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Hammerstone Road Depot, Manchester

Discharge of Planning Condition 11

Curtins Ref: HRD-CUR-00-XX-T-RE-006

Revision: P03

Issue Date: 06 September 2025

Client Name: Morgan Sindall

Client Address: 10th Floor, Evershot St, London, NW1 2DN

Site Address: Hammerstone Road Depot Gorton Manchester M18 8EQ

Control Sheet

Rev	Description	Checked	Issued	Date
P01	First Issue	ATL	ATL	02/02/25
P02	Updated following LLFA comments	ATL	ATL	04/09/25
P03	Updated following LLFA comments	ATL	MW	06/02/25

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1.0 Introduction

1.1 Project Details

1.1.1 Curtins was appointed by Morgan Sindall to assist in the discharge of planning conditions for Hammerstone Road Depot, Manchester, M18 8EQ, National Grid Reference 388216E, 396834N.

1.1.2 Planning Consent was granted 3rd December 2021 – the Planning Reference is 130127/VO/2021.

1.1.3 This report is provided in relation to the requirements of Condition 11:

11) Notwithstanding the drainage information referenced in condition no.1, prior to any above ground works in relation to the proposed new buildings, and the reconfiguration of the parking and servicing areas shall take place until surface water drainage works have been implemented in accordance with Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacements national standards and details that have been submitted to and approved in writing by the Local Planning Authority. The development shall be implemented in accordance with the approved details.

Reason - To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution. This condition is imposed in light of national policies within the NPPF and NPPG and policies EN08 and EN14 of the Manchester Core Strategy (2012).

1.1.4 The main purpose of this report is to provide responses to comments received from the Lead local Flood Authority regarding previously issued information.

2.0 Responses to LLFA Comments

2.1 General comments:

2.1.1 *Please can the applicant provide a proposed levels plan. (Navigating the site without levels is difficult to follow.)*

Proposed Levels Plan is enclosed within Appendix A

2.1.2 *Area 5, MCC Bin store, north of the site. Clarity on Roof Access Stairs construction. Provide Foundation plans. (A potential clash between stair structure and culvert structure).*

The design of the stair access is addressed in the report for Condition 33. The report and confirmation of the Condition Discharge is included in Appendix B

2.1.3 *Please note the LLFA do not approve any build overs on culverted watercourses and applicants must maintain appropriate easements.*

Please refer to the report and confirmation of the Condition Discharge is included in Appendix B. The vehicle cleaning ramp is demountable and therefore does not restrict access to the culvert.

2.1.4 *Demolition Plan to be provided.*

Updated demolition Information is provided in Appendix C

2.1.5 *Kindly supply the CCTV documentation, as it has not been included in this application.*

The CCTV survey information is enclosed within Appendix D

2.2 Proposed Ground Floor Drainage.

2.2.1 *MCC LLFA previously advised against siphonic drainage. "We would not permit the use of siphonic in this instance, as this would likely increase the outfall discharge rate from the existing building to the watercourse." Please refer to LLFA response from Oliver Timmins 05 Aug 2021. Please clarify why this option as has been progressed?*

The existing building drainage is served by an extremely large number of rainwater pipes. These rainwater pipes discharge to several different sewers, both inside and outside of the site. It would have not been feasible to provide new gravity drainage for the building and route the surface water drainage to the watercourse.

The use of siphonic drainage allows for a new connection into the watercourse. As shown on the drainage information, the flow into the watercourse is restricted.

2.2.2 *Catchment plans - Errors have been identified regarding hatches and labelling in relation to the provided legend. Please review and update.*

Updated Catchment Plans are enclosed within Appendix A

2.2.3 *Could you please elaborate on the methodology of 33 l/s discharge rate for MH S28?*

The overall discharge for the external works for the site was calculated as the following:

- 1 in 1 year storm: 45 l/s
- 1:30-year storm: 107 l/s
- 1:100-year (+40%CC): 140 l/s

These discharge rates have been calculated using a combination of brownfield and greenfield runoff rates.

The lower ground car park drainage is limited to a discharge of 7 l/s (across all storm events, as agreed with UU)

The washdown drainage is limited to a discharge of 5 l/s (across all storm events, as agreed with UU).

The discharge rates for the main ground floor external drainage have been calculated by subtracting the discharge rates for the lower ground/ washdown areas from the overall drainage allowance:

- 1 in 1 year storm: 45 l/s (48% reduction from existing discharge)
- 1:30-year storm: 107 l/s (48% reduction from existing discharge)
- 1:100-year (+40%CC): 140 l/s (49% reduction from existing discharge)

2.2.4 *We require a sectional view from SRH04 to Tank 4. The LLFA must ensure that there are no clashes or conflicts.*

Section View enclosed in Appendix E – refer to drawing HRD-CUR-XX-00-DR-C-92-540

2.2.5 *The drawing mentions 'rising main by others' and 'RWH by others.' Where can we find this information? Without it, we lack a complete understanding of the system.*

The RWH tank is used to provide water for the vehicle washdown area. Details of the Rainwater harvesting tanks are available in Appendix E

2.2.6 *Once again, "Siphons Break at chambers. Refer to Sapoflow Details" Where might we access this information?*

Sapoflow details are enclosed in Appendix F

2.2.7 *Please provide tank 4 construction details.*

Tank Details are enclosed within Appendix E

Further Comment from 3rd April 2025

It has been stated that construction details for tank 4 have been provided within Appendix E and on drawing HRD CUR XX ZZ DR C 92522-C03. However, these construction details are for Attenuation Tank 1, which discharges to MH S28. Please provide construction details for Tank 4 (which discharges to SRH06).

Construction details for tanks 1,2 & 4 are enclosed in Appendix E. These have been labelled more clearly for clarity. Details of Tank 4 are enclosed in Appendix L (Lower Ground Floor

2.2.8 *Please provided Vented cover construction details.*

Vented Manhole detail enclosed in Appendix F – refer to drawing HRD-CUR-XX-ZZ-DR-C-92-520.

2.2.9 *Connection north of MH S16 is not hydraulically efficient, please review and update.*

The connection into MH S16 has been detailed in order to bring the pipework into the manhole square to the outlet pipe.

2.2.10 *What is the purpose of having three pipes at SRH06a? Is this configuration the most efficient? Please provide construction details of this MH. Additionally, please provide confirmed 150 dia vent pipe level.*

The triple pipe connection has been used in order to allow the connection into the attenuation tank – the maximum direct connection to the tank is 375mm diameter. Therefore, three pipes have been used in order to provide sufficient capacity from SRH06 into the tank. The triple pipe configuration has been incorporated in the drainage model

2.2.11 *Once more, why are there three pipes at S27 and S28? Is this arrangement the most efficient? Please provide construction details of this MH.*

The reasoning behind triple pipe provision is as per 2.2.10. This also allows for the connection into the Tank access unit channel, which allows inspection and cleaning through the tank.

Construction details of manholes SRH06 and S27 are shown on drawing HRD-CUR-XX-00-DR-C-92-508 in Appendix G

2.2.12 *Please provide manufacturer data sheets for proposed petrol interceptor and "SPEL Detail drawing"*

Spel Interceptor Details are enclosed in Appendix H

2.2.13 *Please provide Gatic channel construction details and manufacturer specification / data sheets.*

Gatic channel construction details drawing HRD-CUR-XX-ZZ-DR-C-92-521 and performance information are shown on drawing in Appendix I.

2.2.14 *The construction specifications for "Connections to culvert" lack clarity. The instruction, "Manholes to be constructed in accordance with typical PCC manhole details shown elsewhere," is insufficient. Please provide comprehensive details, including adherence to BS codes, mortar haunching specifications, kite marking, concrete grade, minimum clear access requirements, and site-specific, special manhole details for the two connections into the watercourse: MH S29 and MH SRH08. Ensure that the provided details are scaled correctly and tailored to the site's requirements.*

Refer to drawing HRD-CUR-XX-ZZ-DR-C-92-528 in Appendix G, which contains details for the watercourse connection manholes.

2.2.15 *A correspondence from Oliver Timmins 09/03/2021 mentions: "If retaining wall structures are to remain on site and if the culverted watercourse is found to be directly beneath this, then it is the landowners responsibility as a riparian owner to ensure that the structural integrity of the culverted watercourse is not compromised by the proposed on site works." No details regarding retaining wall have been provided. Clarity required on any structural implications to the culvert. What happened to the retaining wall?*

This referenced the retaining wall along the southern boundary of the lower ground car park. This work has been completed without causing damage to the culvert. As there are no further works to be undertaken in this area, this is not now considered an issue.

2.2.16 *Kindly supply the CCTV documentation, as it has not been included in this application.*

The CCTV survey information is enclosed within Appendix D

2.2.17 *Method statement for connection to watercourse not provided.*

Method Statement and Risk Assessment is enclosed in Appendix G.

Further Comment from LLFA, 3rd April 2025

A method statement has been provided in Appendix G. However, it is not clear which section specifically refers to the construction of manholes on the culverted watercourse, and it is unclear what temporary works (e.g. dry working area, over-pumping) or mitigation (e.g. silt mitigation) works are proposed. Please provide a clear step-by-step method statement, detailing how the connections will be made into the culverted watercourse.

An updated method statement is enclosed in Appendix G.

2.2.18 *Hydraulic calcs. Pending review due to clarification on the above points.*

Proposed Drainage Calculations are enclosed in Appendix J

2.3 Washdown Drainage

2.3.1 *Please kindly confirm if you've addressed the requirement for sufficient sediment control in the design to prevent silt from entering the public sewer?*

There are four elements of sediment control within the washdown drainage network:

- The in-situ concrete channels have silt traps at the outlet points to collect heavy sediment from the washdown runoff. (Details of the channels are shown on drawing HRD-CUR-XX-00-DR-C-94-700 in Appendix I)
- The connections from the channels connect into a catchpit chamber, which provides further sediment collection.
- The runoff then passes through a Washdown separator, sized for the estimated number of vehicles. This provides 7,500 litres of silt storage capacity.
- The runoff passes through another catchpit, and on to the Hydrobrake manhole. This manhole also contains a sump to allow for sediment. The effect of the flow control reducing the outflow, will allow for sediment to settle in the separator/ sumps provided.

2.3.2 *Supply information of enquiry to UU trade effluent team regarding any potential chemical discharge into the public sewer and determining the necessary treatment and licensing procedures.*

The Trade Effluent Consent is enclosed in Appendix K.

2.3.3 *Provide Sub-meter details*

Please refer to e-mail enclosed in Appendix K

2.3.4 *Please provide manufacturer data sheets / details for proposed silt-separator.*

The Separator details are enclosed in Appendix H

2.3.5 *Evidence of Klargester confirmation.*

An e-mail from the manufacturer (Spel), confirming the sizing of the separator ls are enclosed in Appendix H

2.3.6 *Please provide S106 approval in principle.*

S106 Part 1 Approval – Ref 02926533, and the Trade Effluent Consent are enclosed in Appendix K

2.3.7 *Regarding the correspondence from Oliver Timmins dated 17/08/2022, could you kindly confirm whether the ramp's impact or abnormal loading on the culvert has been thoroughly assessed and addressed? We seek clarity on whether this matter has been checked and resolved.*

The vehicles ramp will carry one vehicles at a time, and contains a number of supporting columns. As such, the loading on any individual column will be lower than the equivalent loading created by a single wheel load from the vehicle.

2.3.8 *Please confirm S106 south-east of the site is only for foul?*

Refer to S106 Part 1 Approval – Ref 02926533, in Appendix K

2.3.9 *Hydraulic calcs. Pending review due to clarification on the above points.*

Proposed Drainage Calculations are enclosed in Appendix J

2.4 Proposed Lower Floor Drainage

2.4.1 *No objections in principle, however S106 was issued 06/05/2022 and is only valid for 12 months. Has UU been re-consulted or has this been built out already?*

The Lower Ground Floor Drainage was completed in May 2024.

2.4.2 *Please provide tank 3 construction details.*

Construction Records for the Lower Ground Floor drainage, including Tank 3, are included in Appendix L

3.0 Responses to LLFA Comments (03.04.25)

3.1 LLFA Comments

Further comments from the LLFA were received on 3rd April 2025. This Chapter provides responses to these comments.

The full response from the LLFA is enclosed I Appendix M. The following responses are to comments that are deemed unresolved only.

Decision Notice Clause	**Further Information Required**	**Response**
A finalised drainage layout showing all components, outfalls, levels and connectivity;	The following is required: - Please clearly mark all limited discharge rates on the drainage layout within the details for each flow control chamber. <standard comment: The applicant must present a consistent package to discharge this condition (Including all layouts and calculations). The layout and calculations must be jointly updated to account for any edits required. When preparing a resubmission, the applicant must ensure that the drainage layout and hydraulic calculations correspond, and that they can be cross-referenced for checks. This includes layout annotations and schedule printouts. >	The drainage layouts have been updated to clarify the flow rates at the flow control chambers. Updated drainage layouts are enclosed in Appendix N. Hydraulic Calculations are enclosed in Appendix J
Runoff volume in the 1 in 100 year, 6 hours rainfall shall be constrained to a value as close as is	Please provide.	The Pre-development runoff volume for the site in the 100-year, 6 hour event has been calculated as **2,230m3**, based on the average rainfall intensity.

reasonable practicable to the greenfield runoff volume for the same event, but never to exceed the runoff volume from the development site prior to redevelopment;		The Post-development runoff for the equivalent event for the total site has been calculated as 2,202m3. The existing & proposed catchment plans have been updated to include this information and are enclosed in Appendix A Pre-development and post-development runoff calculations are enclosed in Appendix J
Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during a 1 in 100 year rainfall event with allowance for 40% climate change in any part of a building;	Flooding is predicted in the M100 + 40%CC events. An overland flow routes and above ground attenuation plan (HRD-CRU-XX-00-DR-C-92-512-C04) has been provided. However the manhole/outlet references have not been included on the plan, so it is difficult to cross-reference these with the hydraulic calculations of predicted flood volumes. The following is required: - Please indicate the manhole references on the overland flow plan so that these can be cross-referenced with the manhole schedule/hydraulic calculations.	The overland flow plan, which identifies where the flooding occurs in the 100-year event, has been updated to identify all manholes and outlet units/ gullies that are included within the drainage models. The updated drawing is enclosed within Appendix N

Culvert feasibility study and survey findings to be provided.	Please provide.	All survey information that has been received pertaining to the culvert is enclosed in Appendix C
Where surface water is connected to ordinary watercourse, any works within or adjacent to the watercourse that would affect it would require consent from Manchester City Council as Lead Local Flood Authority	Applications for Land Drainage Consent are required for the new connections into the northern culverted watercourse.	A Land Drainage Consent has been submitted to encompass the outfalls onto the culvert. The LDC reference is EF1/593183
Hydraulic calculation of the proposed drainage system.(Hydraulic calcs should coincide with finalised drainage plans.	The following is required: Please provide hydraulic calculations which correspond with the surface water network draining to manhole SRH06 (Flow Control Manhole).	All Hydraulic Calculations are enclosed in Appendix J.
Construction details of flow control and SuDS elements.	Construction details have been provided for Attenuation Tank 1 & 2. Flow control device/chamber construction details have been provided for the Washdown Area, SRH06, and S28. Drawing HRD CUR XX ZZ DR C 92522-C03 states that “manufacturer will need to confirm that the tank has sufficient strength for this	Construction Details have been provided for all Tanks – pages within Appendix E have been labelled to clarify which detail relates to which tank. The details for Attenuation Tanks 3 is enclosed is Appendix L as part of Lower Ground Floor Construction Record Drawings. All tanks have been confirmed as providing sufficient strength

	location in accordance with CIRIA C680." The following is required: Please confirm that the proposed attenuation tanks are in accordance with CIRIA C680. Please provide construction details for Tank 3 & Tank 4.	in accordance with the requirements of CIRIA C680.
Please see below for details of the queries previously raised under application CDN/24/0138.		

Appendices

Appendix A

Levels Plan

Catchment Plans



KEY

- SITE BOUNDARY
- PHASE 1 WORKS BOUNDARY
- PHASE 2 WORKS BOUNDARY
- BOUNDARIES TAKEN FROM DRAWING HRD-FRA-00-XX-DR-A-90-0200
- 64.00 — MAJOR CONTOUR
- MINOR CONTOUR
- - 40.00 → INDICATIVE GRADIENT (ARROW POINTS DOWN)
- PROPOSED LINEAR DRAINAGE CHANNEL LOCATION
- PROPOSED KERB LOCATION
- RIIDGE LINE

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE FROM THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON THIS DRAWING SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE VERIFIED ON SITE.
3. ALL LEVELS ARE IN METRES ABOVE ORDINANCE DATUM UNLESS NOTED OTHERWISE.
4. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

PROPOSED LEVELS NOTES

1. ALL AMBIGUITIES, ERRORS OR OMISSIONS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY.
2. THE ASSUMPTION HAS BEEN MADE THAT ALL MATERIAL BELOW SITE STRIP IS SUITABLE FOR RE-USE.
3. ALL KERBS ASSUMED TO HAVE 100MM UPSTAND EXCEPT FOR DROPPED KERBS AS NOTED:
   - 6mm UPSTAND FOR PEDESTRIAN CROSSINGS
   - 25mm UPSTAND FOR VEHICULAR CROSSINGS
4. THE CUT/FILL VOLUMES HAVE BEEN CALCULATED USING A COMPARISON BETWEEN THE FINISHED SITE STRIP LEVELS AND PROPOSED FINISHED LEVEL FORMATIONS.
5. THE TOPO HAS BEEN ASSUMED TO BE REPRESENTATIVE OF THE SITE UPON WORKS COMMENCEMENT OF EARTHWORKS OPERATIONS. CURTINS ACCEPT NO LIABILITY FOR VARIATION FROM THE PROVIDED TOPOGRAPHICAL SURVEY.

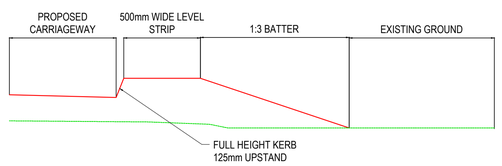
THIS DRAWING IS BASED ON:

PROPOSED SITE PLANS
- HRD-FRA-00-XX-DR-A-90-0200 REV C11 GA
- HRD-FRA-00-XX-DR-A-90-0207 REV C06 EXTERNAL WORKS SETTING OUT SHEET 1
- HRD-FRA-00-XX-DR-A-90-0208 REV C08 EXTERNAL WORKS SETTING OUT SHEET 2
- • HRD-FRA-00-XX-DR-A-90-0210 REV C10 EXTERNAL WORKS

TOPOGRAPHICAL & BUILDING SURVEYS
- S15724-1F-01 REV - BUILDING SURVEY
- S15724-GF-03 REV A BUILDING SURVEY
- S15724-T-01 REV - TOPO SURVEY

PHASE 2 SITE INVESTIGATION REPORT
068065-CUR-00-XX-RP-GE-002-V01

CBR RESULTS
785148.R01(00) - PLATE LOADING TEST REPORT



SECTION A-A
TYPICAL SECTION THROUGH TIE-IN TO COCA COLA BUILDING SLAB

Rev:	Description:	Date:	By:	Chkd:
C05	LEVELS UPDATED	22.10.24	KS	ATL
C04	UPDATED TO SUIT LATEST SITE LAYOUT	23.09.24	JC	ATL
P11	UPDATED IN LINE WITH COMMENTS/ UPDATED SITE LAYOUT	04.04.24	KS	ATL
P10	UPDATED FOR NEW TENDER	19/01/24	ATL	MW
C03	STAIR LEVELS AMENDED	15/03/23	ATL	MW
C02	LOWER GROUND CHANNEL LOCATIONS AMENDED	13/02/23	ATL	MW
C01	LEVELS AROUND WASHDOWN AMENDED	25/11/22	ATL	MW
P09	UPDATED IN LINE WITH COMMENTS	05/08/22	ATL	ATL
P08	UPDATED SITE LAYOUT	05/07/22	LK	MW
P07	REFUGE PARKING AREA LEVELS AMENDED	24/11/21	ATL	MW
P06	LOWER CAR PARK LEVELS AMENDED	05/08/21	ATL	MW
P05	DRAWING NUMBER CHANGE	15/04/21	ATL	ATL
P04	STAGE 4 UPDATE	13.04.21	ATL	MW
P03	STAGE 4 ISSUE	12.04.21	ATL	MW
P02	STAGE 3 UPDATE	16.11.20	ATL	MW
P01	STAGE 3 ISSUE	29.01.19	ATL	MW

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Status: STAGE 5

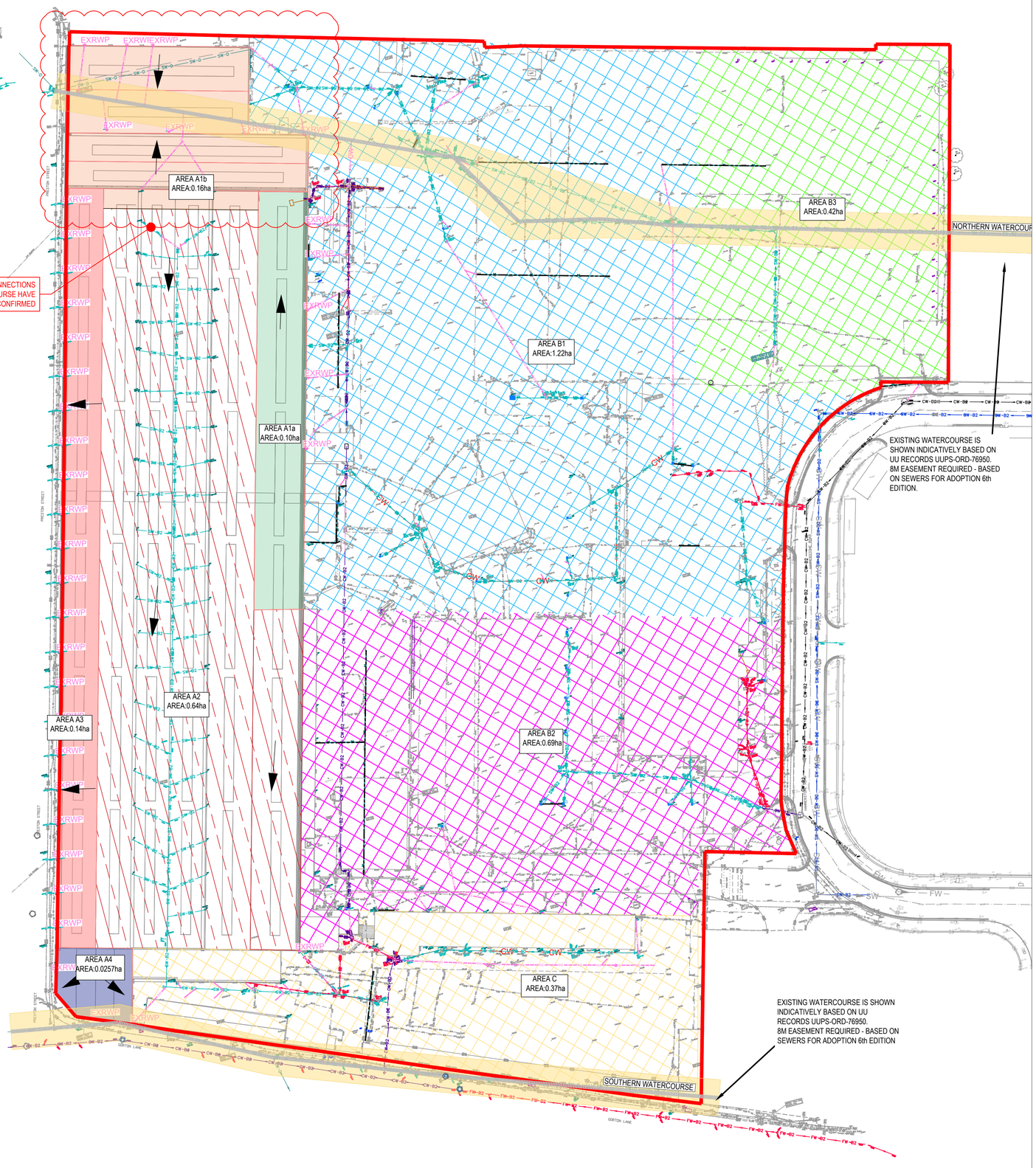
Project: HAMMERSTONE ROAD

Drg Title: PROPOSED EXTERNAL LEVELS

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	29.01.19	ATL	ATL	MW
Scale: 1:500				

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev.
HRD	- CUR -	XX -	00 -	DR -	C -	91-602	-C05

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EXRWP
EXRWP
EXRWP

VIEWPORT A
SCALE 1:200

VIEWPORT B
SCALE 1:200

AREA 1

AREA 2

AREA 3

AREA 4

AREA 5

SRWP1

SRWP2

SRWP3

SRWP4

SRWP5

SIPHONS BREAK ON CHAMBER REFER TO SAPOFLOW DETAILS

ALL EXTERNAL PIPES AND CONNECTIONS TO BE ABANDONED

ALL INTERNAL DRAINAGE ASSOCIATED WITH EXISTING RWPS TO BE ABANDONED

EXISTING RWPS AND CONNECTION TO BE ABANDONED

AREA DISCHARGES AS EXISTING

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.

