61.074	0.359	0.0	0.0	0.0	1.72	1487.9	0.0
8.000	0.00	5.29	61.105	0.094	0.0	0.0	0.0	1.71	1483.4	0.0

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Network Design Table for 30571 SW NET 1 240205.SWS

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
8.001	41.308	0.103	401.0	0.095	0.00	0.0	0.600	o	1050	Pipe/Conduit	
6.003	60.327	0.151	399.5	0.174	0.00	0.0	0.600	o	1050	Pipe/Conduit	
4.005	61.306	0.154	398.1	0.160	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.006	36.752	0.092	399.5	0.073	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.007	55.692	0.186	299.4	0.059	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.008	61.776	0.206	299.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.009	11.526	0.038	300.0	0.000	0.00	0.0	0.600	o	375	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)
8.001	0.00	5.69	61.030	0.189	0.0	0.0	0.0	1.71	1484.7	0.0
6.003	0.00	6.73	60.927	0.722	0.0	0.0	0.0	1.72	1487.5	0.0
4.005	0.00	7.99	60.776	1.727	10.0	0.0	0.0	1.72	1490.2	10.0
1.006	0.00	8.74	60.622	2.838	10.0	0.0	0.0	1.72	1487.6	10.0
1.007	0.00	9.63	60.530	2.897	10.0	0.0	0.0	1.04	115.1	10.0
1.008	0.00	10.62	60.344	2.897	10.0	0.0	0.0	1.04	115.0	10.0
1.009	0.00	10.80	60.138	2.897	10.0	0.0	0.0	1.04	115.0	10.0

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Online Controls for 30571 SW NET 1 240205.SWS

Complex Manhole: 4, DS/PN: 1.007, Volume (m³): 40.8

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0242-3100-0870-3100
Design Head (m)	0.870
Design Flow (l/s)	31.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	242
Invert Level (m)	60.530
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.870	31.0	Kick-Flo®	0.675	27.5
Flush-Flo™	0.373	31.0	Mean Flow over Head Range	-	25.1

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)
0.100	7.9	1.200	36.2	3.000	56.3	7.000	84.9
0.200	24.5	1.400	38.9	3.500	60.6	7.500	87.9
0.300	30.7	1.600	41.5	4.000	64.7	8.000	90.7
0.400	31.0	1.800	44.0	4.500	68.5	8.500	93.4
0.500	30.4	2.000	46.3	5.000	72.1	9.000	95.4
0.600	29.3	2.200	48.4	5.500	75.5	9.500	98.1
0.800	29.8	2.400	50.5	6.000	78.8		
1.000	33.1	2.600	52.5	6.500	81.9		

Hydro-Brake® Optimum

Unit Reference	MD-SCU-0148-3200-2215-3200
Design Head (m)	2.215
Design Flow (l/s)	32.0
Flush-Flo™	Calculated
Objective	Linear discharge profile
Application	Surface
Sump Available	Yes

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Hydro-Brake® Optimum

Diameter (mm)	148
Invert Level (m)	61.450
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.215	32.0	Kick-Flo®	0.220	10.7
Flush-Flo™	0.174	11.0	Mean Flow over Head Range	-	21.6

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)
0.100	5.9	1.200	23.8	3.000	37.0	7.000	55.9
0.200	10.9	1.400	25.7	3.500	39.9	7.500	57.8
0.300	12.4	1.600	27.4	4.000	42.6	8.000	59.6
0.400	14.1	1.800	29.0	4.500	45.1	8.500	61.4
0.500	15.7	2.000	30.5	5.000	47.4	9.000	63.1
0.600	17.1	2.200	31.9	5.500	49.7	9.500	64.8
0.800	19.6	2.400	33.3	6.000	51.8		
1.000	21.8	2.600	34.6	6.500	53.9		

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Storage Structures for 30571 SW NET 1 240205.SWS

Cellular Storage Manhole: 7, DS/PN: 1.004

Invert Level (m) 61.500 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	245.0	0.0	0.801	0.0	0.0
0.800	245.0	0.0			