LEGEND

SITE BOUNDARY BASED ON HRD-FRA-00-XX-DR-A-90-0200

EXISTING SERVICES BASED ON CCTV SURVEY AUG 2020

SW-B2 — EXISTING SURFACE WATER PIPE

EXISTING COMBINED WATER PIPE

EXISTING UNSURVEYED BUILDING DRAINAGE (ASSUMED ROUTE SHOWN)

UNITED UTILITIES RECORDS UUPS-ORD-76950 ALL UU ASSETS ARE SHOWN INDICATIVELY

UU FOUL WATER SEWER

UU SURFACE WATER SEWER

UU COMBINED WATER SEWER

WATERCOURSE

8M EASEMENT BASED ON SEWER FOR ADOPTION 6TH EDITION

PROPOSED DRAINAGE

PROPOSED GRAVITY SURFACE WATER DRAIN

PROPOSED SIPHON DRAINAGE BY SAPOFLOW

GATIC CHANNEL

SRWP — SIPHON RAIN WATER PIPE

DRAWING BASED ON PROVIDED BY SAPOFLOW
SIPHON ROOF STRATEGY ON 29.06.22

PROPOSED SIPHON MAX RATES
SRWP1 151 L/S AREA1 -0.247ha
SRWP2 151 L/S AREA2- 0.245ha
SRWP3 151 L/S AREA3- 0.244ha
SRWP4 151 L/S AREA4- 0.195ha
SRWP5 66 L/S AREA5- 0.112ha

- SIPHON BREAK ON EXTERNAL CHAMBER, SAPOFLOW IS RESPONSIBLE TO ROUTE SIPHON TO PROVIDED GRAVITY CUTINS CHAMBER
- 25MM CUT IN/CUT OF HIGHT

ASSUMED FOR MICRODRAINAGE MODEL
- 900MM DEPTH TO SOFFIT OF SIPHON PIPE ON GF
- SIPHON INVERT AND SLOPES TOWARDS GRAVITY CHAMBER

SRWP1 63.43 225Ø1:100
SRWP2 63.21 225Ø1:100
SRWP3 63.45 225Ø1:100
SRWP4 63.29 225Ø1:100
SRWP5 63.28 225Ø1:100

SIPHON SPECIALIST SHOULD INFORM CURTINS ENGINEER IF ANY INFORMATION HAS BEEN CHANGED OR ANY ASSUMPTIONS ARE NOT CORRECT

Rev:	Description:	Date:	By:	Chkd:
P06	UPDATED FOR NEW TENDER	02/02/24	ATL	MW
C01	ISSUED FOR CONSTRUCTION	23.09.22	ATL	MW
P05	DRAINAGE LAYOUT AMENDED	22.08.22	ATL	MW
P04	UPDATED ROOF STARTEGY	20.07.22	TH	MW
P03	DRAINAGE NOTE ADDED	25.04.22	ATL	MW
P02	UPDATED IN LINE WITH COMMENTS	07.04.22	ATL	MW
P01	FIRST ISSUE	22.03.22	ATL	MW

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Status: STAGE 5

Project: HAMMERSTONE ROAD

Drg Title: MAIN BUILDING ROOF CATCHMENT PLAN

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	22/03/22	ATL	ATL	MW
	Scale: 1:250				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

HRD - CUR - XX - 00 - DR - C - 92-507 -P06

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Appendix B

Access Roof Stairs - Condition 33 Report

Condition 33 - Confirmation of Condition Discharge

MANCHESTER CITY COUNCIL

Town & Country Planning Act 1990 (as amended)
Planning (Listed Building & Conservation Area) Act 1990 (as amended)

Approval of details reserved by condition

Applicant

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M60 2LA

Agent (if used)

Mr Andrew Thompson
Fletcher-Rae
Level 12
Tower 12
18-22 Bridge Street
Manchester
M3 3BZ

Part 1 – Particulars of the application/development

Proposal: Discharge of condition 33 (Roof Access Stairs) from planning approval reference 137572/JO/2023

Location: Hammerstone Road Depot, Hammerstone Road, Manchester, M18 8EQ

Date of application: 23 May 2024

Application number: CDN/24/0436

Part 2 – Particulars of decision

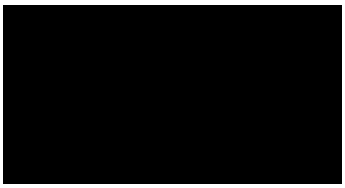
Manchester City Council gives notice that the detail(s) referred to in Part 1 are **Approved** in accordance with the information set out below.

Condition 33 Roof access stairs
The information and foundation designs in the Condition 33 Report ref: HRD-CUR-ZZ-XX-RP-S-00010 revision C02 dated 17 May 2024 are considered to be acceptable.

On the basis that the installation of the roof access stairs is implemented in accordance with Proposed Site Plan GA ref: HRD-FRA-00-XX-DR-A-90-0200 rev. C06, and with the information and foundation designs in the Condition 33 Report ref: HRD-CUR-ZZ-XX-RP-S-00010 revision C02 dated 17 May 2024, condition 33 is discharged.

It is, however, recommended that the condition of the Corn Brook Culvert is regularly monitored to ensure it remains free-flowing and proactively address any potential issues and maintain optimal performance of the culvert.

Date: 4 July 2024

Signed: 

Julie Roscoe
Director of Planning, Building Control & Licensing

Manchester City Council, P O Box 532, Town Hall, Manchester M60 2LA

Notes

1. This permission refers only to that required under the Town and Country Planning Act 1990 (as amended) or Planning (Listed Building & Conservation Area) Act 1990 (as amended) does not include any consent or approval under any other enactment, byelaw, order or regulation.

2 If the applicant is aggrieved by the decision of the local planning authority to refuse permission or approval for the proposed development, or to grant permission or approval subject to conditions, they may appeal to the Secretary of State in accordance with Section 78(1) of the Town and Country Planning Act 1990 or sections 20 and 21 of the Planning (Listed Building & Conservation Area) Act 1990 within six months of the date of the notice of the decision.

The Planning Inspectorate have introduced an online appeals service that can be used to make appeals online. This service is available through the gov.uk website – www.gov.uk/appeal-planning-inspectorate. The Inspectorate will publish details of your appeal on the internet.

Alternatively, appeals can be made on a form which is obtainable from Planning Inspectorate, Customer Support Unit, Room 3/15, Eagle Wing, Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 or by telephone 0117 372 6372.

The Secretary of State has power to allow a longer period for the giving of a notice of appeal but they will not normally be prepared to exercise this power unless there are special circumstances that excuse the delay in giving notice of appeal.

3. The statutory requirements are those set out in Section 79(6) of the Town and Country Planning Act 1990, namely Sections 70(1) and 72(1) of the Act.

4. If either the local planning authority of the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that they can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990

5. In certain circumstances, a claim may be made against the local planning authority for compensation, where permission is refused or granted subject to conditions by the Secretary of State on appeal or on a reference of the application to them. The circumstances in which such compensation is payable are set out in Section 114 of the Town and Country Planning Act 1990.

Curtins | Building a better future

MCC, Hammerstone Road

Planning Condition 33 Report
CR - CONSTRUCTION RECORD

Curtins Ref: HRD-CUR-ZZ-XX-RP-S-00010

Revision: C02

Issue Date: 17 May 2024

Client Name: Morgan Sindall Construction

Client Address: 6th Floor, Anchorage 2, Salford Quays, Manchester

Site Address: Hammerstone Road Depot, Gorton, Manchester, M18 8EQ

Curtins
51-55 Tithebarn Street
Liverpool
L2 2SB
Tel: 0151 726 2000
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Control Sheet

Rev	Description	Checked	Issued	Date
C01	First Issue		JR	17/05/2024
C02	CR – CONSTRUCTION RECORD		JR	01.11.2024

This report has been prepared for the sole benefit, use, and information for the client. The liability of Curtins Consulting Limited with respect to the information contained in the report will not extend to any third party.

Author	Signature	Date
John R Rasberry IEng IMIStructE Senior Engineer	[redacted]	17/05/2024

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4.0 Section 4 ..... Error! Bookmark not defined.
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Appendices

Appendix A
Appendix B

Executive Summary

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Your second paragraph could be regular, size 10.

To update the project reference in the footer, type F9.

1.0 Feasibility of Avoiding Loading to the Structure

Planning Condition 33 relates to the Roof Access Stair Culvert Build Over.

Initial information submitted and uploaded onto the Planning Portal on 19th February2023 has been considered.

A review of the details regarding the proposed access staircase and its relationship to the existing Corn Brook Culvert has been undertaken.

It has been determined that the information currently provide is insufficient for a thorough evaluation of the project's impact on the culvert's integrity and safety.

Additional information is required.

The proposed location of the Roof Access Stair has been determined to provide the most advantageous access location to the roof areas of the existing buildings.

Access is required for periodic maintenance and cleaning of the roof surface and associated guttering together with periodic maintenance of the new solar roof panels.

The location provides access to the main shed roof and adjoining smaller shed roof resulting in the need for a single Roof Access Stair.

Unfortunately, this will result in the requirement for the Roof Access Stair to be constructed over the Corn Brook Culvert and the following pages will describe the arrangements, loadings and risks that are to be considered.

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2.0 Sectional View and Loadings

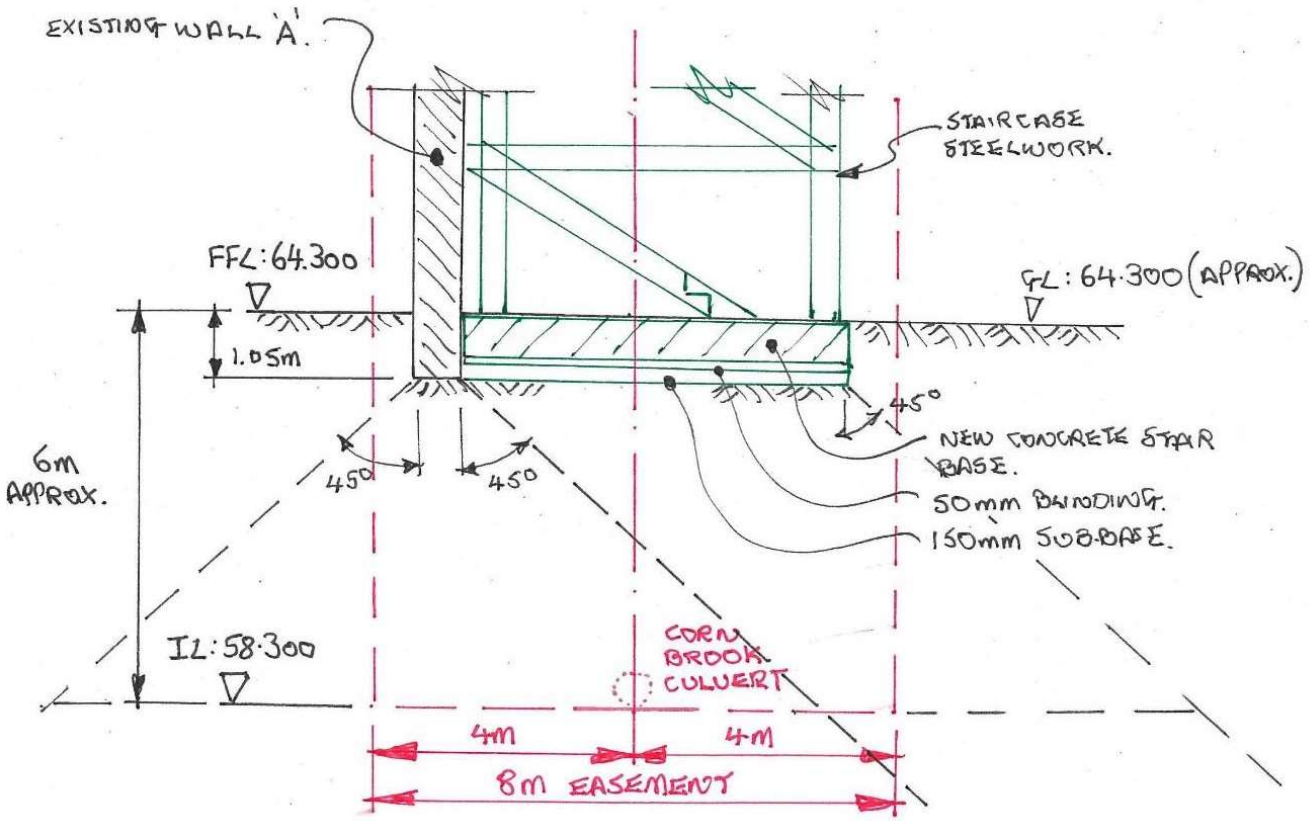


Figure 2.1 – Sectional View

The Sectional View above shown in Figure 2.1 indicates the arrangements of the existing building and proposed staircase and associated concrete slab in relation to the existing Corn Brook Culvert.

The Plan View location of the Section View above is indicated on Figure 3.1 in Section 3.0 Plan View.

The Corn Brook Culvert at the section location has an invert level of 58.300 AOD which equate to approximately 6.0m below the existing ground floor level of the existing building.

The existing building referenced 'Existing Wall 'A'', currently imposed a load on to the Corn Brook Culvert. The underside of the wall at this location has been determined by intrusive investigation as being 1.05m below ground level. The loading of this wall related to the existing and roof loadings.

It is to be noted that in this load assessment the omission of the existing crane load is NOT considered, however, it should be advised that the imposed loads from these very heavy crane loads would impose an even greater load than the load which is to be considered for the purposes of this assessment.

The existing solid brickwork wall is 13.5m high with an average width of 0.6m.

The roof spans approximately 10.0m on tot his wall.

Existing Uniformly Distributed Load (UDL) :

Existing Masonry : 13.5m x 0.6m x 18.0kN/m^3 = 145 kN/m

Existing Roof : 10.0m x 2.1kN/m^2 = 21 kN/m

Total UDL : 145 + 21 = **166 kN/m**

The bearing pressure located directly below the underside of the existing wall foundation equates to the above Total UDL divided by the width of the existing wall. In this case the average width will be used of 0.6m.

Bearing Pressure at Foundation : 166 kN/m / 0.6m = **276 kN/m^2**

As referenced on the Sectional View within Figure 1, this existing bearing pressure is spread over a 45-degree angle, and it is this load that is directly imposed on to the existing Corn Brook Culvert and its surrounding soils.

Based upon the depth of 6.0m to the Corn Brook Culvert, this spread equates to 12.0m.

The existing loading imposed on the Corn Brook Culvert from Existing Wall 'A' and the associated roof is : 276 kN/m^2 / 12.0m = **23 kN/m run**

The proposed additional loadings applied to the Corn Brook Culvert occur from the proposed new reinforced concrete pad foundation and the steel staircase and its components installed over.

The new concrete : 3.2m x 5.8m x 0.6m x 24kN/m^3 = 268 kN

The new staircase : 310kN x 4 = 1240 kN (4No stair column loads)

Total new load : 268kN + 1240kN = **1508 kN**

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The bearing pressure located directly below the concrete slab on to the existing ground equates to the above total new load divided by the plan area of the pad foundation.

Bearing Pressure of New Concrete = 1508kN / (3.2m x 5.8m) = **81.25 kN/m^2**

As referenced on the Sectional View within Figure 1, this new bearing pressure is spread over a 45-degree angle, and it is this load that is directly imposed on to the existing Corn Brook Culvert and its surrounding soils.

Based upon the depth of 6.0m to the Corn Brook Culvert, this spread equates to 12.0m plus 5.8m equalling 17.8m.

The new loading imposed on the Corn Brook Culvert from the new pad foundation and staircase is : 81.25 kN/m^2 / 17.8m = **4.5 kN/m run**

The above determination of existing and proposed loads results in an increase of applied loading to the Corn Brook Culvert of 4.5 kN/m run which is approximately a 20% increase.

This increase could be considered as being excessive, however, there are three items of note that must be taken into consideration of this result.

Firstly, as indicated earlier in this document, the former crane loads have NOT been considered. These loads would have been very large, imposing very large concentrated and moving loads directly to the existing steelwork embedded within the masonry structure which in turn would have resulted in these large moving loads being applied to the Corn brook Culvert. These loads have now been omitted. The cranes are no longer in the building with the crane rails being retained for overall stability of the existing building only.

Secondly, the use of the building has changed. The previous use of the building as a foundry for the manufacture of railway steam engines has now gone. The imposed loading criteria for foundry buildings, referring to current British Standards, is a minimum of 20 kN/m^2. For the purposes of the new building use for refuse collection lorries, the current British Standards note a general industrial imposed load of 5 kN/m^2.

Thirdly, the size of the new staircase and its relation to the existing building. The existing buildings mass is considerable. The above loadings for the existing building have only considered the affect of Existing Wall ‘A’. In addition to this wall, as indicated on Figure 3.1, Existing Wall ‘B’ imposes a similar load to the Corn Brook Culvert. This load occurs in same line as the Corn Brook Culvert, transferring

its loads along the length. The location of the new staircase and its pad foundation are small in relation to the size and mass of the existing building.

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3.0 Foundation Plan

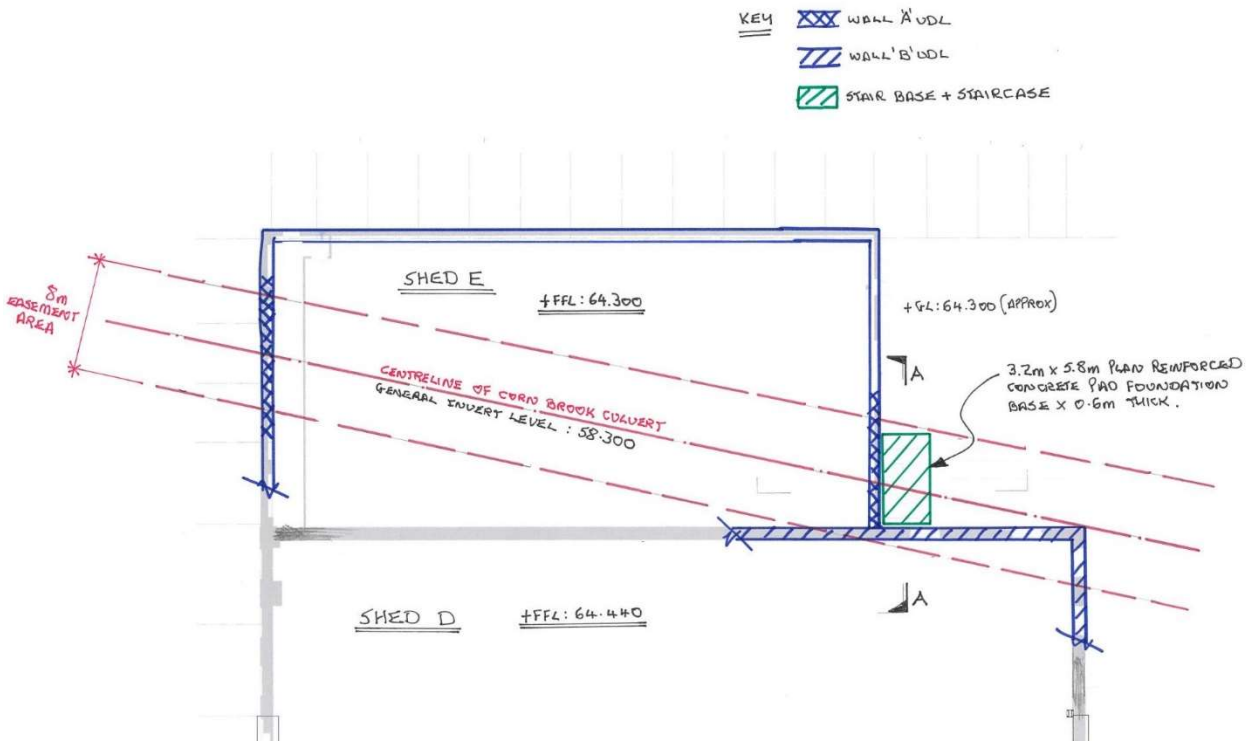


Figure 3.1 – Foundation Plan

With reference to Figure 3.1 above and Figure 2.1 and associated notes, loadings and descriptions within Section 2.0, the relationship between the existing building, existing Corn Brook Culvert and the proposed new staircase and pad foundation are indicated and explained.

As discussed previously, Existing Walls 'A' and 'B' are built directly over the existing Corn Brook Culvert, imposing considerable loads. The new staircase and pad foundation are small in comparison not only in scale but also in actual applied load.

The reduction in the buildings use imposed load and omittance of the existing crane load reduce the effects of loading on to the Corn Brook Culvert.

As determined within Section 2.0, the existing building load applied at the Corn Brook Culvert level is 23 kN/m run, the new staircase and pad foundation create an additional 4.5 kN/m run, and approximate 20% increase. The reduction of the building use-imposed load from 20 kN/m^2 to 5 kN/m^2 is a reduction in load of 75%.

To conclude, the overall load to be applied to the Corn Brook Culvert is **REDUCED**.

4.0 Evidence, Assurance, Risk

The new steel staircase is formed of steelwork sections that are assembled on site using bolts. The principal of construction reflects the ability of this structure to be taken down in a controlled manner through a similar method.

The steel staircase is, therefore, considered to be a demountable structure.

The concrete pad foundation is constructed incorporating steel reinforcement.

The footprint of the new concrete has been designed to be no more than is required to support the new steel staircase.

The design of the concrete pad foundation has been determined to spread the steel staircase loads over its area (3.2m x 5.8m = 18.56m^2) to ensure that the load applied to the ground are kept to a minimum and evenly over the area.

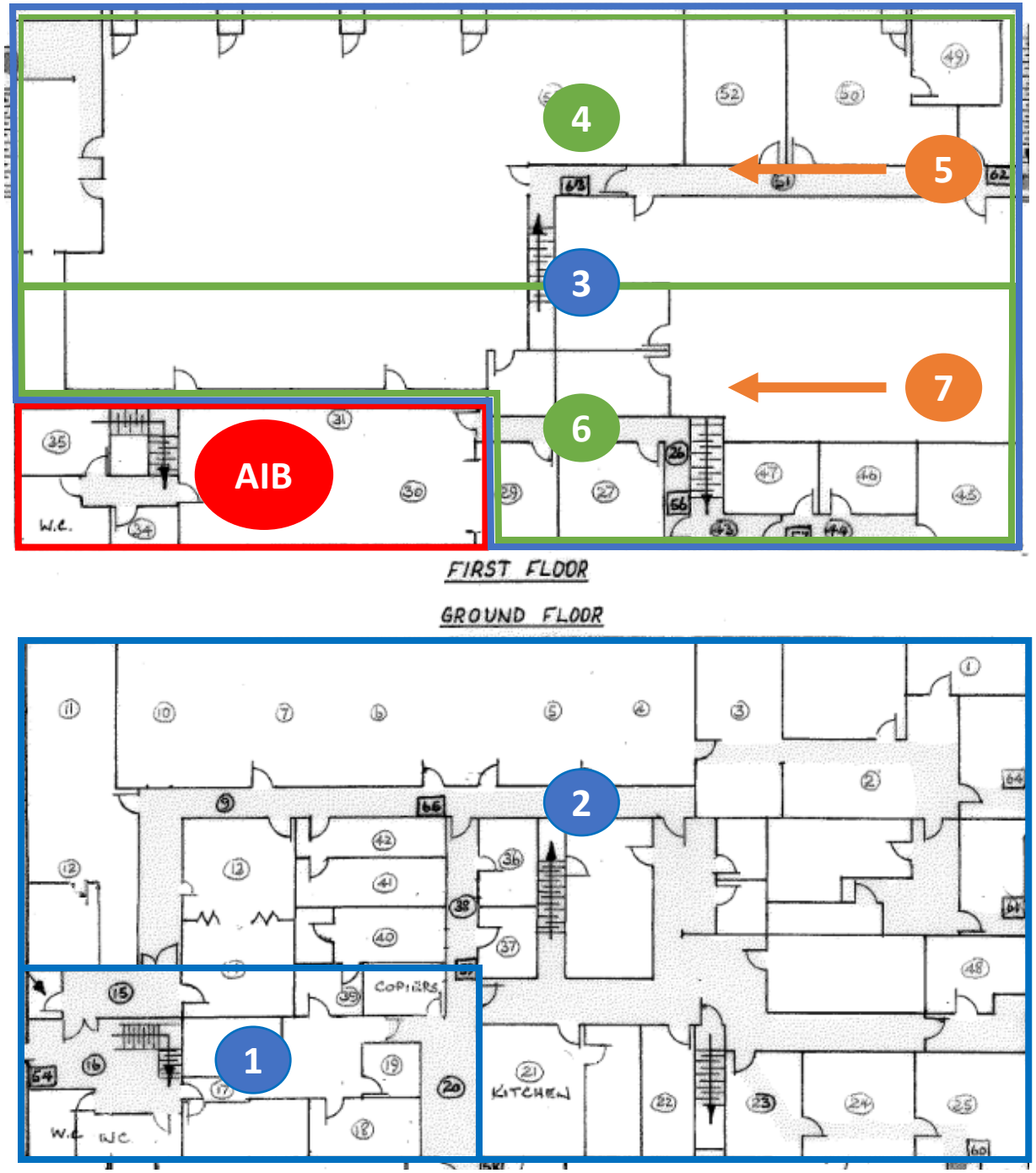
These measure have been incorporated into the design of the staircase and support base to ensure that the loads applied over the Corn Brook Culvert are as low as possible (4.5 kN/m run).

The additional reductions in imposed load that have been incorporated into he designs and usage of the building reduce the current loads applied to the Corn Brook Culvert and, therefore, we would conclude that the above construction, load reductions, load spread are adequate to ensure that the resulting risk to the Corn Brook Culvert are reduced to the absolute minimum but ensuring that the required access staircase can be used safely and, in the event of any requirement for access to the Corn Brook Culvert, can be taken down and removed safely.

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Appendix C
Demolition Plan

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Option 1 (2 Contractors)

Sequence;

Area 1 – Soft strip walls & ceilings to underside of the joists below AIB area
Area 2 – Soft strip walls & ceilings to underside of the joists remaining ground floor
Area 3 – Soft strip walls & ceilings to first floor
AIB – Removal of AIB (Subject to HSE notice/temp works agreement)
Area 4 – Removal of 1st floor joists to West half of the building
Area 5 – Start Removal of roof cement sheets
Area 6 – Removal of 1st floor joists to East half of the building
Area 7 – Start Removal of roof cement sheets
Demolish Shell to slab

Option 2 (1 Contractor)

AIB – Removal of AIB (Subject to HSE notice/temp works agreement)
Area 1&2 Area 4&5 – Soft strip walls & ceilings to underside of the joists remaining ground floor by removal of the North gable end and mechanical removal
Area 6&7 – Start Removal of roof cement sheets
Demolish Shell to slab

Appendix D

CCTV Survey Information

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NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

WEB PROJECT
CLICK TO OPEN THIS PROJECT

genuine embedded reporting WinCan inside

Project

Project Name: Adana Hammerstone Rd Goreton Manchester projects
Project Description: WinCan Import in Miraculix Standard
Project Date: 17/10/2023
Inspection Standard: MSCC5 Sewers & Drainage GB (SRM5 Scoring)

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
derek.kearns@nrcwws.co.uk

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Adana Hammerstone Rd Goreton Manchester projects		17/10/2023

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[redacted]

Project Information

Project Name	Project Number	Project Date
Adana Hammerstone Rd Goreton Manchester projects		17/10/2023

Client

Company: Adana Construction
Department: Adana House
Street: 140 Higher Hillgate
Town or City: Stockport
County: Cheshire
Post Code: SK1 3QT
Phone: 0161 477 7211

Site

Company: ADANA CONSTRUCTION
Contact: Adana Hammerstone Rd Goreton Manchester projects

Contractor

Company: NRCWWS
Contact: Derek Kearns
Department: Director
Street: unit D. Russell Road
Town or City: Rock Ferry
County: Wirral
Post Code: CH42 1LU
Phone: 0151 643 0800
Email: [redacted]

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 28/06/2023 - FWMH02X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	2	28/06/23	10:28	DK0363	No Rain Or Snow	No	FWMH02X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JAME G	PJ210MA	Atex Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FWMH02
Road:	Hammerstone Road	**Inspected Length:**	26.32 m	**Upstream Pipe Depth:**	5.050 m
Location:	Other walkway	**Total Length:**	26.32 m	**Downstream Node:**	BRF01
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:135

Depth: 5.05 m
FWMH02



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: FWMH02	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:06		
2.08		DEEJ	Attached deposits, encrustation at joint from 8 o'clock to 4 o'clock, 10% cross-sectional area loss	00:00:59	FWMH02X_a7ce946b-a5c9-42	3
3.51		CCJ	Crack, circumferential at joint from 11 o'clock to 2 o'clock	00:02:00	FWMH02X_e7d97b54-054d-48	2 / 2
3.51	S02	CLJ	Crack, longitudinal at joint at 12 o'clock, start	00:02:06	FWMH02X_2a4034d0-619c-41	
4.31	S01	LL	Line deviates left, start	00:02:25	FWMH02X_a9c62bf7-3e55-45f3	
5.26	F02	CLJ	Crack, longitudinal at joint at 12 o'clock, finish	00:03:07		2 / 2
6.09		B	Broken pipe at 9 o'clock	00:03:27	FWMH02X_843432e1-3587-4e	4
8.98		CN	Connection other than junction at 3 o'clock, 150mm dia	00:05:31		
8.98	F01	LL	Line deviates left, finish	00:05:41		
10.18		DES	Settled deposits, fine, 15% cross-sectional area loss	00:06:17		3
11.22		REM	General remark: LOCATING LINE AS WE SURVEY	00:07:29		
12.17		LL	Line deviates left	00:07:49		
12.17		FLJ	Fracture, longitudinal at joint at 12 o'clock	00:08:01	FWMH02X_a5d1eb1f-37c1-4bc	3 / 2

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 28/06/2023 - FWMH02X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	2	28/06/23	10:28	DK0363	No Rain Or Snow	No	FWMH02X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JAME G	PJ210MA	Atex Crawler	Not Specified	Not Specified	Not Specified



Scale: 1:135 Position [m]	Code	Observation	MPEG	Photo	Grade
18.85	B	Broken pipe from 8 o'clock to 4 o'clock	00:12:19	FWMH02X_7d793936-b1e4-4fb	4
18.85	D	Deformed sewer or drain, 15%	00:12:30		5 / 3
19.49	ID	Infiltration, dripping at 12 o'clock	00:12:41	FWMH02X_7c48f7e4-fcd9-4bc9	
20.54	LL	Line deviates left	00:13:44		
20.54	CLJ	Crack, longitudinal at joint at 12 o'clock	00:13:50		2 / 2
25.62	LR	Line deviates right: slight	00:15:50		
26.31	LD	Line deviates down	00:16:09		
26.32	BRF	Finish node, major connection without manhole, reference: BRF01	00:16:21		

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
7	245.0	15.4	405.0	5.0	7	2.0	0.4	11.0	3.0

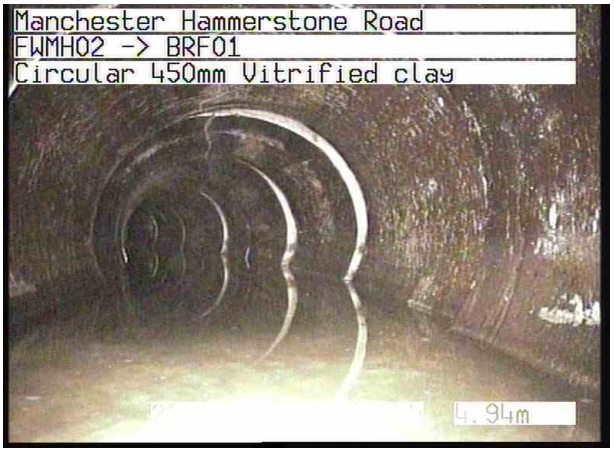
NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 28/06/2023 - FWMH02X

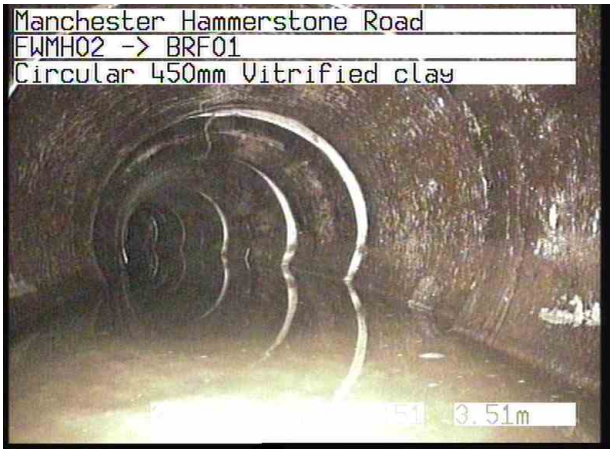
Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	FWMH02X	DK0363	



FWMH02X_a7ce946b-a5c9-424a-86eb-51f0a8fcff04_20230628_102921_045.jpg, 00:00:59, 2.08 m
Attached deposits, encrustation at joint from 8 o'clock to 4 o'clock, 10% cross-sectional area loss



FWMH02X_e7d97b54-054d-4842-80fd-ac972e072d39_20230704_091850_824.jpg, 00:02:00, 3.51 m
Crack, circumferential at joint from 11 o'clock to 2 o'clock



FWMH02X_2a4034d0-619c-4168-ab0f-bc0f286ce88d_20230704_091855_605.jpg, 00:02:06, 3.51 m
Crack, longitudinal at joint at 12 o'clock, start



FWMH02X_a9c62bf7-3e55-45f3-a47c-e56f0c333b3e_20230704_091900_013.jpg, 00:02:25, 4.31 m
Line deviates left, start

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Section Pictures - 28/06/2023 - FWMH02X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	FWMH02X	DK0363	



FWMH02X_843432e1-3587-4ec5-aad0-246872d8816d_20230704_092046_828.jpg, 00:03:27, 6.09 m
Broken pipe at 9 o'clock



FWMH02X_a5d1eb1f-37c1-4bc2-8a2e-f654ab212450_20230628_103631_547.jpg, 00:08:01, 12.17 m
Fracture, longitudinal at joint at 12 o'clock



FWMH02X_7d793936-b1e4-4fb6-b0b0-916719dee72a_20230704_092158_557.jpg, 00:12:19, 18.85 m
Broken pipe from 8 o'clock to 4 o'clock



FWMH02X_7c48f7e4-fcd9-4bc9-810b-eaa80249d89c_20230628_104110_684.jpg, 00:12:41, 19.49 m
Infiltration, dripping at 12 o'clock

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Section Pictures - 28/06/2023 - FWMH02X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	FWMH02X	DK0363	



FWMH02X_efbfd325-baf5-469d-b1a8-2b283e3c7379_20230628_104118_343.jpg, 00:12:41, 19.49 m
Infiltration, dripping at 12 o'clock

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Section Inspection - 04/10/2023 - MH24X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	04/10/23	10:11	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH24X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH24
Road:	1 Hammerstone Road	**Inspected Length:**	17.72 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	17.72 m	**Downstream Node:**	DS
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: FOUL SMELL IN MH
Recommendations:

Scale: 1:154	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH24						
	0.00	MH	Start node, manhole, reference: MH24	00:00:00		
	0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
	10.78	JDM	Joint displaced, medium	00:00:41	MH24 DS_10-78 m_101357	
	17.72	MHF	Finish node, manhole, reference: DS: UNCHARTED, POSS UNDER CABINS	00:01:15	MH24 DS_17-72 m_101457	
DS Depth: m						

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

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Section Pictures - 04/10/2023 - MH24X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	MH24X	DK0526 ADANA	NRC WWS LTD



MH24 DS_10-78m_101357.jpg, 00:00:41, 10.78 m
Joint displaced, medium



MH24 DS_17-72m_101457.jpg, 00:01:15, 17.72 m
Finish node, manhole, reference: DS, UNCHARTED, POSS UNDER CABINS

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Section Inspection - 06/10/2023 - C1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	1	06/10/23	9:35	DK0526 ADANA CONSTRUCTION	Rain	Yes	C1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	C1
Road:	1 Hammerstone Road	**Inspected Length:**	10.69 m	**Upstream Pipe Depth:**	3.250 m
Location:	Property or buildings	**Total Length:**	10.69 m	**Downstream Node:**	DS
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:93



Position [m]	Code	Observation	MPEG	Photo
0.00	MH	Start node, manhole, reference: C1	00:00:00	
0.00	WL	Water level, 10% of the vertical dimension	00:00:00	
4.20	H	Hole in drain or sewer from 9 o'clock to 2 o'clock: POOR REPAIR	00:00:22	MH C1 DS_4-20m _094321.j
10.69	BRF	Finish node, major connection without manhole, reference: DS: CULVERT	00:00:47	MH C1 DS_10-69 m_094359

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	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 06/10/2023 - C1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	C1X	DK0526 ADANA	NRC WWS LTD



MH C1 DS_4-20m_094321.jpg, 00:00:22, 4.20 m
Hole in drain or sewer from 9 o'clock to 2 o'clock, POOR REPAIR



MH C1 DS_10-69m_094359.jpg, 00:00:47, 10.69 m
Finish node, major connection without manhole, reference: DS, CULVERT

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Section Inspection - 22/08/2023 - MH34X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	1	22/08/23	12:55	Not Specified	No Rain Or Snow	Yes	MH34X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH34
Road:	Hammerstone Road	**Inspected Length:**	17.55 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	17.55 m	**Downstream Node:**	EXFW1B
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:152



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH34	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
3.68	WL	Water level, 5% of the vertical dimension	00:00:21		
17.46	FC	Fracture, circumferential from 12 o'clock to 12 o'clock: ON BACKDROP	00:01:20	MH34X_0941c1a5-6953-41b3-	3 / 2
17.46	REM	General remark: BACKDROP	00:01:29		
17.55	MHF	Finish node, manhole, reference: EXFW1B	00:01:36		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	40.0	2.3	40.0	3.0	1	1.0	0.1	1.0	2.0

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Section Pictures - 22/08/2023 - MH34X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
4	Downstream	MH34X		DK0472



MH34X_0941c1a5-6953-41b3-8a84-c1a6191d4dc4_20230822_125832_514.jpg, 00:01:20, 17.46 m
Fracture, circumferential from 12 o'clock to 12 o'clock, ON BACKDROP

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[redacted]

Section Inspection - 22/08/2023 - MH36X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
5	1	22/08/23	12:02	Not Specified	No Rain Or Snow	Yes	MH36X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH36
Road:	Hammerstone Road	**Inspected Length:**	13.21 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	13.21 m	**Downstream Node:**	EXFW1B
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:115



Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m **MH36**					
0.00	IC	Start node, inspection chamber, reference: MH36	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:01:00		
0.83	MCPVC	Pipe material changes to polyvinyl chloride at this point	00:00:43	MH36X_bd74fbc5-b345-47a2-	
7.59	WL	Water level, 35% of the vertical dimension	00:01:58		
8.37	CUW	Loss of vision, camera under water	00:02:04		
9.57	WL	Water level, 100% of the vertical dimension	00:02:54		
13.21	MHF	Finish node, manhole, reference: EXFW1B	00:03:11		
EXFW1B **Depth: m**					

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

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Section Pictures - 22/08/2023 - MH36X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Downstream	MH36X		DK0472



MH36X_bd74fbc5-b345-47a2-8157-43e8e117741c_20230822_120336_574.jpg, 00:00:43, 0.83 m
Pipe material changes to polyvinyl chloride at this point

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Section Inspection - 04/10/2023 - FWIC2X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
6	1	04/10/23	10:40	DK0526 ADANA CONSTRUCTION	Rain	Yes	FWIC2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FWIC2
Road:	1 Hammerstone Road	**Inspected Length:**	7.74 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	7.74 m	**Downstream Node:**	FWIC1
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:68



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: FWIC1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
1.14	WL	Water level, 20% of the vertical dimension	00:00:10		
5.53	WL	Water level, 50% of the vertical dimension	00:01:03		
6.16	CUW	Loss of vision, camera under water	00:01:11		
7.74	ICF	Finish node, inspection chamber, reference: FWIC2	00:01:21		

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	0.0	0	0.0	0.0	0.0	0.0

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Section Inspection - 29/09/2023 - Fwmh01X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
7	1	29/09/23	11:32	DK0526	No Rain Or Snow	Yes	FWMH01X

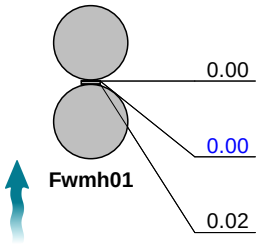
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
P Windle	Not Specified	Not Specified	Not Specified	Not Specified	1

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	FWMH01
Road:	Hammerstone Rd	**Inspected Length:**	0.02 m	**Upstream Pipe Depth:**	
Location:	Other location	**Total Length:**	0.02 m	**Downstream Node:**	FWMH02
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	Cured in place lining
Inspection Purpose:	Post rehab inspection	**Lining Material:**	Fibre reinforced plastics

Comments: POST PATCH CCTV
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: F2	00:00:01		
0.00	WL	Water level, 5% of the vertical dimension	00:00:02		
0.02	MHF	Finish node, manhole, reference: F1: patch on view	00:00:45	F1X_71490003-b3f0-40ea-863b	

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

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Section Pictures - 29/09/2023 - Fwmh01X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
7	Upstream	FWMH01X	DK0526	



F1X_71490003-b3f0-40ea-863b-8bdebed17308_20231017_145304_211.jpg, 00:00:45, 0.02 m
Finish node, manhole, reference: F1, patch on view

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Section Inspection - 28/06/2023 - FWMH01X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
8	1	28/06/23	14:00	DK0367	No Rain Or Snow	Yes	FWMH01X

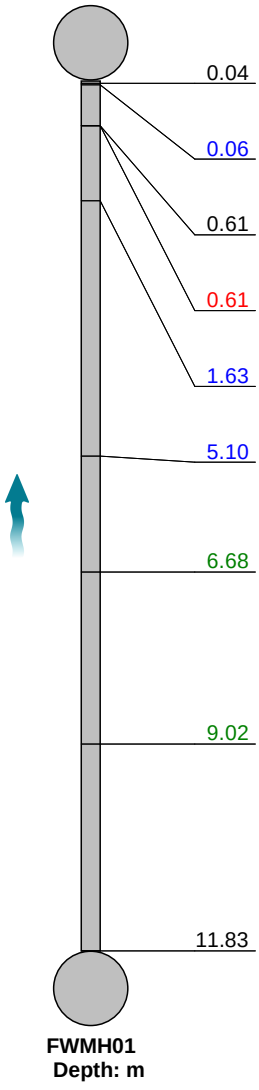
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
jamie g	Not Specified	Push Rod	Not Specified	Not Specified	1

Town or Village:	M18 8Eq	**Inspection Direction:**	Upstream	**Upstream Node:**	FWMH01
Road:	Hammerstone Road	**Inspected Length:**	11.83 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	11.83 m	**Downstream Node:**	FWMH02
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:103



Position [m]	Code	Observation	MPEG	Photo	Grade
0.04	MH	Start node, manhole, reference: FWMH02	00:00:00		
0.06	WL	Water level, 0% of the vertical dimension	00:00:00		
0.61	JN	Junction at 6 o'clock, 225mm dia	00:00:06		
0.61	JDL	Joint displaced, large	00:00:15	FWMH02 US FWMH01_	1 / 4
1.63	WL	Water level, 15% of the vertical dimension	00:00:22		
5.10	WL	Water level, 5% of the vertical dimension	00:00:37		
6.68	DER	Settled deposits, coarse, 5% cross-sectional area loss	00:00:43	FWMH01X _fca69c75 -ec5f-4891	3
9.02	LR	Line deviates right	00:00:51		
11.83	MHF	Finish node, manhole, reference: FWMH01	00:01:03		

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	2	5.0	0.6	7.0	4.0

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Section Pictures - 28/06/2023 - FWMH01X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
8	Upstream	FWMH01X	DK0367	



FWMH02 US FWMH01_0-61m_140927.jpg, 00:00:15, 0.61 m
Joint displaced, large



FWMH01X_fca69c75-ec5f-4891-b983-80ffa3de1089_20230704_091625_459.jpg, 00:00:43, 6.68 m
Settled deposits, coarse, 5% cross-sectional area loss

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Section Inspection - 22/08/2023 - G3X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
9	1	22/08/23	14:50	Not Specified	No Rain Or Snow	Yes	G3X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G3
Road:	Hammerstone Road	**Inspected Length:**	7.98 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	7.98 m	**Downstream Node:**	M32
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:70



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: M32	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
6.29	SS	Surface damage, spalling from 10 o'clock to 2 o'clock	00:00:42	G3X_0aa1 f7fa-6cd4- 4596-b480	2
7.98	GYF	Finish node, gully, reference: G3	00:00:58		

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	20.0	2.5	20.0	2.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 22/08/2023 - G3X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
9	Upstream	G3X		DK0472



G3X_0aa1f7fa-6cd4-4596-b480-e012c28a25d0_20230822_145216_936.jpg, 00:00:42, 6.29 m
Surface damage, spalling from 10 o'clock to 2 o'clock

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[redacted]

Section Inspection - 02/10/2023 - Rod EyeX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
10	1	02/10/23	11:02	N Kirton	No Rain Or Snow	Yes	ROD EYEX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Pushrod	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	ROD EYE
Road:	Hammerstone Rd	**Inspected Length:**	32.23 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	32.23 m	**Downstream Node:**	MH1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:280