Cellular Storage Manhole: 19, DS/PN: 4.000

Invert Level (m) 61.650 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	114.0	0.0	0.801	0.0	0.0
0.800	114.0	0.0			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	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 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	11	15 Winter	1	+0%	100/180 Winter				61.596
1.001	10	15 Winter	1	+0%	100/180 Winter				61.548
2.000	12	15 Winter	1	+0%	100/180 Winter				61.564
1.002	9	15 Winter	1	+0%	100/120 Winter				61.491
1.003	8	15 Winter	1	+0%	100/120 Winter				61.371
1.004	7	120 Winter	1	+0%	100/60 Winter				61.301
3.000	13	120 Winter	1	+0%	100/60 Summer				61.301
1.005	6	120 Winter	1	+0%	30/120 Winter				61.301
4.000	19	15 Winter	1	+0%	100/180 Winter				61.512
5.000	20	15 Winter	1	+0%	100/120 Winter				61.444
4.001	18	15 Winter	1	+0%	100/120 Winter				61.411
4.002	17	120 Winter	1	+0%	100/120 Summer				61.329
4.003	16	120 Winter	1	+0%	100/60 Winter				61.329
4.004	15	120 Winter	1	+0%	100/60 Summer				61.323

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	11	-0.949	0.000	0.01		15.0	OK	
1.001	10	-0.930	0.000	0.02		23.0	OK	
2.000	12	-0.934	0.000	0.02		23.1	OK	
1.002	9	-0.894	0.000	0.05		53.2	OK	
1.003	8	-0.889	0.000	0.05		59.6	OK	
1.004	7	-0.810	0.000	0.02		28.9	OK	
3.000	13	-0.654	0.000	0.01		5.5	OK	
1.005	6	-0.582	0.000	0.02		21.9	OK	
4.000	19	-0.932	0.000	0.02		26.9	OK	
5.000	20	-0.954	0.000	0.01		11.6	OK	
4.001	18	-0.905	0.000	0.04		44.1	OK	
4.002	17	-0.830	0.000	0.02		23.1	OK	
4.003	16	-0.774	0.000	0.03		36.4	OK	
4.004	15	-0.628	0.000	0.03		35.9	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
6.000	24	120 Winter	1	+0%	100/120 Winter				61.317
6.001	23	120 Winter	1	+0%	100/120 Winter				61.317
7.000	25	120 Winter	1	+0%	100/120 Winter				61.317
6.002	22	120 Winter	1	+0%	100/60 Winter				61.317
8.000	27	120 Winter	1	+0%	100/120 Summer				61.316
8.001	26	120 Winter	1	+0%	100/60 Winter				61.316
6.003	21	120 Winter	1	+0%	100/60 Summer				61.317
4.005	14	120 Winter	1	+0%	30/120 Summer				61.316
1.006	5	120 Winter	1	+0%	30/60 Summer				61.299
1.007	4	120 Winter	1	+0%	1/15 Summer				61.272
1.008	3	960 Winter	1	+0%					60.480
1.009	2	960 Winter	1	+0%					60.292

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	24	-0.955	0.000	0.00		4.6	OK	
6.001	23	-0.876	0.000	0.01		6.0	OK	
7.000	25	-0.873	0.000	0.01		5.5	OK	
6.002	22	-0.807	0.000	0.01		13.7	OK	
8.000	27	-0.839	0.000	0.00		3.6	OK	
8.001	26	-0.764	0.000	0.01		6.6	OK	
6.003	21	-0.660	0.000	0.02		20.4	OK	
4.005	14	-0.510	0.000	0.04		44.5	OK	
1.006	5	-0.373	0.000	0.03		37.5	OK	
1.007	4	0.367	0.000	0.29		30.9	SURCHARGED	
1.008	3	-0.239	0.000	0.29		31.0	OK	
1.009	2	-0.221	0.000	0.35		31.0	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	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 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	11	240 Winter	30	+40%	100/180 Winter				61.945
1.001	10	240 Winter	30	+40%	100/180 Winter				61.945
2.000	12	240 Winter	30	+40%	100/180 Winter				61.945
1.002	9	240 Winter	30	+40%	100/120 Winter				61.945
1.003	8	240 Winter	30	+40%	100/120 Winter				61.943
1.004	7	240 Winter	30	+40%	100/60 Winter				61.938
3.000	13	240 Winter	30	+40%	100/60 Summer				61.933
1.005	6	240 Winter	30	+40%	30/120 Winter				61.930
4.000	19	240 Winter	30	+40%	100/180 Winter				62.034
5.000	20	240 Winter	30	+40%	100/120 Winter				62.033
4.001	18	240 Winter	30	+40%	100/120 Winter				62.033
4.002	17	240 Winter	30	+40%	100/120 Summer				62.029
4.003	16	240 Winter	30	+40%	100/60 Winter				62.020
4.004	15	360 Winter	30	+40%	100/60 Summer				61.951