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:06		
1.24	JN	Junction at 2 o'clock, 100mm dia	00:00:27		
2.07	WL	Water level, 10% of the vertical dimension	00:00:33		
5.04	WL	Water level, 5% of the vertical dimension	00:00:42		
13.14	D	Deformed sewer or drain, 30%	00:01:22	Rod EyeX_89df72d6-3b80	4 / 4
16.50	D	Deformed sewer or drain, 5%	00:01:41	Rod EyeX_ccd54a6e-8f3	1 / 2
29.03	WL	Water level, 10% of the vertical dimension	00:02:43		
31.18	JN	Junction at 9 o'clock, 100mm dia	00:03:04		
31.55	JN	Junction at 3 o'clock, 100mm dia	00:03:17		
32.04	LU	Line deviates up	00:03:29		
32.23	REF	Finish node, rodding eye, reference: Rod Eye	00:03:45		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
2	80.0	2.5	80.0	4.0	2	5.0	0.2	6.0	4.0

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Section Pictures - 02/10/2023 - Rod EyeX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
10	Upstream	ROD EYEX	N Kirton	NRC WWS Ltd



Rod
EyeX_89df72d6-3b80-41c3-8f57-19804605fbd5_20231002_110348_578.jpg, 00:01:22, 13.14 m
Deformed sewer or drain, 30%



Rod
EyeX_ccd54a6e-8f3a-4a5b-afef-6d8136f2e6f5_20231002_110406_458.jpg, 00:01:41, 16.50 m
Deformed sewer or drain, 5%

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Section Inspection - 02/10/2023 - MH1AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
11	1	02/10/23	10:54	N Kirton	No Rain Or Snow	Yes	MH1AX

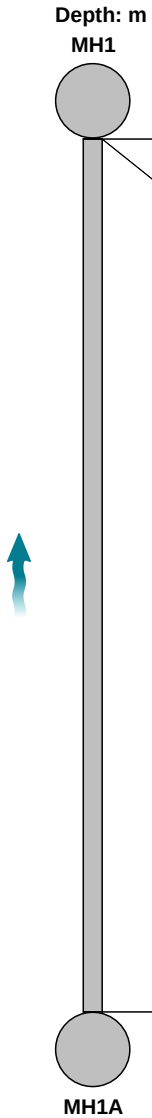
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1A
Road:	Hammerstone Rd	**Inspected Length:**	22.59 m	**Upstream Pipe Depth:**	1.070 m
Location:	Property or buildings	**Total Length:**	22.59 m	**Downstream Node:**	MH1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:196



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:08		
22.59	MHF	Finish node, manhole, reference: MH1A	00:01:34		

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

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Section Inspection - 29/09/2023 - UU 3803X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
12	1	29/09/23	11:05	N Kirton	No Rain Or Snow	Yes	UU 3803X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	UU 3803
Road:	Hammerstone Rd	**Inspected Length:**	47.24 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	47.24 m	**Downstream Node:**	MH1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:410 Position [m]		Code	Observation	MPEG	Photo	Grade
Depth: m MH1 0.00		MH	Start node, manhole, reference: MH1	00:00:00		
0.00		WL	Water level, 10% of the vertical dimension	00:00:07		
0.00		REM	General remark: rope running along invert	00:00:17	UU 3803X_7c 4fe95a-61	
0.60	S01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, start: Patchy	00:00:38	UU 3803X_ec a04b50-e1	
11.45		CN	Connection other than junction at 1 o'clock, 150mm dia	00:01:37	UU 3803X_2d 64c7c1-49	
26.09		MH	Start node, manhole, reference: Node point: 150mm pipe incoming	00:03:18	UU 3803X_7c 8327ac-b3	
33.23		CXD	Connection defective, connecting pipe is damaged at 12 o'clock, 150mm dia: saddle to main missing	00:04:17	UU 3803X_eff 886a3-924	
36.74		DES	Settled deposits, fine, 10% cross-sectional area loss	00:04:51		3
37.38		MH	Start node, manhole, reference: node point: no laterals	00:05:45	UU 3803X_89 4b8984-5c	
38.99	C01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 10% cross-sectional area loss, change: Patchy	00:06:28	UU 3803X_99 a6e569-ce	
44.62		CX	Connection defective at 10 o'clock, 225mm dia: Half blocked with encrustation	00:07:31	UU 3803X_d2 a16a24-99	
45.40		CN	Connection other than junction at 3 o'clock, 300mm dia	00:08:06	UU 3803X_3c a19a47-24	
45.63		DES	Settled deposits, fine, 20% cross-sectional area loss	00:08:41		4
47.24	F01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 10% cross-sectional area loss, finish: Patchy	00:09:43		3
47.24		SA	Survey abandoned: Due to silt	00:09:51		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	3	7.0	2.1	101.0	4.0

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Section Pictures - 29/09/2023 - UU 3803X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
12	Upstream	UU 3803X	N Kirton	NRC WWS Ltd



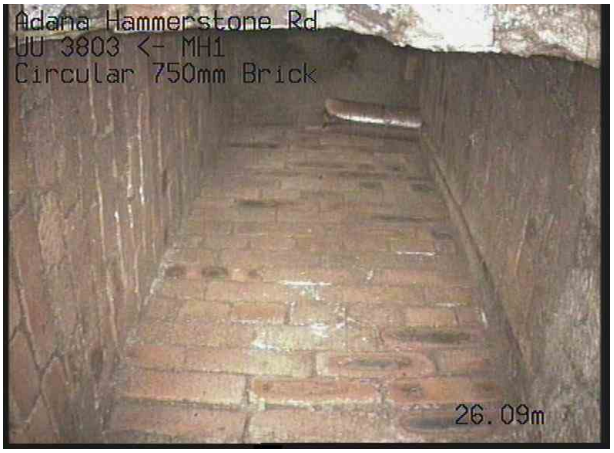
UU
3803X_7c4fe95a-6172-400c-8e55-e9b46b12f59b_20230929_110556_997.jpg, 00:00:17, 0.00 m
General remark, rope running along invert



UU
3803X_eca04b50-e131-4dfe-8786-ba9a1bf9edd0_20230929_110618_260.jpg, 00:00:38, 0.60 m
Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, start, Patchy



UU
3803X_2d64c7c1-4914-4176-8e85-39894b60b95c_20230929_110716_314.jpg, 00:01:37, 11.45 m
Connection other than junction at 1 o'clock, 150mm dia



UU
3803X_7c8327ac-b3ef-4fae-86ac-5e048638f9f8_20230929_110857_666.jpg, 00:03:18, 26.09 m
Start node, manhole, reference: Node point, 150mm pipe incoming

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Section Pictures - 29/09/2023 - UU 3803X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
12	Upstream	UU 3803X	N Kirton	NRC WWS Ltd



UU
3803X_eff886a3-9245-4379-9a54-673bd7d69ebb_20230929_110956_482.jpg, 00:04:17, 33.23 m
Connection defective, connecting pipe is damaged at 12 o'clock, 150mm dia, saddle to main missing



UU
3803X_894b8984-5c81-408d-a3ff-856742ecc766_20230929_111130_446.jpg, 00:05:45, 37.38 m
Start node, manhole, reference: node point, no laterals



UU
3803X_99a6e569-ced3-4896-b8c2-f3ac361cc375_20230929_111207_657.jpg, 00:06:28, 38.99 m
Attached deposits, encrustation from 7 o'clock to 5 o'clock, 10% cross-sectional area loss, change, Patchy



UU
3803X_d2a16a24-99c2-48d6-9eae-0b7b58d8eb97_20230929_111310_253.jpg, 00:07:31, 44.62 m
Connection defective at 10 o'clock, 225mm dia, Half blocked with encrustation

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Section Pictures - 29/09/2023 - UU 3803X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
12	Upstream	UU 3803X	N Kirton	NRC WWS Ltd



UU 3803X_3ca19a47-249f-40ed-abcb-2825530696c9_20230929_111346_245.jpg, 00:08:06, 45.40 m
Connection other than junction at 3 o'clock, 300mm dia

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Section Inspection - 02/10/2023 - U/SX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
13	1	02/10/23	11:13	N Kirton	No Rain Or Snow	Yes	U/SX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Pushrod	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	U/S
Road:	Hammerstone Rd	**Inspected Length:**	7.74 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	7.74 m	**Downstream Node:**	MH1A
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	1.070 m

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:68

Depth: 1.07 m
MH1A



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1A	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:05		
7.74	XP	Collapsed drain or sewer, 95% cross-sectional area loss	00:01:23	U_SX_551ced77-9085-490f-9a3	5
7.74	SA	Survey abandoned: Pipe collapsed, broken pipe and full bore concrete	00:01:46		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	165.0	21.3	165.0	5.0	0	0.0	0.0	0.0	1.0

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[redacted]

Section Pictures - 02/10/2023 - U/SX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
13	Upstream	U/SX	N Kirton	NRC WWS Ltd



U_SX_551ced77-9085-490f-9a3d-03c1825fe094_20231002_111536_088.jpg, 00:01:23, 7.74 m
Collapsed drain or sewer, 95% cross-sectional area loss

NRCWWS
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[redacted]

Section Inspection - 04/10/2023 - RWPX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
14	1	04/10/23	8:34	DK0526 ADANA CONSTRUCTION	Rain	Yes	RWPX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	RWP
Road:	1 Hammerstone Road	**Inspected Length:**	12.15 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	12.15 m	**Downstream Node:**	MH3
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:106



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH3	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
1.55	D	Deformed sewer or drain, 15%	00:00:12	MH3 US RWP_1-5 5m_08353	
4.52	D	Deformed sewer or drain, 10%	00:00:25	MH3 US RWP_4-5 2m_08355	
5.37	LL	Line deviates left	00:00:31		
7.06	D	Deformed sewer or drain, 10%	00:00:39	MH3 US RWP_7-0 6m_08362	
11.83	LU	Line deviates up	00:00:59		
12.15	SA	Survey abandoned: RWP MISSING OFF WALL	00:01:02	MH3 US RWP_12-15m_0837	

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
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[redacted]

Section Pictures - 04/10/2023 - RWPX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
14	Upstream	RWPX	DK0526 ADANA	NRC WWS LTD



MH3 US RWP_1-55m_083539.jpg, 00:00:12, 1.55 m
Deformed sewer or drain, 15%



MH3 US RWP_4-52m_083557.jpg, 00:00:25, 4.52 m
Deformed sewer or drain, 10%



MH3 US RWP_7-06m_083620.jpg, 00:00:39, 7.06 m
Deformed sewer or drain, 10%



MH3 US RWP_12-15m_083706.jpg, 00:01:02, 12.15 m
Survey abandoned, RWP MISSING OFF WALL

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[redacted]

Section Inspection - 04/10/2023 - ACOX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
15	1	04/10/23	8:38	DK0526 ADANA CONSTRUCTION	Rain	Yes	ACOX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	ACO
Road:	1 Hammerstone Road	**Inspected Length:**	15.02 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	15.21 m	**Downstream Node:**	MH3
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:132 Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH3 0.00	MH	Start node, manhole, reference: MH3	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
9.49	JDM	Joint displaced, medium	00:00:41	MH3 US ACO_9-49 m_083943	
10.69	FM	Fractures, multiple at 12 o'clock	00:00:48	MH3 US ACO_10-6 9m_08395	
10.69	B	Broken pipe at 12 o'clock	00:00:50		
10.69	D	Deformed sewer or drain, 20%	00:00:51		
12.04	JDL	Joint displaced, large	00:01:08	MH3 US ACO_12-0 4m_08403	
13.56	LL	Line deviates left	00:01:17		
13.93	JDL	Joint displaced, large	00:01:23	MH3 US ACO_13-9 3m_08410	
13.93	MCPVC	Pipe material changes to polyvinyl chloride at this point	00:01:25		
14.16	JN	Junction at 9 o'clock, 100mm dia	00:01:29		
14.55	MCVC	Pipe material changes to vitrified clay at this point	00:01:35		
14.55	LL	Line deviates left	00:01:36		
15.00	LL	Line deviates left	00:01:41		
ACO Depth: m 15.02	GYF	Finish node, gully, reference: ACO GULLY	00:01:48		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 04/10/2023 - ACOX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
15	Upstream	ACOX	DK0526 ADANA	NRC WWS LTD



MH3 US ACO_9-49m_083943.jpg, 00:00:41, 9.49 m
Joint displaced, medium



MH3 US ACO_10-69m_083959.jpg, 00:00:48, 10.69 m
Fractures, multiple at 12 o'clock



MH3 US ACO_12-04m_084036.jpg, 00:01:08, 12.04 m
Joint displaced, large



MH3 US ACO_13-93m_084102.jpg, 00:01:23, 13.93 m
Joint displaced, large

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Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

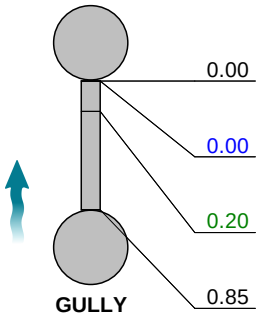
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
16	1	03/10/23	14:07	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	0.85 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	0.85 m	**Downstream Node:**	MH3
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:50 Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH3	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.20	LU	Line deviates up	00:00:05		
0.85	GYF	Finish node, gully, reference: GULLY	00:00:20		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
17	1	03/10/23	14:10	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	6.55 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	6.55 m	**Downstream Node:**	MH4
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:57	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH4						
	0.00	MH	Start node, manhole, reference: MH4	00:00:00		
	0.00	WL	Water level, 10% of the vertical dimension	00:00:01		
	0.30	FMJ	Fractures, multiple at joint from 8 o'clock to 5 o'clock	00:00:04	MH4 US GULLY_0-30m_1410	
	1.77	WL	Water level, 20% of the vertical dimension	00:00:16		
	6.55	GYF	Finish node, gully, reference: GULLY	00:00:33		
GULLY Depth: m						

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

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 03/10/2023 - GULLYX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
17	Upstream	GULLYX	DK0526 ADANA	NRC WWS LTD



MH4 US GULLY_0-30m_141058.jpg, 00:00:04, 0.30 m
Fractures, multiple at joint from 8 o'clock to 5 o'clock

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Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - MH3X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
18	1	03/10/23	14:01	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH3X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH3
Road:	1 Hammerstone Road	**Inspected Length:**	22.35 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	22.35 m	**Downstream Node:**	MH4
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:194

Position [m]	Code	Observation	MPEG	Photo	Grade
		Depth: m			
		MH4			
0.00	MH	Start node, manhole, reference: MH4	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:01		
4.38	JN	Junction at 1 o'clock, 100mm dia: GULLY NEXT TO MOBILE OFFICE	00:00:17		
22.35	MHF	Finish node, manhole, reference: MH3	00:01:10		
		MH3			
		Depth: m			

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

NRCWWS
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[redacted]

Section Inspection - 04/10/2023 - INTERCEPTOR MHX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
19	1	04/10/23	8:16	DK0526 ADANA CONSTRUCTION	Rain	Yes	INTERCEPTOR MHX

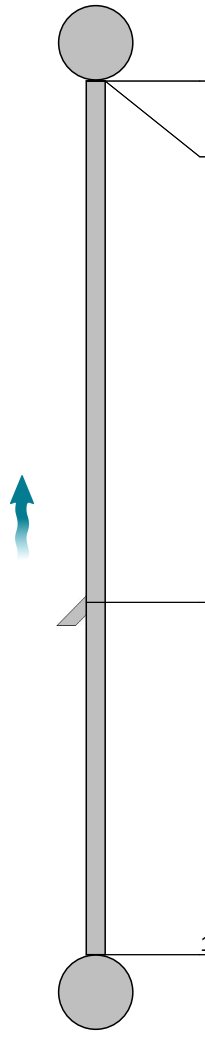
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	INTERCEPTOR MH
Road:	1 Hammerstone Road	**Inspected Length:**	16.61 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	16.61 m	**Downstream Node:**	MH4A
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:144



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH4A	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
9.92	JN	Junction at 3 o'clock, 100mm dia	00:00:38		
16.61	OCF	Finish node, other special chamber, reference: INTERCEPTOR MH: INT MH WASH DOWN AREA	00:01:02	MH4A US INTERCEPTOR	

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 04/10/2023 - INTERCEPTOR MHX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
19	Upstream	INTERCEPTOR MHX	DK0526 ADANA	NRC WWS LTD



MH4A US INTERCEPTOR MH_16-61m_081913.jpg, 00:01:02, 16.61 m
Finish node, other special chamber, reference:
INTERCEPTOR MH, INT MH WASH DOWN AREA

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unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 04/10/2023 - MH7X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
20	1	04/10/23	8:20	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH7X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH7
Road:	1 Hammerstone Road	**Inspected Length:**	19.93 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	19.93 m	**Downstream Node:**	MH4A
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:173



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH4A	00:00:01		
0.00	WL	Water level, 10% of the vertical dimension	00:00:01		
1.15	LL	Line deviates left	00:00:09		
15.57	JN	Junction at 12 o'clock, 100mm dia: GULLY	00:00:56		
19.93	MHF	Finish node, manhole, reference: MH7: NO INLETS IN MH	00:01:17		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 28/09/2023 - Line AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
21	1	28/09/23	10:08	N Kirton	No Rain Or Snow	No	LINE AX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

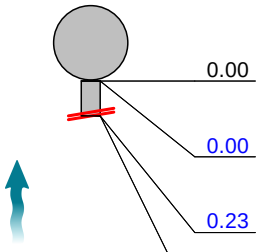
Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	LINE A
Road:	Hammerstone Rd	**Inspected Length:**	0.23 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	0.23 m	**Downstream Node:**	MH5
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	5.150 m

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50

Depth: 5.15 m
MH5



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH5	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:06		
0.23	REM	General remark: General MH survey	00:00:24	Line AX_e91a9475-7b4e-	
0.23	SA	Survey abandoned: Visual of line entering MH - Line A	00:01:16		

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

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 28/09/2023 - Line AX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
21	Upstream	LINE AX	N Kirton	NRC WWS Ltd



Line
AX_e91a9475-7b4e-47fb-a422-8ee038e079f9_20230928_100927_614.jpg, 00:00:24, 0.23 m
General remark, General MH survey



Line
AX_8e7aa481-461d-44bb-8f15-7b653cb4fe82_20230928_100930_894.jpg, 00:00:24, 0.23 m
General remark, General MH survey

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - MH4AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
22	1	03/10/23	14:17	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH4AX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH4A
Road:	1 Hammerstone Road	**Inspected Length:**	5.65 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	5.65 m	**Downstream Node:**	MH5
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: MH4A NOT ON PLAN
Recommendations:

Scale: 1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH4A						
	0.00	MH	Start node, manhole, reference: MH4A	00:00:00		
	0.00	WL	Water level, 20% of the vertical dimension	00:00:00		
	1.88	OBZJ	Other obstacles at joint from 10 o'clock to 3 o'clock, 5% cross-sectional area loss: PLASTIC	00:00:11	MH4A DS MH5_1-88 m_141855	
	5.65	MHF	Finish node, manhole, reference: MH5: CULVERT MH	00:00:33	MH4A DS MH5_5-65 m_141930	
MH5 Depth: m						

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

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 03/10/2023 - MH4AX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
22	Downstream	MH4AX	DK0526 ADANA	NRC WWS LTD



MH4A DS MH5_1-88m_141855.jpg, 00:00:11, 1.88 m
Other obstacles at joint from 10 o'clock to 3 o'clock, 5% cross-sectional area loss, PLASTIC



MH4A DS MH5_5-65m_141930.jpg, 00:00:33, 5.65 m
Finish node, manhole, reference: MH5, CULVERT MH

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 29/09/2023 - MH1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
23	2	29/09/23	8:22	N Kirton	No Rain Or Snow	Yes	MH1X

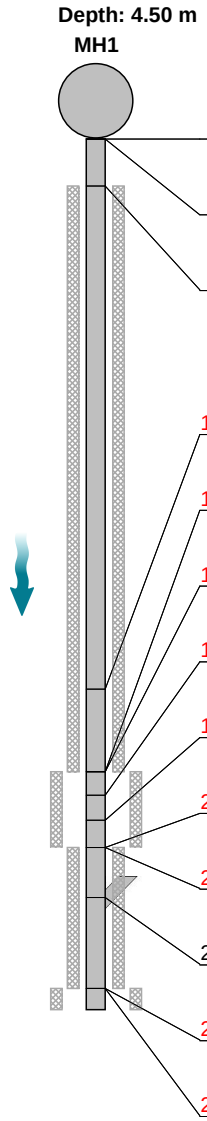
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Downstream	**Upstream Node:**	MH1
Road:	Hammerstone Rd	**Inspected Length:**	27.77 m	**Upstream Pipe Depth:**	4.500 m
Location:	Property or buildings	**Total Length:**	60.00 m	**Downstream Node:**	MH5
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	5.150 m

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Concrete
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: Overlap as jet wont go through debris coming upstream
Recommendations:

Scale: 1:219



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH1	00:00:00		
0.00		WL	Water level, 10% of the vertical dimension	00:00:07		
1.37	S01	FL	Fracture, longitudinal at 12 o'clock, start	00:00:36	MH1X_e8ddb24d-3b20-4023-af	
15.92		FL	Fracture, longitudinal at 7 o'clock	00:02:43	MH1X_57c3ec85-d13d-4d4f-ba5	3 / 2
18.30	F01	FL	Fracture, longitudinal at 12 o'clock, finish	00:03:29		3 / 2
18.30	S02	FL	Fracture, longitudinal at 2 o'clock, start	00:03:37	MH1X_c2594daa-fcaf-402d-bd6	
18.98		FC	Fracture, circumferential from 3 o'clock to 9 o'clock	00:04:16	MH1X_b6fec33a-22d3-4af2-983	3 / 2
19.71		FM	Fractures, multiple from 11 o'clock to 2 o'clock	00:04:34	MH1X_56c66650-3221-4101-b6	4 / 2
20.48	F02	FL	Fracture, longitudinal at 2 o'clock, finish	00:04:57		3 / 2
20.48	S03	FM	Fractures, multiple from 12 o'clock to 12 o'clock, start	00:05:06	MH1X_e097ea5e-e366-4a2c-9	
21.93		CN	Connection other than junction at 9 o'clock, 150mm dia	00:05:56		
24.56	F03	FM	Fractures, multiple from 12 o'clock to 12 o'clock, finish	00:06:47		4 / 2
24.56	S04	FL	Fracture, longitudinal at 12 o'clock, start	00:06:57	MH1X_3d9dbc05-6e24-48b4-b	

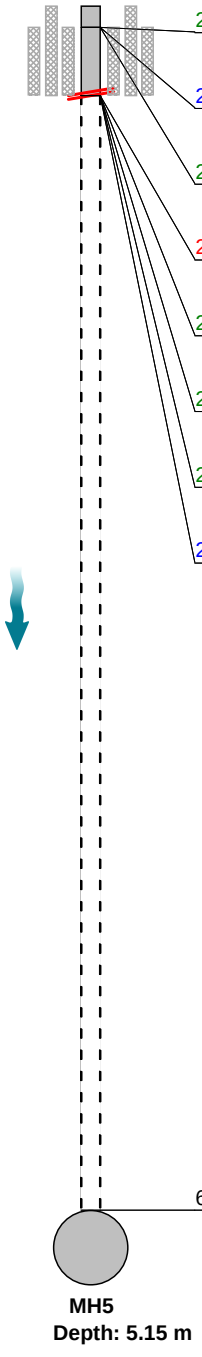
NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 29/09/2023 - MH1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
23	2	29/09/23	8:22	N Kirton	No Rain Or Snow	Yes	MH1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified



Scale: 1:219	Position [m]	Code	Observation	MPEG	Photo	Grade
	25.80 S05	DEC	Settled deposits, hard or compacted, 15% cross-sectional area loss, start	00:07:36		
	25.80	WL	Water level, 20% of the vertical dimension	00:07:39		
	25.80 S06	DES	Settled deposits, fine, 10% cross-sectional area loss, start	00:07:46		
	27.77 F04	FL	Fracture, longitudinal at 12 o'clock, finish	00:08:16		3 / 2
	27.77 F06	DES	Settled deposits, fine, 10% cross-sectional area loss, finish	00:08:27		3
	27.77 F05	DEC	Settled deposits, hard or compacted, 15% cross-sectional area loss, finish	00:08:35		3
	27.77	DEC	Settled deposits, hard or compacted, 40% cross-sectional area loss: Bricks/rubble	00:09:04	MH1X_0bc624e5-c3b6-449d-b8	4
	27.77	SA	Survey abandoned: Jetting required & Man entry	00:09:25		
	60.00		End of pipe			

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
7	200.0	25.3	1520.0	4.0	10	5.0	0.8	45.0	4.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 29/09/2023 - MH1X

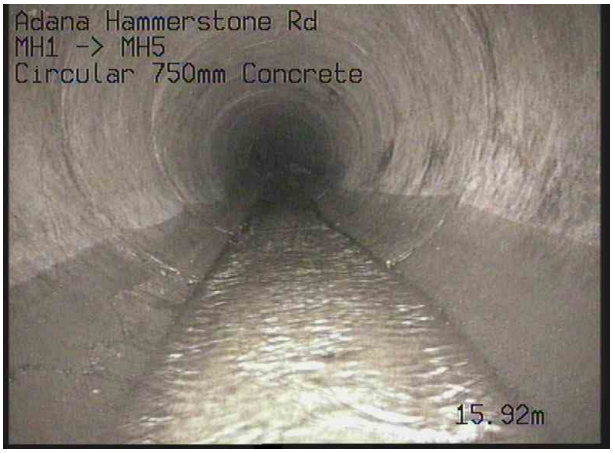
Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Downstream	MH1X	N Kirton	NRC WWS Ltd



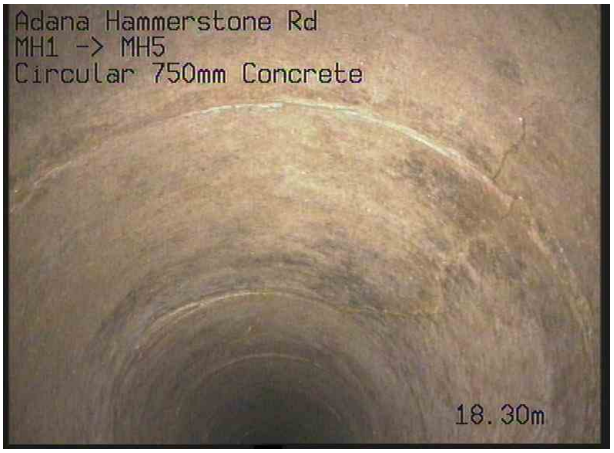
MH1X_e8ddb24d-3b20-4023-afa7-0dde4b1c943f_20230929_082331_720.jpg, 00:00:36, 1.37 m
Fracture, longitudinal at 12 o'clock, start



MH1X_3c9c27db-fb99-4094-9bf2-97fcb271940e_20230929_082340_048.jpg, 00:00:36, 1.37 m
Fracture, longitudinal at 12 o'clock, start



MH1X_57c3ec85-d13d-4d4f-ba57-254ecc38816c_20230929_082539_013.jpg, 00:02:43, 15.92 m
Fracture, longitudinal at 7 o'clock



MH1X_c2594daa-fcaf-402d-bd67-0043181de174_20230929_082633_141.jpg, 00:03:37, 18.30 m
Fracture, longitudinal at 2 o'clock, start

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 29/09/2023 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Downstream	MH1X	N Kirton	NRC WWS Ltd



MH1X_b6fec33a-22d3-4af2-9836-bf00c744b5a6_20230929_082711_786.jpg, 00:04:16, 18.98 m
Fracture, circumferential from 3 o'clock to 9 o'clock



MH1X_56c66650-3221-4101-b6ba-7d3f042609b4_20230929_082729_854.jpg, 00:04:34, 19.71 m
Fractures, multiple from 11 o'clock to 2 o'clock



MH1X_e097ea5e-e366-4a2c-9436-68de88a165e2_20230929_082822_672.jpg, 00:05:06, 20.48 m
Fractures, multiple from 12 o'clock to 12 o'clock, start

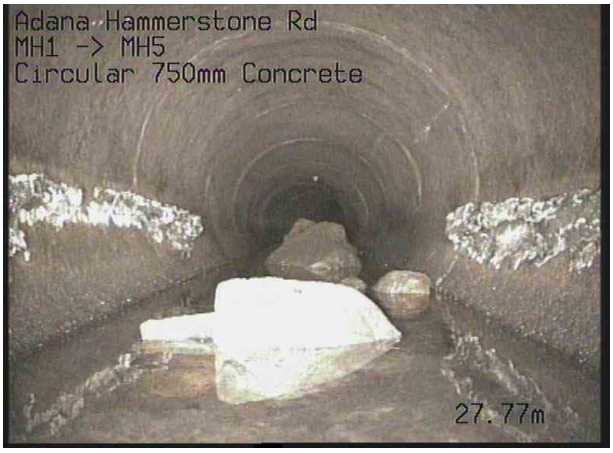


MH1X_3d9dbc05-6e24-48b4-bd28-cb39d0947a73_20230929_082952_988.jpg, 00:06:57, 24.56 m
Fracture, longitudinal at 12 o'clock, start

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 29/09/2023 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Downstream	MH1X	N Kirton	NRC WWS Ltd



MH1X_0bc624e5-c3b6-449d-b80d-909b61ccf2e0_20230929_083200_349.jpg, 00:09:04, 27.77 m
Settled deposits, hard or compacted, 40% cross-sectional area loss, Bricks/rubble

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 28/09/2023 - MH1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
23	1	28/09/23	14:40	N Kirton	No Rain Or Snow	Yes	MH1X

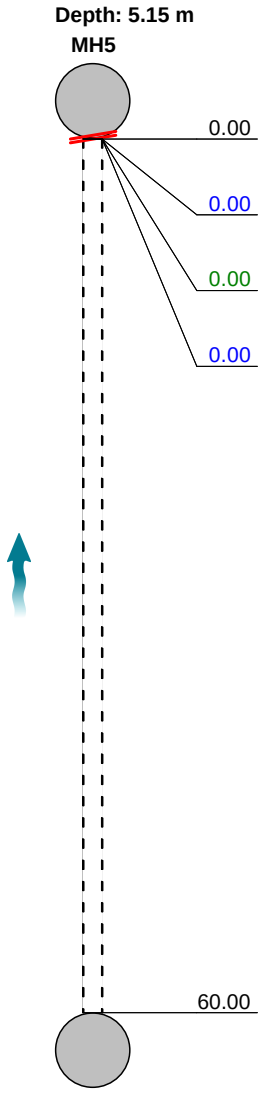
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1
Road:	Hammerstone Rd	**Inspected Length:**	0.00 m	**Upstream Pipe Depth:**	4.500 m
Location:	Property or buildings	**Total Length:**	60.00 m	**Downstream Node:**	MH5
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	5.150 m

Use:	Culverted watercourse	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Concrete
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:520



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH5: Cleaning progress	00:00:00		
0.00	WL	Water level, 20% of the vertical dimension	00:00:22		
0.00	DEC	Settled deposits, hard or compacted, 40% cross-sectional area loss: Rocks & Bricks ahead	00:01:02	MH1X_1e4fff8e-f462-4aec-b3d	4
0.00	SA	Survey abandoned: Further cleaning required	00:01:15		
60.00		End of pipe			

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

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Tel. 0151 643 0800
[redacted]

Section Pictures - 28/09/2023 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Upstream	MH1X	N Kirton	NRC WWS Ltd



MH1X_1e4fff8e-f462-4aec-b3d1-adf4e246590f_20230928_144150_540.jpg, 00:01:02, 0.00 m
Settled deposits, hard or compacted, 40% cross-sectional area loss, Rocks & Bricks ahead

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Section Inspection - 03/10/2023 - MH4X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
24	1	03/10/23	14:12	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH4X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH4
Road:	1 Hammerstone Road	**Inspected Length:**	17.14 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	17.14 m	**Downstream Node:**	MH5
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:149



Position [m]		Code	Observation	MPEG	Photo
Depth: m					
MH4					
0.00		MH	Start node, manhole, reference: MH4	00:00:00	
0.00		WL	Water level, 20% of the vertical dimension	00:00:00	
2.93		JN	Junction at 10 o'clock, 100mm dia	00:00:13	
7.02		WL	Water level, 30% of the vertical dimension	00:00:27	
8.23	S01	CUW	Loss of vision, camera under water, start	00:00:34	
13.11	F01	CUW	Loss of vision, camera under water, finish	00:00:49	
13.13		WL	Water level, 20% of the vertical dimension	00:00:50	
16.69		JDM	Joint displaced, medium	00:01:10	MH4 DS MH5_16-6 9m_14155
16.73		LL	Line deviates left	00:01:12	
17.14		MHF	Finish node, manhole, reference: MH4A: UNCHARTED MH	00:02:08	MH4 DS MH5_17-1 4m_14171
MH5					
Depth: m					

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

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[redacted]

Section Pictures - 03/10/2023 - MH4X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
24	Downstream	MH4X	DK0526 ADANA	NRC WWS LTD



MH4 DS MH5_16-69m_141551.jpg, 00:01:10, 16.69 m
Joint displaced, medium



MH4 DS MH5_17-14m_141711.jpg, 00:02:08, 17.14 m
Finish node, manhole, reference: MH4A, UNCHARTED MH

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Section Inspection - 04/10/2023 - MH16X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
25	21	04/10/23	8:56	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH16X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH16
Road:	1 Hammerstone Road	**Inspected Length:**	21.11 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	21.11 m	**Downstream Node:**	MH15
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:183

Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m					
MH16					
0.00	IC	Start node, inspection chamber, reference: MH16	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
21.11	ICF	Finish node, inspection chamber, reference: MH15: IC INSTALLED AGAINST FLOW	00:01:12		
MH15					
Depth: m					

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

NRCWWS
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Tel. 0151 643 0800
[redacted]

Section Inspection - 04/10/2023 - ROD EYEX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
26	1	04/10/23	9:16	DK0526 ADANA CONSTRUCTION	Rain	Yes	ROD EYEX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	ROD EYE
Road:	1 Hammerstone Road	**Inspected Length:**	7.67 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	7.67 m	**Downstream Node:**	MH16
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:67



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: MH16	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.00	LR	Line deviates right	00:00:03		
5.08	JN	Junction at 10 o'clock, 100mm dia	00:00:21		
6.68	LU	Line deviates up	00:00:29		
7.67	REF	Finish node, rodding eye, reference: ROD EYE: NO CAP ON RE	00:00:34	MH16 US ROD EYE_7-67	

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	0.0	0	0.0	0.0	0.0	0.0

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[redacted]

Section Pictures - 04/10/2023 - ROD EYEX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
26	Upstream	ROD EYEX	DK0526 ADANA	NRC WWS LTD



MH16 US ROD EYE_7-67m_091805.jpg, 00:00:34, 7.67 m
Finish node, rodding eye, reference: ROD EYE, NO CAP ON RE

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[redacted]

Section Inspection - 03/10/2023 - MH16X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
27	1	03/10/23	9:10	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH16X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH16
Road:	1 Hammerstone Road	**Inspected Length:**	8.23 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	8.23 m	**Downstream Node:**	MH17
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:72



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: MH17	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
8.23	ICF	Finish node, inspection chamber, reference: MH16	00:00:22		

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	0.0	0	0.0	0.0	0.0	0.0

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[redacted]

Section Inspection - 03/10/2023 - MH17X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
28	1	03/10/23	9:41	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH17X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH17
Road:	1 Hammerstone Road	**Inspected Length:**	12.77 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	12.77 m	**Downstream Node:**	MH18
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:111



Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m					
MH17					
0.00	IC	Start node, inspection chamber, reference: MH17	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.30	LL	Line deviates left	00:00:06		
12.45	LL	Line deviates left	00:00:37		
12.77	ICF	Finish node, inspection chamber, reference: MH18: DIP IN CHAMBER	00:00:47	MH17 DS MH18_12-77m_0942	
MH18					
Depth: m					

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

NRCWWS
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Tel. 0151 643 0800
[redacted]

Section Pictures - 03/10/2023 - MH17X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
28	Downstream	MH17X	DK0526 ADANA	NRC WWS LTD



MH17 DS MH18_12-77m_094242.jpg, 00:00:47, 12.77 m
Finish node, inspection chamber, reference: MH18, DIP IN CHAMBER

NRCWWS
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Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
29	1	03/10/23	10:00	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

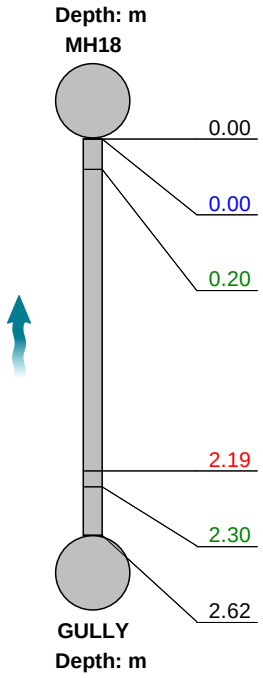
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	2.62 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	2.62 m	**Downstream Node:**	MH18
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH18	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
0.20	LR	Line deviates right	00:00:03		
2.19	JDL	Joint displaced, large	00:00:14	MH18 US GULLY_2-19m_1001	
2.30	LL	Line deviates left	00:00:17		
2.62	GYF	Finish node, gully, reference: GULLY	00:00:21		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
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Tel. 0151 643 0800
[redacted]

Section Pictures - 03/10/2023 - GULLYX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
29	Upstream	GULLYX	DK0526 ADANA	NRC WWS LTD



MH18 US GULLY_2-19m_100123.jpg, 00:00:14, 2.19 m
Joint displaced, large

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unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - MH18X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
30	1	03/10/23	9:43	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH18X

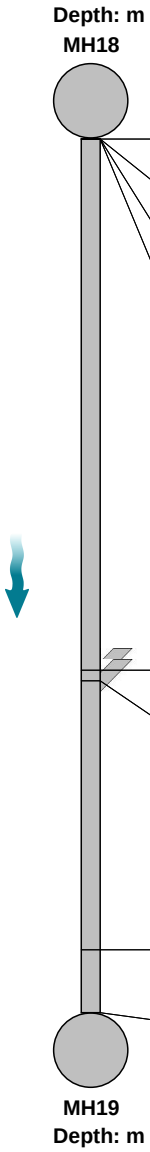
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH18
Road:	1 Hammerstone Road	**Inspected Length:**	18.68 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	18.68 m	**Downstream Node:**	MH19
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:162



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: MH18	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
0.00	IC	Start node, inspection chamber, reference: MH18	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
11.36	JN	Junction at 9 o'clock, 100mm dia	00:00:35		
11.59	JN	Junction at 9 o'clock, 100mm dia	00:00:38		
17.35	WL	Water level, 20% of the vertical dimension	00:00:54		
18.68	MHF	Finish node, manhole, reference: MH19	00:01:15		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
31	1	03/10/23	10:11	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

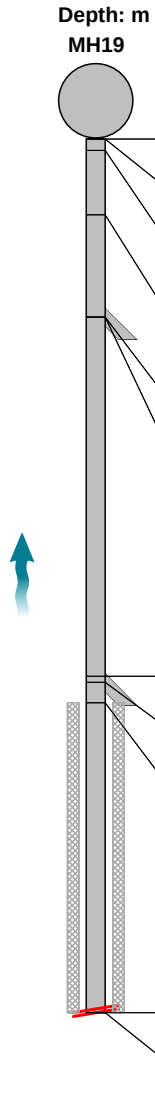
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	21.68 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	21.68 m	**Downstream Node:**	MH19
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:188



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH19	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:01		
0.30		LR	Line deviates right	00:00:07		
1.89		JDM	Joint displaced, medium	00:00:16	MH19 US GULLY_1-89m_1012	
4.43		JN	Junction at 10 o'clock, 100mm dia	00:00:29		
4.43		WL	Water level, 10% of the vertical dimension	00:00:31		
13.34		WL	Water level, 40% of the vertical dimension	00:01:04		
13.49		JN	Junction at 10 o'clock, 100mm dia	00:01:10		
13.99	S01	CUW	Loss of vision, camera under water, start	00:01:17		
21.68	F01	CUW	Loss of vision, camera under water, finish	00:02:15		
21.68		SA	Survey abandoned: CUW AND NO VISUAL	00:02:17		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 03/10/2023 - GULLYX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
31	Upstream	GULLYX	DK0526 ADANA	NRC WWS LTD



MH19 US GULLY_1-89m_101245.jpg, 00:00:16, 1.89 m
Joint displaced, medium

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - GULLYX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
32	1	03/10/23	10:11	DK0526 ADANA CONSTRUCTION	Rain	Yes	GULLYX

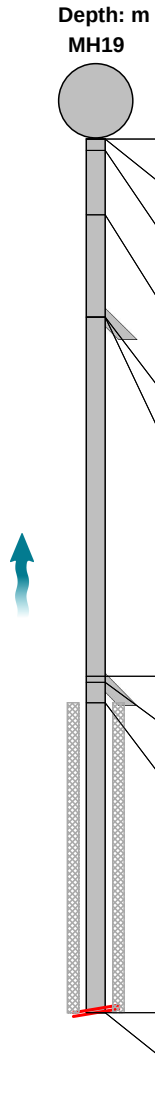
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	GULLY
Road:	1 Hammerstone Road	**Inspected Length:**	21.68 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	21.68 m	**Downstream Node:**	MH19
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:188



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH19	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:01		
0.30		LR	Line deviates right	00:00:07		
1.89		JDM	Joint displaced, medium	00:00:16	MH19 US GULLY_1-89m_1012	
4.43		JN	Junction at 10 o'clock, 100mm dia	00:00:29		
4.43		WL	Water level, 10% of the vertical dimension	00:00:31		
13.34		WL	Water level, 40% of the vertical dimension	00:01:04		
13.49		JN	Junction at 10 o'clock, 100mm dia	00:01:10		
13.99	S01	CUW	Loss of vision, camera under water, start	00:01:17		
21.68	F01	CUW	Loss of vision, camera under water, finish	00:02:15		
21.68		SA	Survey abandoned: CUW AND NO VISUAL	00:02:17		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 03/10/2023 - GULLYX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
32	Upstream	GULLYX	DK0526 ADANA	NRC WWS LTD



MH19 US GULLY_1-89m_101245.jpg, 00:00:16, 1.89 m
Joint displaced, medium

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Section Inspection - 03/10/2023 - MH19X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
33	1	03/10/23	9:55	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH19X

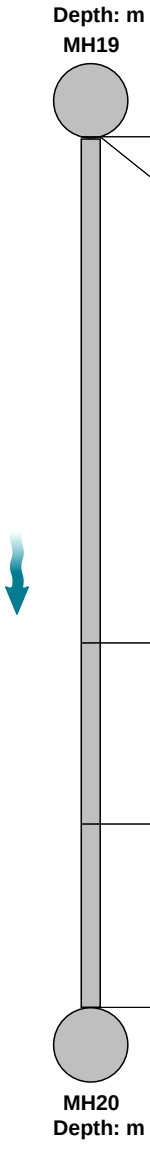
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH19
Road:	1 Hammerstone Road	**Inspected Length:**	9.54 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	9.52 m	**Downstream Node:**	MH20
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:83



Position [m]	Code	Observation	MPEG	Photo	Grade
-0.02	MH	Start node, manhole, reference: MH19	00:00:00		
-0.02	WL	Water level, 10% of the vertical dimension	00:00:00		
5.52	WL	Water level, 20% of the vertical dimension	00:00:16		
7.51	WL	Water level, 5% of the vertical dimension: DIP	00:00:25		
9.52	MHF	Finish node, manhole, reference: MH28: VT Incorrect	00:00:33		

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

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Section Inspection - 04/10/2023 - USX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
34	1	04/10/23	10:05	DK0526 ADANA CONSTRUCTION	Rain	Yes	USX

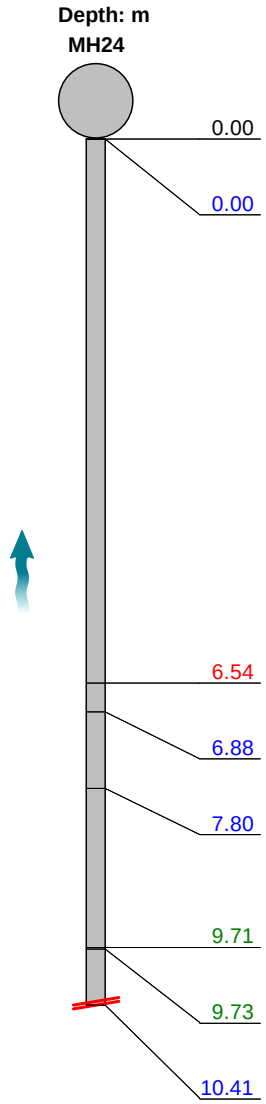
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	US
Road:	1 Hammerstone Road	**Inspected Length:**	10.41 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	10.41 m	**Downstream Node:**	MH24
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:91



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH24	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
6.54	FCJ	Fracture, circumferential at joint at 12 o'clock	00:00:35	MH24 US_6-54m _100726.j	
6.88	WL	Water level, 20% of the vertical dimension	00:00:50		
7.80	WL	Water level, 5% of the vertical dimension	00:01:06		
9.71	LU	Line deviates up	00:01:15		
9.73	LR	Line deviates right	00:01:14		
10.41	SA	Survey abandoned: UNABLE TO PASS BENDS	00:01:26	MH24 US_10-41 m_100850	

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	0.0	0	0.0	0.0	0.0	0.0

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Section Pictures - 04/10/2023 - USX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
34	Upstream	USX	DK0526 ADANA	NRC WWS LTD



MH24 US_6-54m_100726.jpg, 00:00:35, 6.54 m
Fracture, circumferential at joint at 12 o'clock



MH24 US_10-41m_100850.jpg, 00:01:26, 10.41 m
Survey abandoned, UNABLE TO PASS BENDS

NRCWWS
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Tel. 0151 643 0800
[redacted]

Section Inspection - 04/10/2023 - RWGX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
35	1	04/10/23	10:09	DK0526 ADANA CONSTRUCTION	Rain	Yes	RWGX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	RWG
Road:	1 Hammerstone Road	**Inspected Length:**	2.21 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	2.21 m	**Downstream Node:**	MH24
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH24	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
0.20	LU	Line deviates up	00:00:05		
2.21	GYF	Finish node, gully, reference: RWG	00:00:24		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 04/10/2023 - FWIC1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
36	29	04/10/23	10:43	DK0526 ADANA CONSTRUCTION	Rain	Yes	FWIC1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	FWIC1
Road:	1 Hammerstone Road	**Inspected Length:**	7.51 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	7.51 m	**Downstream Node:**	MH25
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Polyvinyl chloride
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:66



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: FWIC1	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:00		
6.19	WL	Water level, 20% of the vertical dimension: DIP	00:00:27	FWIC1 DS MH25_6-1 9m_10450	
7.21	WL	Water level, 10% of the vertical dimension	00:00:36		
7.21	LL	Line deviates left	00:00:36		
7.21	LD	Line deviates down	00:00:36		
7.51	MHF	Finish node, manhole, reference: MH25	00:00:39		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
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[redacted]