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	11	-0.600	0.000	0.01		10.3	OK	
1.001	10	-0.533	0.000	0.01		16.2	OK	
2.000	12	-0.553	0.000	0.01		16.1	OK	
1.002	9	-0.440	0.000	0.03		35.3	OK	
1.003	8	-0.317	0.000	0.03		37.7	OK	
1.004	7	-0.173	0.000	0.02		29.6	OK	
3.000	13	-0.022	0.000	0.01		12.9	OK	
1.005	6	0.047	0.000	0.02		25.8	SURCHARGED	
4.000	19	-0.410	0.000	0.01		17.3	OK	
5.000	20	-0.365	0.000	0.01		7.9	OK	
4.001	18	-0.283	0.000	0.02		20.5	OK	
4.002	17	-0.130	0.000	0.02		20.6	OK	
4.003	16	-0.083	0.000	0.03		32.3	OK	
4.004	15	0.000	0.000	0.02		26.8	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
6.000	24	240 Winter	30	+40%	100/120 Winter				61.986
6.001	23	240 Winter	30	+40%	100/120 Winter				61.985
7.000	25	240 Winter	30	+40%	100/120 Winter				61.985
6.002	22	240 Winter	30	+40%	100/60 Winter				61.985
8.000	27	240 Winter	30	+40%	100/120 Summer				61.980
8.001	26	240 Winter	30	+40%	100/60 Winter				61.980
6.003	21	240 Winter	30	+40%	100/60 Summer				61.977
4.005	14	240 Winter	30	+40%	30/120 Summer				61.932
1.006	5	240 Winter	30	+40%	30/60 Summer				61.930
1.007	4	240 Winter	30	+40%	1/15 Summer				61.927
1.008	3	240 Winter	30	+40%					60.532
1.009	2	240 Winter	30	+40%					60.352

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	24	-0.286	0.000	0.01		8.4	OK	
6.001	23	-0.208	0.000	0.01		5.6	OK	
7.000	25	-0.205	0.000	0.01		10.5	OK	
6.002	22	-0.139	0.000	0.01		13.0	OK	
8.000	27	-0.175	0.000	0.01		6.9	OK	
8.001	26	-0.100	0.000	0.01		8.3	OK	
6.003	21	0.000	0.000	0.02		25.8	OK	
4.005	14	0.106	0.000	0.05		58.2	SURCHARGED	
1.006	5	0.258	0.000	0.05		53.8	SURCHARGED	
1.007	4	1.022	0.000	0.50		54.1	SURCHARGED	
1.008	3	-0.187	0.000	0.50		54.1	OK	
1.009	2	-0.161	0.000	0.62		54.1	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	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 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	11	240 Winter	100	+45%	100/180 Winter				62.743
1.001	10	240 Winter	100	+45%	100/180 Winter				62.743
2.000	12	240 Winter	100	+45%	100/180 Winter				62.743
1.002	9	240 Winter	100	+45%	100/120 Winter				62.743
1.003	8	240 Winter	100	+45%	100/120 Winter				62.743
1.004	7	240 Winter	100	+45%	100/60 Winter				62.744
3.000	13	240 Winter	100	+45%	100/60 Summer				62.744
1.005	6	240 Winter	100	+45%	30/120 Winter				62.744
4.000	19	240 Winter	100	+45%	100/180 Winter				62.749
5.000	20	240 Winter	100	+45%	100/120 Winter				62.749
4.001	18	240 Winter	100	+45%	100/120 Winter				62.749
4.002	17	240 Winter	100	+45%	100/120 Summer				62.749
4.003	16	240 Winter	100	+45%	100/60 Winter				62.749
4.004	15	240 Winter	100	+45%	100/60 Summer				62.747

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	11	0.198	0.000	0.01		13.8	SURCHARGED	
1.001	10	0.265	0.000	0.02		19.1	SURCHARGED	
2.000	12	0.245	0.000	0.02		21.7	SURCHARGED	
1.002	9	0.358	0.000	0.03		38.4	SURCHARGED	
1.003	8	0.483	0.000	0.03		40.4	SURCHARGED	
1.004	7	0.633	0.000	0.03		40.2	SURCHARGED	
3.000	13	0.789	0.000	0.03		29.6	SURCHARGED	
1.005	6	0.861	0.000	0.03		35.7	SURCHARGED	
4.000	19	0.305	0.000	0.02		19.0	SURCHARGED	
5.000	20	0.351	0.000	0.01		10.4	SURCHARGED	
4.001	18	0.433	0.000	0.02		24.6	SURCHARGED	
4.002	17	0.590	0.000	0.04		39.5	SURCHARGED	
4.003	16	0.646	0.000	0.04		54.3	SURCHARGED	
4.004	15	0.796	0.000	0.05		58.3	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
6.000	24	240 Winter	100	+45%	100/120 Winter				62.744
6.001	23	240 Winter	100	+45%	100/120 Winter				62.744
7.000	25	240 Winter	100	+45%	100/120 Winter				62.744
6.002	22	240 Winter	100	+45%	100/60 Winter				62.745
8.000	27	240 Winter	100	+45%	100/120 Summer				62.745
8.001	26	240 Winter	100	+45%	100/60 Winter				62.745
6.003	21	240 Winter	100	+45%	100/60 Summer				62.745
4.005	14	240 Winter	100	+45%	30/120 Summer				62.745
1.006	5	240 Winter	100	+45%	30/60 Summer				62.742
1.007	4	240 Winter	100	+45%	1/15 Summer				62.738
1.008	3	240 Winter	100	+45%					60.569
1.009	2	240 Winter	100	+45%					60.399