Section Pictures - 04/10/2023 - FWIC1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
36	Downstream	FWIC1X	DK0526 ADANA	NRC WWS LTD



FWIC1 DS MH25_6-19m_104500.jpg, 00:00:27, 6.19 m
Water level, 20% of the vertical dimension, DIP

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 04/10/2023 - USX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
37	1	04/10/23	10:17	DK0526 ADANA CONSTRUCTION	Rain	Yes	USX

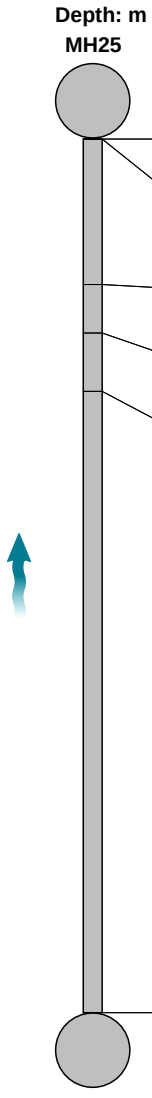
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	US
Road:	1 Hammerstone Road	**Inspected Length:**	24.33 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	24.33 m	**Downstream Node:**	MH25
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:211



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH25	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
4.07	MH	Start node, manhole, reference: UNDER CABIN	00:00:16		
5.41	LR	Line deviates right: OUT OF MH	00:00:25		
7.04	WL	Water level, 20% of the vertical dimension	00:00:35		
24.33	MHF	Finish node, manhole, reference: US UTL	00:01:47	MH25 US_24-33 m_102353	

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 04/10/2023 - USX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
37	Upstream	USX	DK0526 ADANA	NRC WWS LTD



MH25 US_24-33m_102353.jpg, 00:01:47, 24.33 m
Finish node, manhole, reference: US UTL

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - USX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
38	1	03/10/23	10:33	DK0526 ADANA CONSTRUCTION	Rain	Yes	USX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

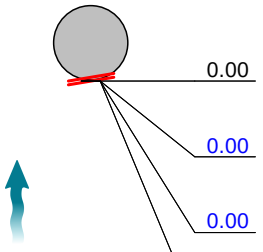
Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	US
Road:	1 Hammerstone Road	**Inspected Length:**	0.00 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	0.00 m	**Downstream Node:**	MH26
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50

Depth: m
MH26



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH26	00:00:01		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.00	REM	General remark: CAPPED	00:00:02	MH26 US_0-00m _103515.j	
0.00	SA	Survey abandoned: LINE CAPPED	00:00:05		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
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Tel. 0151 643 0800
[redacted]

Section Pictures - 03/10/2023 - USX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
38	Upstream	USX	DK0526 ADANA	NRC WWS LTD



MH26 US_0-00m_103515.jpg, 00:00:02, 0.00 m
General remark, CAPPED

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - MH28X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
39	1	03/10/23	10:18	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH28X

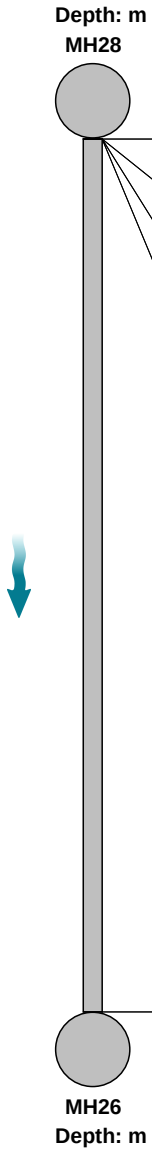
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH28
Road:	1 Hammerstone Road	**Inspected Length:**	18.67 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	18.67 m	**Downstream Node:**	MH26
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Cast iron
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:162



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH28	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.00	MH	Start node, manhole, reference: MH28	00:00:01		
0.00	WL	Water level, 5% of the vertical dimension	00:00:02		
18.67	MHF	Finish node, manhole, reference: MH26	00:01:26		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - MH26X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
40	1	03/10/23	10:36	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH26X

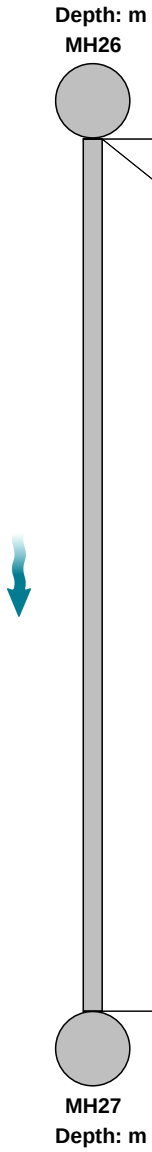
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH26
Road:	1 Hammerstone Road	**Inspected Length:**	15.66 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	15.66 m	**Downstream Node:**	MH27
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: MH27 UTR
Recommendations:

Scale: 1:136



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH26	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:00		
15.66	MHF	Finish node, manhole, reference: MH27: UTR REVERSE CCTV COMPLETED	00:01:43		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - RWP BX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
41	1	03/10/23	10:24	DK0526 ADANA CONSTRUCTION	Rain	Yes	RWP BX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	RWP B
Road:	1 Hammerstone Road	**Inspected Length:**	15.65 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	15.65 m	**Downstream Node:**	MH28
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Cast iron
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:136



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH28	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
15.65	LU	Line deviates up	00:01:40		
15.65	SA	Survey abandoned: RWP B	00:01:41	MH28 US RWP B_15-65m	

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 03/10/2023 - RWP BX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
41	Upstream	RWP BX	DK0526 ADANA	NRC WWS LTD



MH28 US RWP B_15-65m_102753.jpg, 00:01:41, 15.65 m
Survey abandoned, RWP B

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 03/10/2023 - RWP AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
42	1	03/10/23	10:21	DK0526 ADANA CONSTRUCTION	Rain	Yes	RWP AX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	RWP A
Road:	1 Hammerstone Road	**Inspected Length:**	1.79 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	1.79 m	**Downstream Node:**	MH28
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50 Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH28					
0.00	MH	Start node, manhole, reference: MH28	00:00:01		
0.00	WL	Water level, 5% of the vertical dimension	00:00:02		
0.30	LU	Line deviates up	00:00:06		
1.57	OJM	Open joint, medium	00:00:32	MH28 US RWP A_1-57m_	
1.79	SA	Survey abandoned: UNABLE TO PUSH ON	00:00:46		

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	0.0	0	0.0	0.0	0.0	0.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 03/10/2023 - RWP AX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
42	Upstream	RWP AX	DK0526 ADANA	NRC WWS LTD



MH28 US RWP A_1-57m_102307.jpg, 00:00:32, 1.57 m
Open joint, medium

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Section Inspection - 22/08/2023 - G1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
43	1	22/08/23	14:32	Not Specified	No Rain Or Snow	Yes	G1X

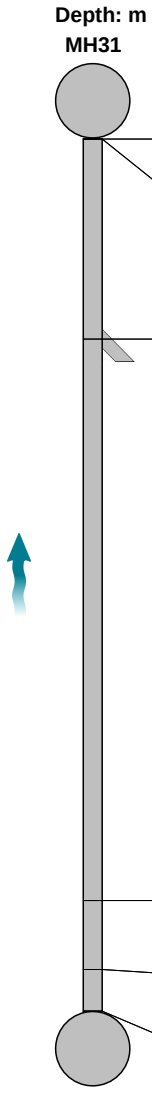
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G1
Road:	Hammerstone Road	**Inspected Length:**	11.17 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	11.17 m	**Downstream Node:**	MH31
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:97



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH31	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
2.57	JN	Junction at 10 o'clock, 150mm dia	00:01:07		
9.75	LU	Line deviates up	00:01:53		
10.64	GYF	Finish node, gully, reference: G1	00:02:04		
11.17	LL	Line deviates left	00:02:02		

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

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[redacted]

Section Inspection - 22/08/2023 - G2X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
44	1	22/08/23	14:44	Not Specified	No Rain Or Snow	Yes	G2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G2
Road:	Hammerstone Road	**Inspected Length:**	6.39 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	6.39 m	**Downstream Node:**	MH32
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:56



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH32	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
2.00	FCJ	Fracture, circumferential at joint from 12 o'clock to 12 o'clock: FROM HOLE	00:00:26	G2X_d3ff5865-e93a-4ec7-a84c	3 / 2
2.30	H	Hole in drain or sewer at 12 o'clock	00:00:23		4
2.30	B	Broken pipe from 4 o'clock to 8 o'clock	00:01:03	G2X_2be08d98-3f9c-4bdc-8a9a	4
2.30	D	Deformed sewer or drain, 10%	00:01:08	G2X_747da227-0512-4bbe-84f2	4 / 3
3.74	FLJ	Fracture, longitudinal at joint at 1 o'clock	00:01:49	G2X_ab06da00-461d-487a-906	3 / 2
4.59	LU	Line deviates up	00:02:02		
5.12	FC	Fracture, circumferential from 12 o'clock to 12 o'clock	00:02:07	G2X_7d0afabf-d9d6-4a7d-873b	3 / 2
6.39	GYF	Finish node, gully, reference: G2	00:02:21		

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**
6	240.0	56.3	360.0	4.0	4	2.0	0.8	5.0	3.0

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Tel. 0151 643 0800
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Section Pictures - 22/08/2023 - G2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
44	Upstream	G2X		DK0472



G2X_d3ff5865-e93a-4ec7-a84c-383277f4871d_20230822_144547_320.jpg, 00:00:26, 2.00 m
Fracture, circumferential at joint from 12 o'clock to 12 o'clock, FROM HOLE



G2X_2be08d98-3f9c-4bdc-8a9a-d6455144f56f_20230822_144653_113.jpg, 00:01:03, 2.30 m
Broken pipe from 4 o'clock to 8 o'clock



G2X_747da227-0512-4bbe-84f2-efa2331e3276_20230822_144655_798.jpg, 00:01:08, 2.30 m
Deformed sewer or drain, 10%



G2X_ab06da00-461d-487a-9062-864238af2135_20230822_144730_122.jpg, 00:01:49, 3.74 m
Fracture, longitudinal at joint at 1 o'clock

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Section Pictures - 22/08/2023 - G2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
44	Upstream	G2X		DK0472



G2X_7d0afabf-d9d6-4a7d-873b-f683bedce10f_20230822_144819_634.jpg, 00:02:07, 5.12 m
Fracture, circumferential from 12 o'clock to 12 o'clock

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Section Inspection - 22/08/2023 - MH31X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
45	1	22/08/23	14:21	Not Specified	No Rain Or Snow	Yes	MH31X

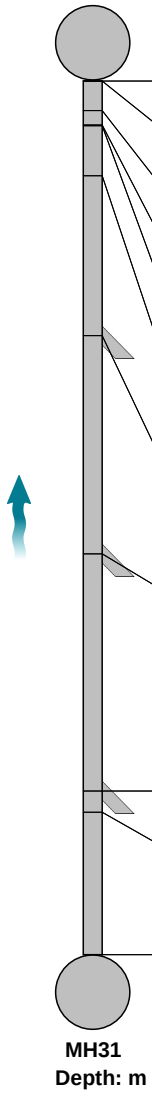
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH31
Road:	Hammerstone Road	**Inspected Length:**	26.06 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	26.06 m	**Downstream Node:**	MH32
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:226



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH32	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension			
0.90	FLJ	Fracture, longitudinal at joint at 11 o'clock	00:00:24	MH31X_5 6cae0d2-2 bc6-4c28-	3 / 2
1.32	SC	Pipe size changes, new size(s), 100mm high	00:01:15		
1.34	LR	Line deviates right	00:01:04		
2.84	WL	Water level, 10% of the vertical dimension	00:01:37		
7.61	JN	Junction at 10 o'clock, 150mm dia	00:02:10		
14.11	JN	Junction at 10 o'clock, 150mm dia	00:02:44		
21.18	JN	Junction at 10 o'clock, 150mm dia	00:03:18		
21.83	WL	Water level, 10% of the vertical dimension	00:03:20		
26.06	MHF	Finish node, manhole, reference: MH31	00:03:32		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	40.0	1.5	40.0	3.0	1	1.0	0.0	1.0	2.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 22/08/2023 - MH31X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
45	Upstream	MH31X		DK0472



MH31X_56cae0d2-2bc6-4c28-862c-216765a5cfea_20230822_142250_192.jpg, 00:00:24, 0.90 m
Fracture, longitudinal at joint at 11 o'clock



MH31X_a7e1bd3b-4274-4a7a-8eac-753dbce24893_20230822_142250_429.jpg, 00:00:24, 0.90 m
Fracture, longitudinal at joint at 11 o'clock

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Tel. 0151 643 0800
[redacted]

Section Inspection - 22/08/2023 - MH32X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
46	1	22/08/23	12:37	Not Specified	No Rain Or Snow	Yes	MH32X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH32
Road:	Hammerstone Road	**Inspected Length:**	9.97 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	9.97 m	**Downstream Node:**	MH33
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:87



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH33	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:01:05		
0.30	JDL	Joint displaced, large	00:00:15	MH32X_2 4bb07b8-9 3c2-4e3b-	1 / 4
0.36	WL	Water level, 15% of the vertical dimension	00:00:36		
2.19	WL	Water level, 5% of the vertical dimension	00:00:46		
9.97	MHF	Finish node, manhole, reference: MH32	00:02:04		

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	1	5.0	0.5	5.0	4.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 22/08/2023 - MH32X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
46	Upstream	MH32X		DK0472



MH32X_24bb07b8-93c2-4e3b-8492-e88e5f53e045_20230822_123855_790.jpg, 00:00:15, 0.30 m
Joint displaced, large

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 22/08/2023 - MH33X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
47	1	22/08/23	12:30	Not Specified	No Rain Or Snow	Yes	MH33X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH33
Road:	Hammerstone Road	**Inspected Length:**	15.26 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	15.26 m	**Downstream Node:**	MH34
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:133



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH34	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:03:16		
2.97	WL	Water level, 20% of the vertical dimension	00:00:15		
5.53	WL	Water level, 100% of the vertical dimension	00:00:19		
5.53	CUW	Loss of vision, camera under water	00:00:21		
8.25	WL	Water level, 15% of the vertical dimension	00:00:33		
12.62	WL	Water level, 5% of the vertical dimension	00:00:47		
15.26	MHF	Finish node, manhole, reference: MH33	00:01:00		

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

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 22/08/2023 - G5X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
48	1	22/08/23	15:13	Not Specified	No Rain Or Snow	Yes	G5X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G5
Road:	Hammerstone Road	**Inspected Length:**	6.25 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	6.25 m	**Downstream Node:**	MH34
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:55



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH34	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
5.32	LU	Line deviates up	00:00:22		
6.25	GYF	Finish node, gully, reference: G5: GULLY FULL REQUIRES ACCESS	00:00:32		

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

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 22/08/2023 - MH1 INTERNX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
49	1	22/08/23	15:19	Not Specified	No Rain Or Snow	Yes	MH1 INTERNX

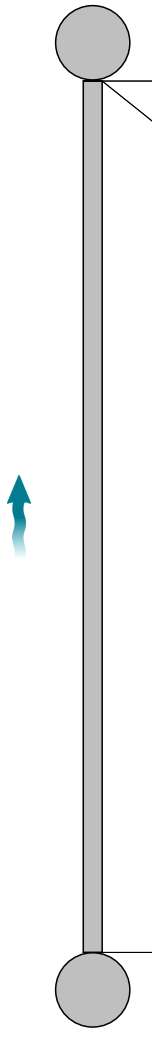
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1 INTERN
Road:	Hammerstone Road	**Inspected Length:**	10.70 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	10.70 m	**Downstream Node:**	MH34
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:93



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH34	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
10.70	MHF	Finish node, manhole, reference: MH1 INTERN	00:00:54		

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

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 22/08/2023 - G4X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
50	1	22/08/23	15:05	Not Specified	No Rain Or Snow	Yes	G4X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	G4
Road:	Hammerstone Road	**Inspected Length:**	4.98 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	4.98 m	**Downstream Node:**	MH34
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	125 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH34	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
2.95	JDL	Joint displaced, large	00:00:49	G4X_9f5969be-001d-4340-b98	1 / 4
3.82	LU	Line deviates up	00:01:03		
4.98	GYF	Finish node, gully, reference: G4	00:01:12		

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	0.4	2.0	1.0	1	5.0	1.0	5.0	4.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Pictures - 22/08/2023 - G4X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
50	Upstream	G4X		DK0472



G4X_9f5969be-001d-4340-b98b-1ba644824653_20230822_150615_700.jpg, 00:00:49, 2.95 m
Joint displaced, large

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 22/08/2023 - MH37X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
51	1	22/08/23	11:58	Not Specified	No Rain Or Snow	Yes	MH37X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH37
Road:	Hammerstone Road	**Inspected Length:**	1.42 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	1.42 m	**Downstream Node:**	MH36
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH37	00:00:00		
0.00	WL	Water level, 10% of the vertical dimension	00:00:00		
0.91	JDL	Joint displaced, large: SEALING RING VISIBLE	00:00:24	MH37X_2a16aa07-31ea-4574-	1 / 4
1.42	ICF	Finish node, inspection chamber, reference: MH36	00:00:55		

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	1.4	2.0	1.0	1	5.0	3.5	5.0	4.0

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Section Pictures - 22/08/2023 - MH37X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
51	Downstream	MH37X		DK0472



MH37X_2a16aa07-31ea-4574-9c90-f29b9d278d83_20230822_115907_537.jpg, 00:00:24, 0.91 m
Joint displaced, large, SEALING RING VISIBLE

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Section Inspection - 22/08/2023 - MH38X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
52	1	22/08/23	11:45	Not Specified	No Rain Or Snow	Yes	MH38X

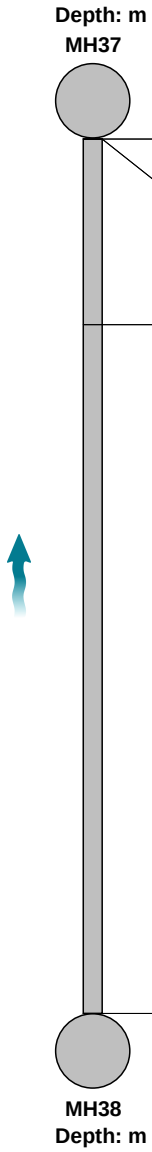
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH38
Road:	Hammerstone Road	**Inspected Length:**	12.35 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	12.35 m	**Downstream Node:**	MH37
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:107



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH36	00:03:28		
0.01	WL	Water level, 5% of the vertical dimension	00:00:00		
2.63	JDL	Joint displaced, large	00:00:37		1 / 4
12.35	MHF	Finish node, manhole, reference: MH38	00:01:39		

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	1	5.0	0.4	5.0	4.0

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Section Inspection - 06/10/2023 - U/SX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
53	1	06/10/23	10:14	N Kirton	No Rain Or Snow	Yes	U/SX

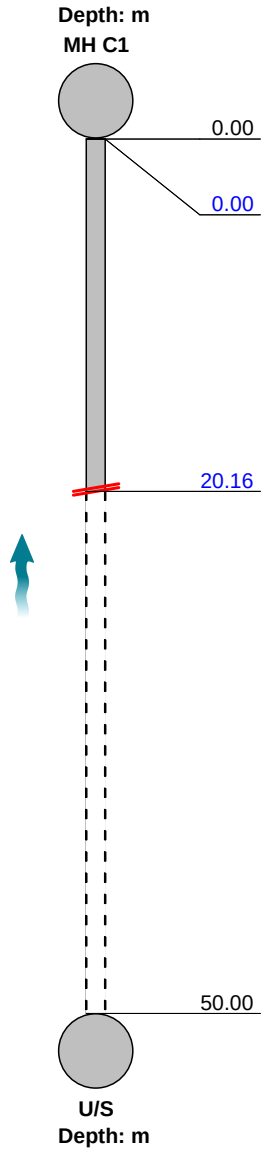
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Pushrod	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Upstream	**Upstream Node:**	U/S
Road:	Hammerstone Rd	**Inspected Length:**	20.16 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	50.00 m	**Downstream Node:**	MH C1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments: 150mm set up to pass CXI
Recommendations:

Scale: 1:433



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH C1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:05		
20.16	SA	Survey abandoned: 150mm set up wedged under cxi	00:02:33		
50.00		End of pipe			

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

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Section Inspection - 29/09/2023 - FWMH02X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
54	1	29/09/23	12:44	N Kirton	No Rain Or Snow	Yes	FWMH02X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	PJ210MA	Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Adana	**Inspection Direction:**	Downstream	**Upstream Node:**	FWMH02
Road:	Hammerstone Rd	**Inspected Length:**	16.91 m	**Upstream Pipe Depth:**	5.050 m
Location:	Property or buildings	**Total Length:**	16.91 m	**Downstream Node:**	NEW MH
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	4.470 m

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	450 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:147



Position [m]		Code	Observation	MPEG	Photo	Grade
Depth: 5.05 m						
FWMH02 0.00		MH	Start node, manhole, reference: FWMH02: Hard standing in MH	00:00:00	FWMH02X_db9322b8-9ab3-4d	
0.00		WL	Water level, 20% of the vertical dimension	00:00:30		
0.76	S01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, start	00:01:26	FWMH02X_d2215c8f-f3bb-4127	
3.11		LR	Line deviates right	00:01:59		
3.26	S02	FL	Fracture, longitudinal at 12 o'clock, start	00:02:12	FWMH02X_d67fa18a-261f-42cc	
4.78	F02	FL	Fracture, longitudinal at 12 o'clock, finish	00:02:51		3 / 2
8.87		CN	Connection other than junction at 3 o'clock, 150mm dia	00:04:00		
9.68		DEC	Settled deposits, hard or compacted, 30% cross-sectional area loss: Concrete	00:04:32	FWMH02X_22d30264-c456-4a	4
11.54	S03	FL	Fracture, longitudinal at 12 o'clock, start	00:05:27	FWMH02X_633f7784-7216-437	
12.29		FL	Fracture, longitudinal at 6 o'clock	00:06:02	FWMH02X_f3b58675-fd07-4717	3 / 2
13.52	F03	FL	Fracture, longitudinal at 12 o'clock, finish	00:06:31		3 / 2
13.52		WL	Water level, 10% of the vertical dimension	00:06:35		
16.51		OBBJ	Other obstacles, brick or masonry in invert at joint from 5 o'clock to 6 o'clock, 10% cross-sectional area loss	00:07:37	FWMH02X_88bea82c-ac8f-4bd	5
16.91	F01	DEE	Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, finish	00:07:56		3
NEW MH 16.91		MHF	Finish node, manhole, reference: NEW MH	00:08:01		
Depth: 4.47 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**
3	80.0	11.8	200.0	3.0	6	12.0	3.2	54.0	5.0

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Section Pictures - 29/09/2023 - FWMH02X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
54	Downstream	FWMH02X	N Kirton	NRC WWS Ltd



FWMH02X_db9322b8-9ab3-4d4a-8258-9b1e2f5a8361_20230929_124453_432.jpg, 00:00:00, 0.00 m
Start node, manhole, reference: FWMH02, Hard standing in MH



FWMH02X_d2215c8f-f3bb-4127-9b8e-fde0659868d8_20230929_124600_242.jpg, 00:01:26, 0.76 m
Attached deposits, encrustation from 7 o'clock to 5 o'clock, 5% cross-sectional area loss, start



FWMH02X_d67fa18a-261f-42cc-b472-823572ada9df_20230929_124648_735.jpg, 00:02:12, 3.26 m
Fracture, longitudinal at 12 o'clock, start



FWMH02X_22d30264-c456-4ae7-aeda-8c7f10495bb9_20230929_124915_902.jpg, 00:04:32, 9.68 m
Settled deposits, hard or compacted, 30% cross-sectional area loss, Concrete

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Section Pictures - 29/09/2023 - FWMH02X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
54	Downstream	FWMH02X	N Kirton	NRC WWS Ltd



FWMH02X_633f7784-7216-4371-80bf-317db178d39e_20230929_125002_555.jpg, 00:05:27, 11.54 m
Fracture, longitudinal at 12 o'clock, start



FWMH02X_f3b58675-fd07-4717-8b15-d7f2aa510cb6_20230929_125036_729.jpg, 00:06:02, 12.29 m
Fracture, longitudinal at 6 o'clock



FWMH02X_88bea82c-ac8f-4bd6-ad0a-3f201e129369_20230929_125210_984.jpg, 00:07:37, 16.51 m
Other obstacles, brick or masonry in invert at joint from 5 o'clock to 6 o'clock, 10% cross-sectional area loss

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Section Inspection - 29/06/2023 - EXMH06X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
56	3	29/06/23	13:53	DK0363	No Rain Or Snow	No	EXMH06X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JAME G	PJ210MA	Atex Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	EXMH06
Road:	Hammerstone Road	**Inspected Length:**	85.92 m	**Upstream Pipe Depth:**	
Location:	Other walkway	**Total Length:**	85.92 m	**Downstream Node:**	UU1902
Surface Type:	Concrete Footway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:527 Position [m]		Code	Observation	MPEG	Photo	Grade
Depth: m EXMH06 0.00		MH	Start node, manhole, reference: EXMH06	00:00:00		
0.00		WL	Water level, 10% of the vertical dimension	00:00:04		
7.27		DER	Settled deposits, coarse, 5% cross-sectional area loss	00:00:36	EXMH06X_eed5b47b-ed46-48	3
13.44		DER	Settled deposits, coarse, 5% cross-sectional area loss	00:00:56	EXMH06X_a55d7d83-2f42-41d	3
15.50		WL	Water level, 10% of the vertical dimension	00:01:07		
16.74		CN	Connection other than junction at 9 o'clock, 750mm dia: Major Branch	00:01:13		
19.18		OBB	Other obstacles, brick or masonry in invert from 7 o'clock to 8 o'clock, 15% cross-sectional area loss: Unable to jet due to bricks catching encrustation	00:01:51	EXMH06X_1122bd28-ce2d-4a	5
19.18		REM	General remark: Needs to be jetted from the downstream node	00:01:51		
20.02		OBB	Other obstacles, brick or masonry in invert at 6 o'clock, 10% cross-sectional area loss	00:02:00	EXMH06X_061fc6ce-03c3-410	5
20.92		CN	Connection other than junction at 9 o'clock, 300mm dia	00:02:19		
21.52		DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 15% cross-sectional area loss: Bricks are catching on this whilst jetting, unable to remove	00:02:25	EXMH06X_705dcd75-53f9-487	3
35.12		DH	Deformed horizontally, 5%: Bricks moved causing an improper flow	00:04:43	EXMH06X_db1f7b05-343a-492	2 / 2
46.13		SCO	Shape changes to oval, new size(s), 750mm high, 800mm wide	00:05:32		
53.59	S01	DEE	Attached deposits, encrustation from 8 o'clock to 4 o'clock, 5% cross-sectional area loss, start	00:06:00	EXMH06X_b2d37cc8-baa6-423	
58.49		CN	Connection other than junction at 9 o'clock, 300mm dia	00:06:18		

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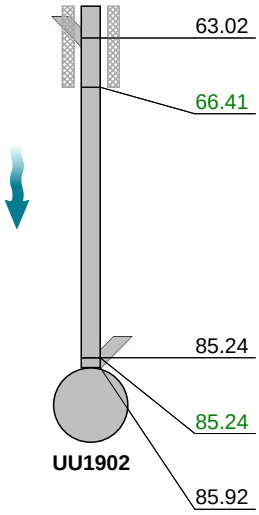
Section Inspection - 29/06/2023 - EXMH06X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
56	3	29/06/23	13:53	DK0363	No Rain Or Snow	No	EXMH06X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
JAME G	PJ210MA	Atex Crawler	Not Specified	Not Specified	Not Specified

Scale: 1:527



Depth: m

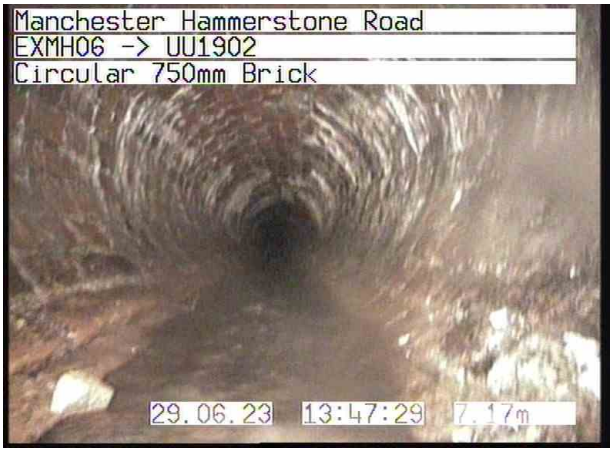
Position [m]		Code	Observation	MPEG	Photo	Grade
63.02		CN	Connection other than junction at 3 o'clock, 750mm dia: Major Branch	00:06:40		
66.41	F01	DEE	Attached deposits, encrustation from 8 o'clock to 4 o'clock, 5% cross-sectional area loss, finish	00:07:32	EXMH06X_6b01fa59-4330-489	3
85.24		CN	Connection other than junction at 9 o'clock, 300mm dia	00:08:52		
85.24		LD	Line deviates down	00:08:52		
85.92		MHF	Finish node, manhole, reference: UU1902: MH In View	00:09:28		

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	20.0	0.2	20.0	2.0	7	10.0	0.6	53.0	5.0

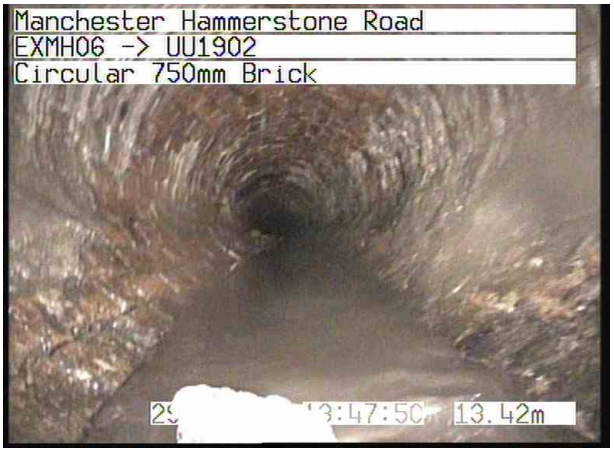
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[redacted]

Section Pictures - 29/06/2023 - EXMH06X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
56	Downstream	EXMH06X	DK0363	



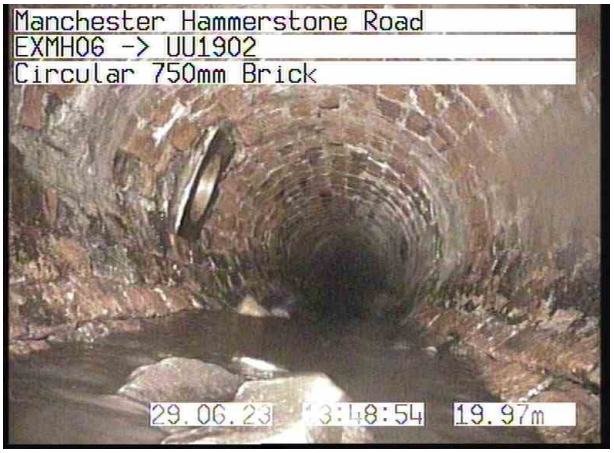
EXMH06X_eed5b47b-ed46-48a0-857e-6e44c42f80e7_20230704_092341_194.jpg, 00:00:36, 7.27 m
Settled deposits, coarse, 5% cross-sectional area loss



EXMH06X_a55d7d83-2f42-41d3-88d7-abd184265b1f_20230704_092346_033.jpg, 00:00:56, 13.44 m
Settled deposits, coarse, 5% cross-sectional area loss



EXMH06X_1122bd28-ce2d-4a72-aa66-86907662bf99_20230704_092352_690.jpg, 00:01:51, 19.18 m
Other obstacles, brick or masonry in invert from 7 o'clock to 8 o'clock, 15% cross-sectional area loss, Unable to jet due to bricks catching encrustation



EXMH06X_061fc6ce-03c3-4108-b9bc-a6451c6e9e0e_20230704_092358_690.jpg, 00:02:00, 20.02 m
Other obstacles, brick or masonry in invert at 6 o'clock, 10% cross-sectional area loss

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Section Pictures - 29/06/2023 - EXMH06X

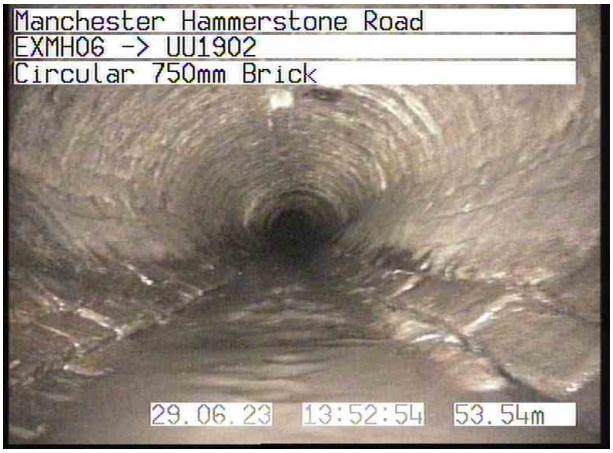
Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
56	Downstream	EXMH06X	DK0363	



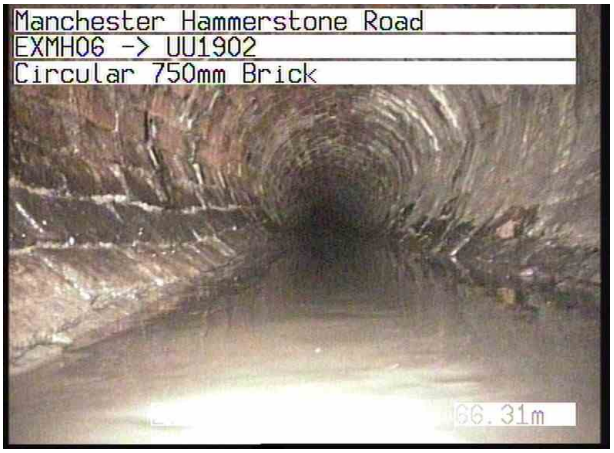
EXMH06X_705dcd75-53f9-4874-8eb6-03ca64d7bcdd_20230704_092405_783.jpg, 00:02:25, 21.52 m
Attached deposits, encrustation from 5 o'clock to 7 o'clock, 15% cross-sectional area loss, Bricks are catching on this whilst jetting, unable to remove



EXMH06X_db1f7b05-343a-4923-9bc0-7baf1208481a_20230704_092412_620.jpg, 00:04:43, 35.12 m
Deformed horizontally, 5%, Bricks moved causing an improper flow



EXMH06X_b2d37cc8-baa6-4236-ae01-568821f6fe03_20230704_092421_558.jpg, 00:06:00, 53.59 m
Attached deposits, encrustation from 8 o'clock to 4 o'clock, 5% cross-sectional area loss, start



EXMH06X_6b01fa59-4330-4891-a585-e5ad4d59d3d0_20230704_092429_813.jpg, 00:07:32, 66.41 m
Attached deposits, encrustation from 8 o'clock to 4 o'clock, 5% cross-sectional area loss, finish

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Section Inspection - 04/10/2023 - MH25X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
57	1	04/10/23	10:25	DK0526 ADANA CONSTRUCTION	Rain	Yes	MH25X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
ROBBIE DAVIN	Not Specified	Solo	Not Specified	Not Specified	1

Town or Village:	Gorton, Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH25
Road:	1 Hammerstone Road	**Inspected Length:**	10.09 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	10.09 m	**Downstream Node:**	UU2801
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:88



Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m					
MH25					
0.00	MH	Start node, manhole, reference: MH25	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
10.09	JN	Junction at 6 o'clock, 150mm dia: DROPSHAFT	00:01:27	MH25 DS UU2801_1 0-09m_10	
10.09	MHF	Finish node, manhole, reference: UU2801	00:01:29		
UU2801					
Depth: m					

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

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Section Pictures - 04/10/2023 - MH25X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
57	Downstream	MH25X	DK0526 ADANA	NRC WWS LTD



MH25 DS UU2801_10-09m_102744.jpg, 00:01:27, 10.09 m
Junction at 6 o'clock, 150mm dia, DROPSHAFT

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 22/08/2023 - UUMH2708X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
58	1	22/08/23	11:16	Not Specified	No Rain Or Snow	Yes	UUMH2708X

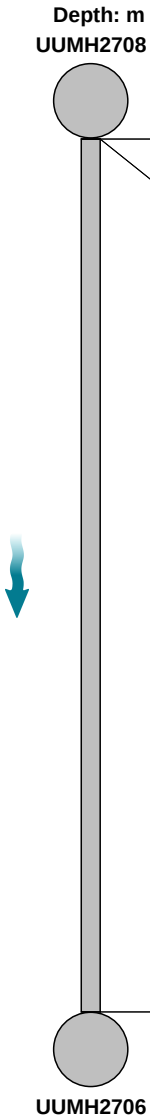
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	UUMH2708
Road:	Hammerstone Road	**Inspected Length:**	29.74 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	29.74 m	**Downstream Node:**	UUMH2706
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

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

Comments:
Recommendations:

Scale: 1:258



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: UUMH2708	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:03:34		
29.74	MHF	Finish node, manhole, reference: UUMH2706	00:03:23		

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

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Tel. 0151 643 0800
[redacted]

Section Inspection - 22/08/2023 - EXFW1BX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
59	1	22/08/23	11:00	Not Specified	No Rain Or Snow	Yes	EXFW1BX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
D.MORRISON	PK20 Syx	Coiler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	EXFW1B
Road:	Hammerstone Road	**Inspected Length:**	7.05 m	**Upstream Pipe Depth:**	
Location:	Road	**Total Length:**	7.05 m	**Downstream Node:**	UUMH2708
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	2.200 m

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Pipe Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Investment planning	**Lining Material:**	No Lining

Comments:
Recommendations: PATCH / FULL LINER

Scale: 1:62

Depth: 2.20 m
UUMH2708



EXFW1B
Depth: m

Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: UUMH2708	00:00:00		
0.01	WL	Water level, 5% of the vertical dimension	00:00:00		
3.09	FCJ	Fracture, circumferential at joint from 1 o'clock to 10 o'clock	00:00:46	EXFW1BX_4dbb72b1-1295-45	3 / 2
4.58	FL	Fracture, longitudinal at 4 o'clock	00:01:32	EXFW1BX_db974e72-2cce-4a	3 / 2
4.58	FL	Fracture, longitudinal at 8 o'clock	00:01:38	EXFW1BX_5939447d-403e-4a	3 / 2
6.29	FCJ	Fracture, circumferential at joint from 10 o'clock to 1 o'clock	00:02:03	EXFW1BX_1f52a089-6d68-439	3 / 2
7.05	MHF	Finish node, manhole, reference: EXFW1B	00:03:29		

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	80.0	22.7	160.0	3.0	4	2.0	0.6	4.0	3.0

NRCWWS
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[redacted]

Section Pictures - 22/08/2023 - EXFW1BX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
59	Upstream	EXFW1BX		DK0472



EXFW1BX_4dbb72b1-1295-4541-a76e-22125fdc992b_20230822_110208_059.jpg, 00:00:46, 3.09 m
Fracture, circumferential at joint from 1 o'clock to 10 o'clock



EXFW1BX_db974e72-2cce-4a01-80a6-9243de8bc956_20230822_110300_543.jpg, 00:01:32, 4.58 m
Fracture, longitudinal at 4 o'clock



EXFW1BX_5939447d-403e-4a0f-ae56-577e9bebf2b4_20230822_110312_377.jpg, 00:01:38, 4.58 m
Fracture, longitudinal at 8 o'clock



EXFW1BX_1f52a089-6d68-439b-b6e4-a2acf425ded2_20230822_110353_274.jpg, 00:02:03, 6.29 m
Fracture, circumferential at joint from 10 o'clock to 1 o'clock

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unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

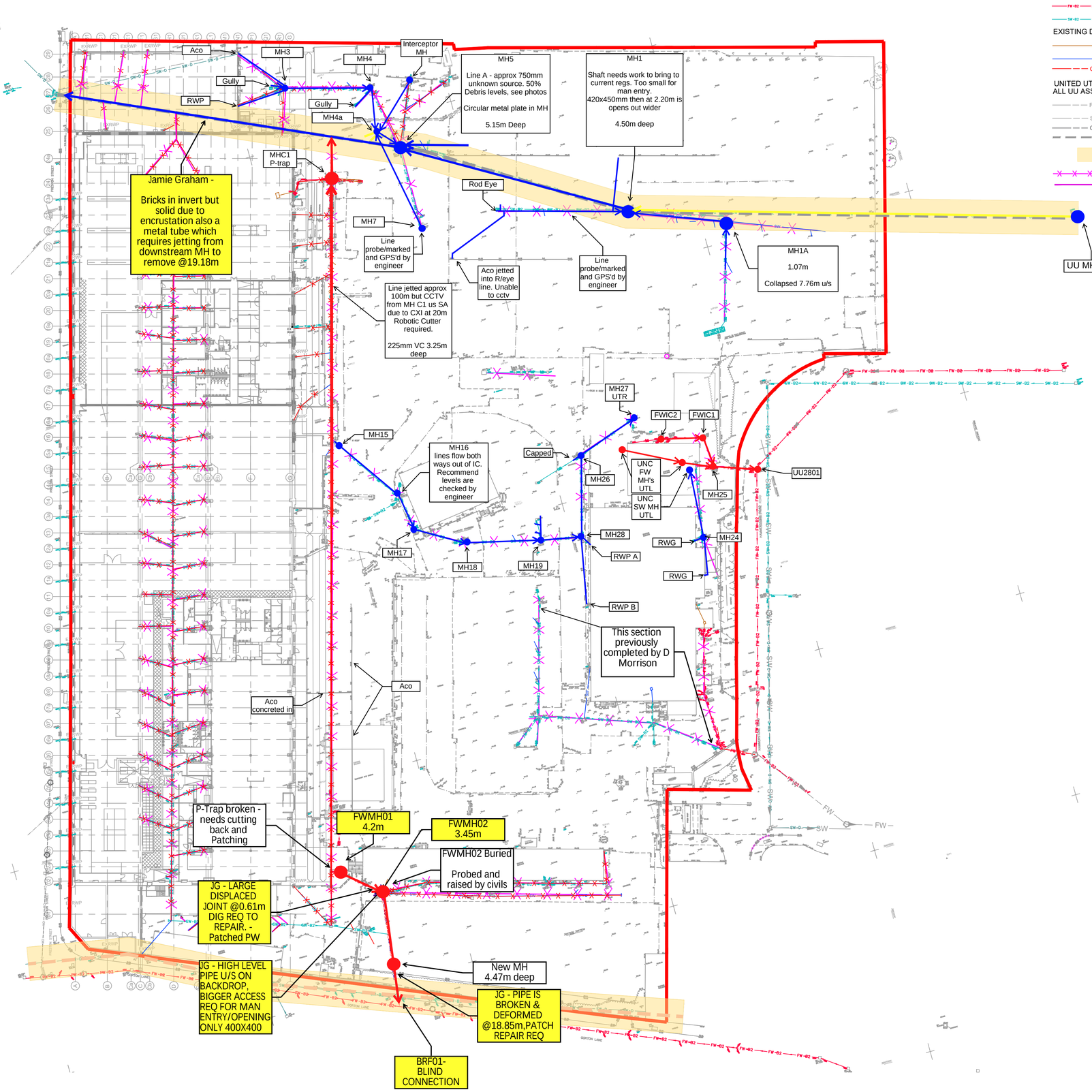
Section Pictures - 22/08/2023 - EXFW1BX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
59	Upstream	EXFW1BX		DK0472



EXFW1BX_9b32c581-e6a0-4426-97a8-5dfa9d785a36_20230822_110456_184.jpg, 00:02:03, 6.29 m
Fracture, circumferential at joint from 10 o'clock to 1 o'clock

APPENDIX D2 - CCTV SURVEY PLAN



LEGEND

- SITE BOUNDARY BASED ON HRD-FRA-00-XX-DR-A-90-0200

EXISTING SERVICES BASED ON GPR SURVEY S17480-U DEC 2018

- BT CABLE
- ELECTRICITY CABLE
- TELECOM CABLE
- UNKNOWN SERVICE
- FOUL WATER PIPE
- SURFACE WATER PIPE

EXISTING DRAINAGE BASED ON CCTV SURVEY DEC 2018

- FOUL WATER PIPE
- SURFACE WATER PIPE
- COMBINED WATER PIPE

UNITED UTILITIES RECORDS UUPS-ORD-76950
ALL UU ASSETS ARE SHOWN INDICATIVELY

- UU FOUL WATER SEWER
- UU SURFACE WATER SEWER
- UU COMBINED WATER SEWER
- WATERCOURSE
- 8M EASEMENT BASED ON SEWER FOR ADOPTION 6TH EDITION
- ABANDONED
- EXISTING DRAINAGE UNSURVEYED, ROUTE ASSUMED

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.