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	24	0.472	0.000	0.01		12.5	SURCHARGED	
6.001	23	0.551	0.000	0.03		28.1	SURCHARGED	
7.000	25	0.554	0.000	0.01		14.8	SURCHARGED	
6.002	22	0.621	0.000	0.03		40.8	SURCHARGED	
8.000	27	0.590	0.000	0.01		13.8	SURCHARGED	
8.001	26	0.665	0.000	0.03		36.8	SURCHARGED	
6.003	21	0.768	0.000	0.07		79.9	SURCHARGED	
4.005	14	0.919	0.000	0.10		123.2	SURCHARGED	
1.006	5	1.070	0.000	0.07		82.3	SURCHARGED	
1.007	4	1.833	0.000	0.67		72.4	SURCHARGED	
1.008	3	-0.150	0.000	0.67		72.4	OK	
1.009	2	-0.114	0.000	0.83		72.4	OK	

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 30571 SW NET 2 240205.SWS

Pipe Sizes 30571 SW NET 2 240205 Manhole Sizes 30571 SW NET 2 240205

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.359	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	0	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	0.75
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for 30571 SW NET 2 240205.SWS

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	52.862	0.132	400.5	0.116	5.00	0.0	0.600	o	1050	Pipe/Conduit	
1.001	47.905	0.120	399.2	0.081	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.002	23.992	0.060	399.9	0.170	0.00	0.0	0.600	o	1050	Pipe/Conduit	
2.000	50.007	0.125	400.1	0.143	5.00	0.0	0.600	o	1050	Pipe/Conduit	
1.003	58.607	0.147	398.7	0.056	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.004	55.780	0.139	401.3	0.174	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.005	13.822	0.035	394.9	0.103	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.006	11.522	0.077	149.6	0.000	0.00	0.0	0.600	o	225	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	0.00	5.51	59.692	0.116	0.0	0.0	0.0	1.72	1485.7	0.0
1.001	0.00	5.98	59.560	0.197	0.0	0.0	0.0	1.72	1488.1	0.0
1.002	0.00	6.21	59.440	0.367	0.0	0.0	0.0	1.72	1486.9	0.0
2.000	0.00	5.49	59.505	0.143	0.0	0.0	0.0	1.72	1486.5	0.0
1.003	0.00	6.78	59.380	0.566	0.0	0.0	0.0	1.72	1489.1	0.0
1.004	0.00	7.32	59.233	0.740	0.0	0.0	0.0	1.71	1484.2	0.0
1.005	0.00	7.45	59.094	0.843	0.0	0.0	0.0	1.73	1496.2	0.0
1.006	0.00	7.63	59.059	0.843	0.0	0.0	0.0	1.07	42.4	0.0

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Network Design Table for 30571 SW NET 2 240205.SWS

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
1.007	3.456	0.023	150.3	0.000	0.00	0.0	0.600	o	225	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)
1.007	0.00	7.69	58.982	0.843	0.0	0.0	0.0	1.06	42.3	0.0

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Online Controls for 30571 SW NET 2 240205.SWS

Hydro-Brake® Optimum Manhole: 30, DS/PN: 1.006, Volume (m³): 23.9

Unit Reference	MD-SHE-0124-1000-2500-1000
Design Head (m)	2.500
Design Flow (l/s)	10.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	124
Invert Level (m)	59.059
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.500	10.0	Kick-Flo®	1.107	6.8
Flush-Flo™	0.539	8.6	Mean Flow over Head Range	-	8.0

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)
0.100	4.4	1.200	7.1	3.000	10.9	7.000	16.3
0.200	7.4	1.400	7.6	3.500	11.7	7.500	16.9
0.300	8.1	1.600	8.1	4.000	12.5	8.000	17.4
0.400	8.5	1.800	8.6	4.500	13.2	8.500	17.9
0.500	8.6	2.000	9.0	5.000	13.9	9.000	18.4
0.600	8.6	2.200	9.4	5.500	14.5	9.500	18.9
0.800	8.3	2.400	9.8	6.000	15.2		
1.000	7.6	2.600	10.2	6.500	15.7		

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Storage Structures for 30571 SW NET 2 240205.SWS

Cellular Storage Manhole: 31, DS/PN: 1.005

Invert Level (m) 60.050 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	123.5	0.0	0.801	0.0	0.0
0.800	123.5	0.0			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 2 240205.SWS

Simulation Criteria

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	36	15 Winter	1	+0%	100/120 Winter				59.769
1.001	35	15 Winter	1	+0%	100/120 Winter				59.671
1.002	34	120 Winter	1	+0%	100/60 Winter				59.646
2.000	37	120 Winter	1	+0%	100/120 Summer				59.645
1.003	33	120 Winter	1	+0%	100/60 Winter				59.645
1.004	32	120 Winter	1	+0%	30/120 Winter				59.645
1.005	31	120 Winter	1	+0%	30/60 Winter				59.643
1.006	30	120 Winter	1	+0%	1/15 Summer				59.642
1.007	29	120 Winter	1	+0%					59.067

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 2 240205.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	36	-0.973	0.000	0.01		13.5	OK	
1.001	35	-0.939	0.000	0.02		20.7	OK	
1.002	34	-0.844	0.000	0.01		14.2	OK	
2.000	37	-0.910	0.000	0.00		5.8	OK	
1.003	33	-0.785	0.000	0.02		19.3	OK	
1.004	32	-0.638	0.000	0.02		18.4	OK	
1.005	31	-0.501	0.000	0.02		11.5	OK	
1.006	30	0.358	0.000	0.24		8.6	SURCHARGED	
1.007	29	-0.140	0.000	0.31		8.6	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 2 240205.SWS

Simulation Criteria

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	36	240 Winter	30	+40%	100/120 Winter				60.382
1.001	35	240 Winter	30	+40%	100/120 Winter				60.382
1.002	34	240 Winter	30	+40%	100/60 Winter				60.382
2.000	37	240 Winter	30	+40%	100/120 Summer				60.381
1.003	33	240 Winter	30	+40%	100/60 Winter				60.381
1.004	32	240 Winter	30	+40%	30/120 Winter				60.376
1.005	31	240 Winter	30	+40%	30/60 Winter				60.376
1.006	30	240 Winter	30	+40%	1/15 Summer				60.391
1.007	29	1440 Summer	30	+40%					59.067

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 2 240205.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	36	-0.360	0.000	0.01		8.9	OK	
1.001	35	-0.228	0.000	0.01		9.0	OK	
1.002	34	-0.108	0.000	0.01		13.4	OK	
2.000	37	-0.174	0.000	0.01		11.1	OK	
1.003	33	-0.049	0.000	0.01		15.0	OK	
1.004	32	0.093	0.000	0.02		19.5	SURCHARGED	
1.005	31	0.232	0.000	0.02		12.2	SURCHARGED	
1.006	30	1.107	0.000	0.24		8.6	SURCHARGED	
1.007	29	-0.140	0.000	0.31		8.6	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 2 240205.SWS

Simulation Criteria

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	36	240 Winter	100	+45%	100/120 Winter				61.563
1.001	35	240 Winter	100	+45%	100/120 Winter				61.563
1.002	34	240 Winter	100	+45%	100/60 Winter				61.563
2.000	37	240 Winter	100	+45%	100/120 Summer				61.563
1.003	33	240 Winter	100	+45%	100/60 Winter				61.563
1.004	32	240 Winter	100	+45%	30/120 Winter				61.563
1.005	31	240 Winter	100	+45%	30/60 Winter				61.564
1.006	30	240 Winter	100	+45%	1/15 Summer				61.563
1.007	29	240 Winter	100	+45%					59.074

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 2 240205.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	36	0.821	0.000	0.01		12.0	SURCHARGED	
1.001	35	0.953	0.000	0.01		13.6	SURCHARGED	
1.002	34	1.073	0.000	0.03		27.3	SURCHARGED	
2.000	37	1.008	0.000	0.01		15.0	SURCHARGED	
1.003	33	1.133	0.000	0.03		35.7	SURCHARGED	
1.004	32	1.280	0.000	0.04		45.5	FLOOD RISK	
1.005	31	1.420	0.000	0.03		24.3	SURCHARGED	
1.006	30	2.279	0.000	0.28		10.0	SURCHARGED	
1.007	29	-0.133	0.000	0.36		10.0	OK	

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