DRAWING BASED ON:
TOPOGRAPHICAL SURVEY BY SEP S15724-T
GPR SURVEY BY SEP S17480-U DEC 2018 JUNE 2018
CCTV SURVEY BY SEP DRAINAGE SURVEYS LTD DEC 2018
ADDITIONAL CCTV SURVEY AUG 2020
ADDITIONAL CCTV SURVEY DECEMBER 2021
EXISTING BUILDING SURVEY BY SEP S15724-GA JUNE 2018
UU RECORDS UUPS-ORD-76950
ARCHITECT RWP SKETCH PROVIDED 13.01.22

Rev:	Description:	Date:	By:	Chkd:
C01	CONSTRUCTION ISSUE	26.09.22	MW	MW
P02	UPDATED FOLLOWING CCTV SURVEY& RWPS POSITION PROVIDED ON ARCHITECT SKETCH	21.01.22	MW	MW
P01	STAGE 4 ISSUE	05.08.21	TH	MW

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Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: STAGE 5

Project: HAMMERSTONE ROAD

Drg Title: ASSUMED EXISTING DRAINAGE AND ADDITIONAL SURVEY

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	05.08.21	TH	MW	MW
	Scale: 1:500				

Project Code: HRD | Originator: CUR | Zone: XX | Level: 00 | Type: DR | Discipline: C | Category / Number: 92-514 | Rev: -C01

\\mafs02\Projects\068001 - 069000\068065 - Hammerstone Road Depot\IMS 4 Production\4B Models & Drawings_Civil (C4D)\

NRCWWS
unit D. Russell Road, Rock Ferry
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[redacted]

WEB PROJECT
CLICK TO OPEN THIS PROJECT

Project

Project Name:	DK0758 Adana Hammerstone rd Goreton Manchester 25-31 01 24
Project Date:	25/01/2024
Inspection Standard:	MSCC5 Sewers & Drainage GB (SRM5 Scoring)

NRCWWS
unit D. Russell Road, Rock Ferry
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[redacted]*k*

Table of Contents

Project Name	Project Number	Project Date
DK0758 Adana Hammerstone rd Goreton Manchester 25-31 01 24		25/01/2024

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Tel. 0151 643 0800
[redacted]

Project Information

Project Name	Project Number	Project Date
DK0758 Adana Hammerstone rd Goreton Manchester 25-31 01 24		25/01/2024

Client

Company: ADANA CONSTRUCTION
Description: ADANA HOUSE
Contact: 140 HIGHER HILLGATE
Department: STOCKPORT
Street: SK1 3QT

Site

Company: ADANA CONSTRUCTION
Contact: DK0758 Adana Hammerstone rd Goreton Manchester 25-

Contractor

Company: NRCWWS
Contact: Derek Kearns
Department: Director
Street: unit D. Russell Road
Town or City: Rock Ferry
County: Wirral
Post Code: CH42 1LU
Phone: 0151 643 0800
Email: [redacted]

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Tel. 0151 643 0800
[redacted]

Section Inspection - 01/02/2024 - MH5X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	3	01/02/24	16:38	NRC WWS LTD	No Rain Or Snow	Yes	MH5X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MH5
Road:	Hammerstone Rd	**Inspected Length:**	81.84 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	81.84 m	**Downstream Node:**	OFFSITE
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	600 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:486



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH5	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:05		
4.57	S01	DEE	Attached deposits, encrustation from 01 o'clock to 11 o'clock, 5% cross-sectional area loss, start	00:01:30		
14.87		WL	Water level, 10% of the vertical dimension	00:03:01		
17.58		JX	Junction, defective at 09 o'clock, 450mm dia: lose bricks in jnction	00:04:39		
19.34		DEZ	Attached deposits, other from 05 o'clock to 07 o'clock, 15% cross-sectional area loss: bricks and poss concrete in invert	00:05:39		3
20.66		DEZ	Attached deposits, other from 05 o'clock to 07 o'clock, 15% cross-sectional area loss: concrete in invert	00:06:41		3
20.93		CN	Connection other than junction at 09 o'clock, 225mm dia	00:06:59		
28.16		IG	Infiltration, gushing at 09 o'clock: from joint on brick work	00:09:05		
30.03		IG	Infiltration, gushing at 08 o'clock: from joint on brick work	00:09:42		
32.38		FL	Fracture, longitudinal at 12 o'clock	00:10:11		4 / 2
34.40		FL	Fracture, longitudinal at 12 o'clock	00:10:37		4 / 2
41.23		D	Deformed sewer or drain, 10%	00:11:49		
46.73		MB	Missing bricks at 11 o'clock	00:12:54		4
55.46		CN	Connection other than junction at 09 o'clock, 300mm dia	00:14:36		

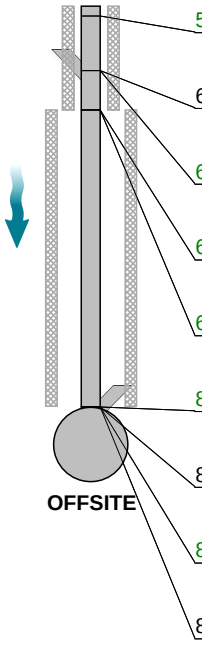
NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 01/02/2024 - MH5X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	3	01/02/24	16:38	NRC WWS LTD	No Rain Or Snow	Yes	MH5X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified



Scale: 1:486	Position [m]		Code	Observation	MPEG	Photo	Grade
	56.76		ID	Infiltration, dripping at 12 o'clock: from encrustation	00:15:02		
	60.28		JX	Junction, defective at 03 o'clock, 600mm dia: loose bricks	00:16:20		
	60.28		ID	Infiltration, dripping at 12 o'clock	00:16:28		
	62.80	F01	DEE	Attached deposits, encrustation from 1 o'clock to 11 o'clock, 5% cross-sectional area loss, finish	00:17:00		3
	62.80	S02	DEE	Attached deposits, encrustation from 12 o'clock to 05 o'clock, 5% cross-sectional area loss, start	00:17:18		
	81.84		LD	Line deviates down: sharp	00:20:16		
	81.84		CN	Connection other than junction at 09 o'clock, 225mm dia: in poss old chamber	00:20:41		
	81.84	F02	DEE	Attached deposits, encrustation from 12 o'clock to 5 o'clock, 5% cross-sectional area loss, finish	00:20:56		3
	81.84		MHF	Finish node, manhole, reference: OFFSITE: MH in view	00:21:16		

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	120.0	3.9	320.0	4.0	6	4.0	2.0	164.0	3.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 25/01/2024 - MH1X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	25/01/24	9:17	NRC WWS LTD	No Rain Or Snow	Yes	MH1X

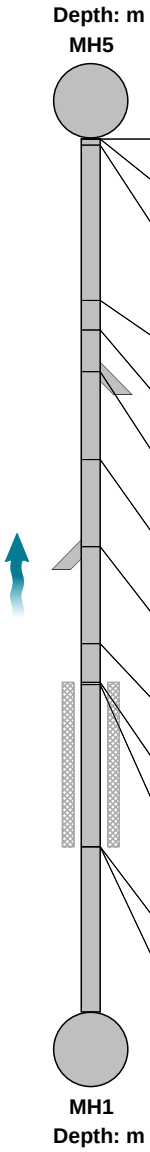
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1
Road:	Hammerstone Rd	**Inspected Length:**	51.87 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	63.99 m	**Downstream Node:**	MH5
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:555



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH5	00:00:00		
0.00		WL	Water level, 5% of the vertical dimension	00:00:07		
0.47		MCCO	Pipe material changes to concrete at this point	00:00:28		
11.86		LL	Line deviates left	00:01:23		
14.00		FLJ	Fracture, longitudinal at joint at 9 o'clock	00:04:10	MH1X_51f353b9-360a-4272-9e	
17.07		CN	Connection other than junction at 10 o'clock, 300mm dia	00:02:22		
23.52		DEG	Attached deposits, grease at 08 o'clock, 5% cross-sectional area loss: grease	00:03:13	MH1X_012cdac9-bc28-4f1c-bf	3
29.88		CN	Connection other than junction at 01 o'clock, 225mm dia	00:03:52		
37.00		FLJ	Fracture, longitudinal at joint at 8 o'clock	00:04:23	MH1X_d86746ce-af0b-49ac-bf	
39.80	S02	FL	Fracture, longitudinal at 12 o'clock, start	00:02:42		
40.00		FLJ	Fracture, longitudinal at joint at 9 o'clock	00:04:38	MH1X_cd383f44-f452-42c0-b12	
51.86	F02	FL	Fracture, longitudinal at 12 o'clock, finish	00:02:42		4 / 2
51.87		MHF	Finish node, manhole, reference: MH1	00:06:21		

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	120.0	24.4	1560.0	4.0	2	4.0	0.3	17.0	3.0

NRCWWS
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Section Pictures - 25/01/2024 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Upstream	MH1X	NRC WWS LTD	



MH1X_51f353b9-360a-4272-9ee9-2f0bf5299c1e_20240201_102217_287.jpg, 00:04:10, 14.00 m
Fracture, longitudinal at joint at 9 o'clock



MH1X_012cdac9-bc28-4f1c-bf1c-46af3d245a1e_20240201_101857_282.jpg, 00:03:13, 23.52 m
Attached deposits, grease at 08 o'clock, 5% cross-sectional area loss, grease



MH1X_d86746ce-af0b-49ac-bf60-ade12876c7f0_20240201_102241_993.jpg, 00:04:23, 37.00 m
Fracture, longitudinal at joint at 8 o'clock



MH1X_cd383f44-f452-42c0-b12e-c7d4cdfae8e6_20240201_102311_947.jpg, 00:04:38, 40.00 m
Fracture, longitudinal at joint at 9 o'clock

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 25/01/2024 - MH1AX

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	1	25/01/24	9:25	NRC WWS LTD	No Rain Or Snow	Yes	MH1AX

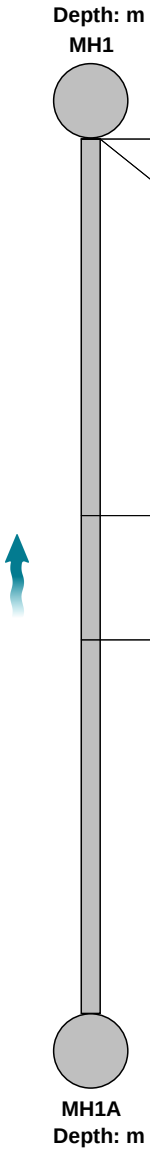
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	MH1A
Road:	Hammerstone Rd	**Inspected Length:**	38.00 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	46.53 m	**Downstream Node:**	MH1
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:403



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH1	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:06		
20.03	REM	General remark: rope running through invert	00:01:50		
26.67	MHF	Finish node, manhole, reference: MH1A	00:02:34		

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	0.0	2.6	120.0	4.0	1	0.0	0.0	1.0	1.0

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

Section Inspection - 25/01/2024 - UU MH3803X

WEB PROJECT CLICK TO OPEN THIS SECTION

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	2	25/01/24	13:24	NRC WWS LTD	No Rain Or Snow	Yes	UU MH3803X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
K.Graham	PK68 XZZ	Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	UU MH3803
Road:	Hammerstone Rd	**Inspected Length:**	10.68 m	**Upstream Pipe Depth:**	
Location:	Property or buildings	**Total Length:**	10.68 m	**Downstream Node:**	MH1A
Surface Type:	Asphalt Highway	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	750 mm
Flow Control:	No flow control	**Pipe Material:**	Brick
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Sample condition survey	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:93	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH1A						
	0.00	MH	Start node, manhole, reference: MH1A	00:00:00		
	0.00	WL	Water level, 5% of the vertical dimension	00:00:05		
	6.73	H	Hole in drain or sewer at 12 o'clock: MISSING BRICK	00:01:37	UU MH3803X _7de389c	
	10.68	MHF	Finish node, manhole, reference: UU MH3803	00:03:11		
UU MH3803 Depth: m						

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

NRCWWS
unit D. Russell Road, Rock Ferry
Tel. 0151 643 0800
[redacted]

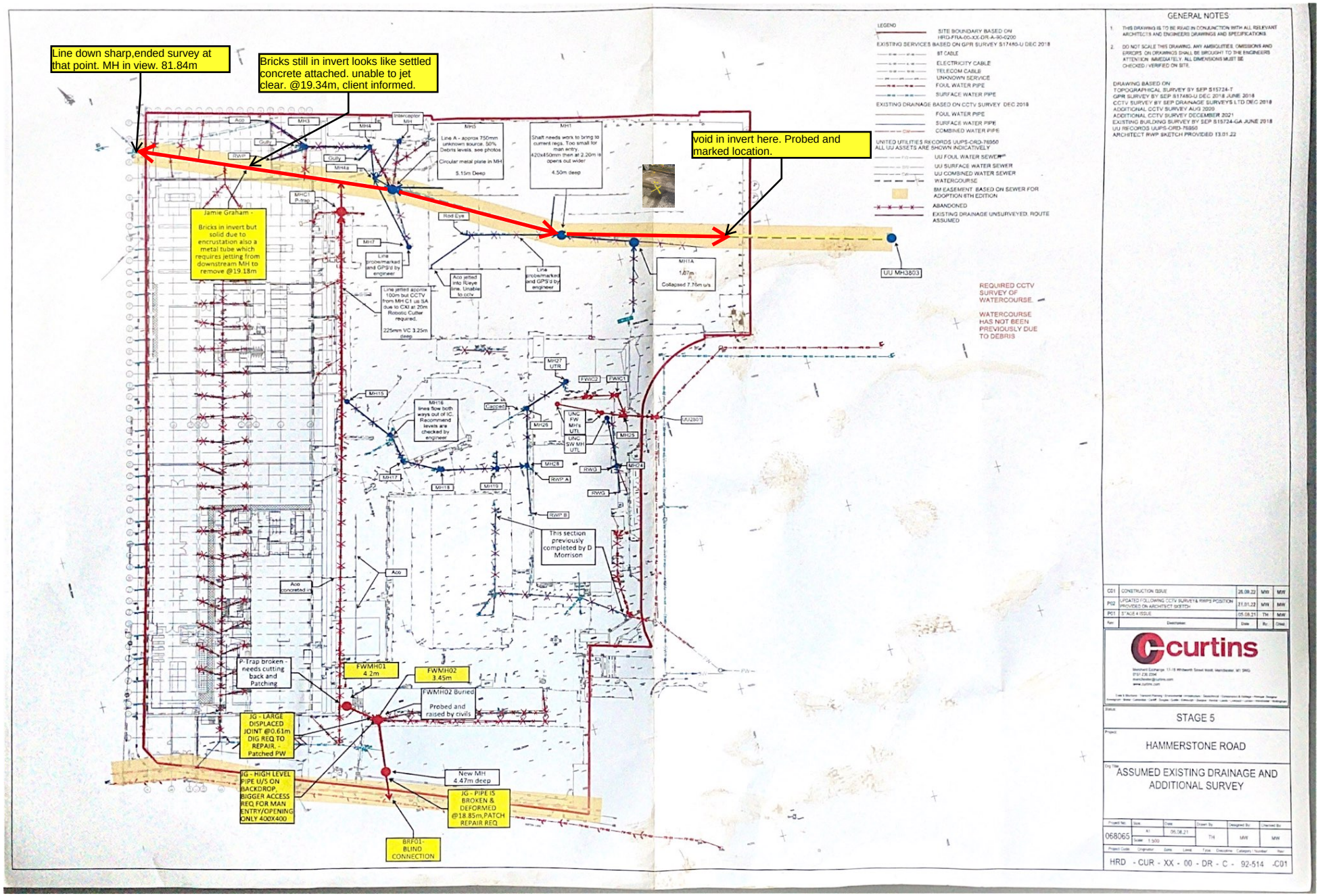
Section Pictures - 25/01/2024 - UU MH3803X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
4	Upstream	UU MH3803X	NRC WWS LTD	



UU MH3803X_7de389c4-e6ec-4690-9aac-c2fc7a252f20_20240201_170816_726.jpg, 00:01:37, 6.73 m
Hole in drain or sewer at 12 o'clock, MISSING BRICK

APPENDIX D4 - CULVERT SURVEY PLAN



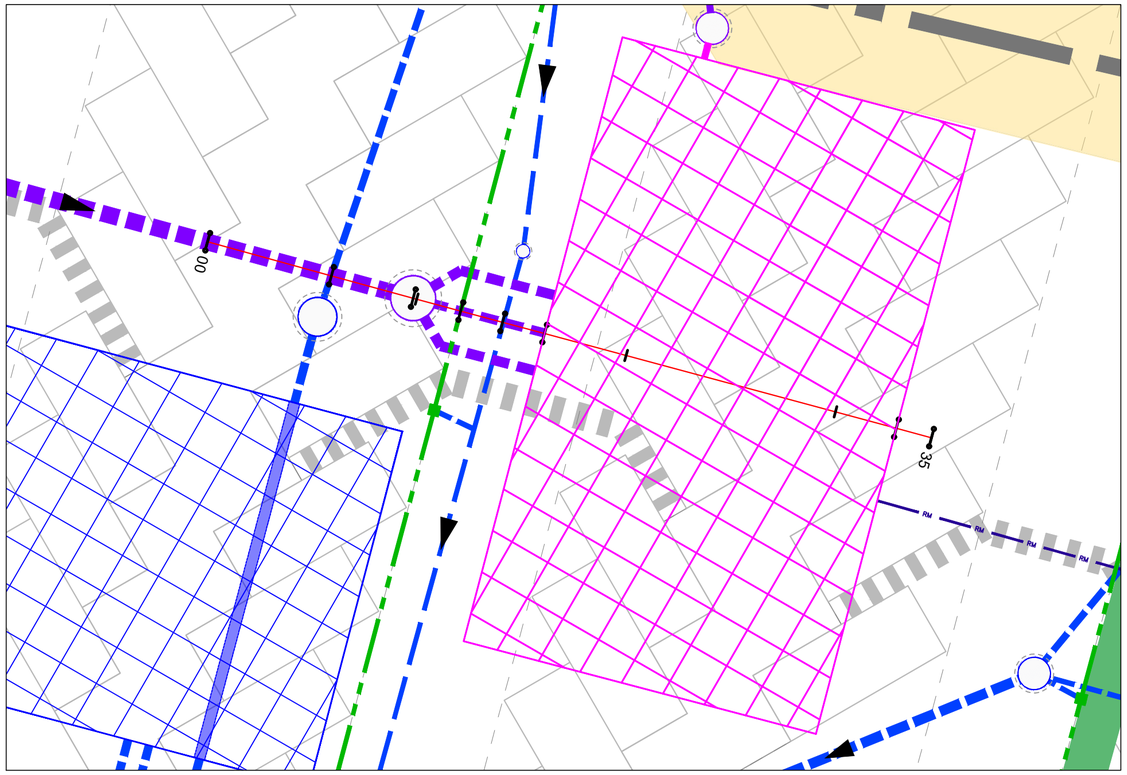
Appendix E

Section Through Tank Connections

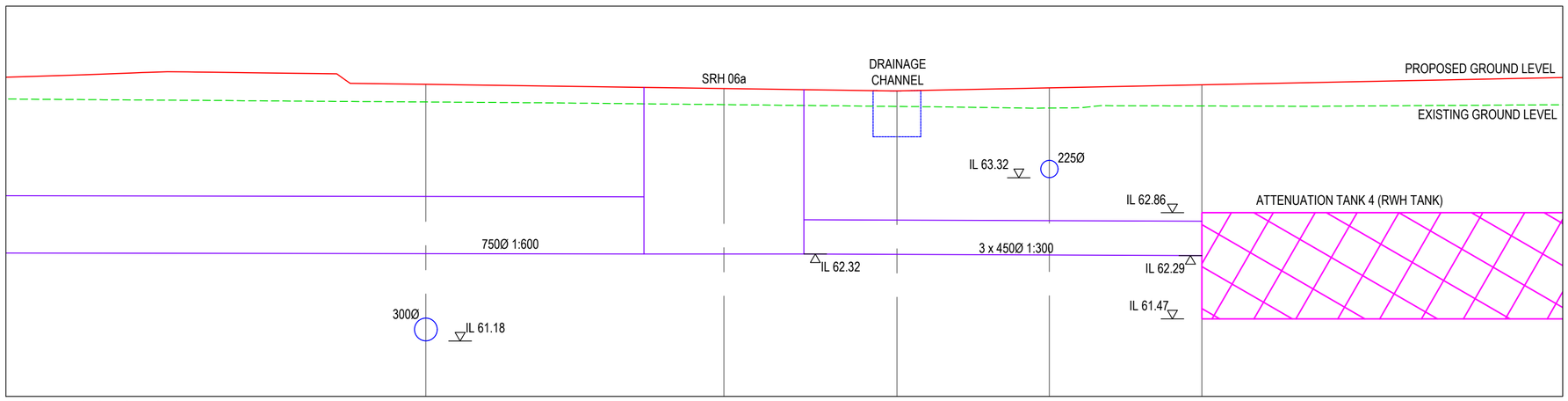
Attenuation Tank Details

Rainwater Harvesting Tank Information

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SECTION LOCATION
SCALE 1:200



SECTION THROUGH CONNECTION
SCALE 1:50

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. FOR GENERAL NOTES REFER TO DRAWING.

Rev:	Description:	Date:	By:	Chkd:
P01	ISSUED FOR PLANNING CONDITION DISCHARGE	31.01.24	ATL	ATL

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Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: INFORMATION

Project: HAMMERSTONE ROAD

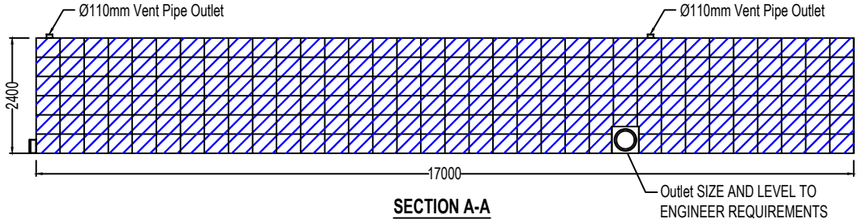
Drg Title: ATTENUATION TANK SECTION THROUGH CONNECTION

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A2	31/01/25	ATL	ATL	ATL
	Scale: AS SHOWN				

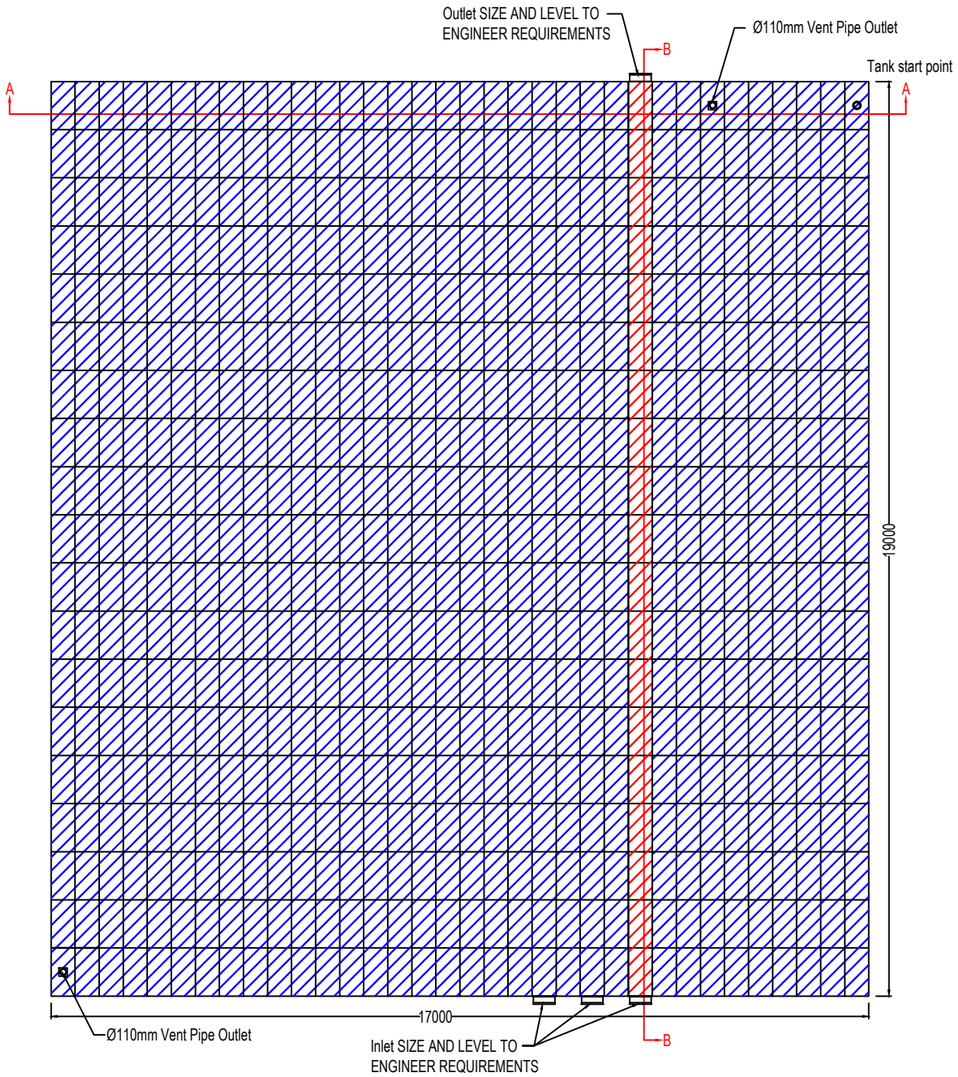
Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
HRD	- CUR -	XX -	00 -	DR -	C -	92540	- P01

\\ma-fs-1\Projects\068001 - 069000\068065 - Hammerstone Road Depot\0MS 4 Production\4B Models & Drawings_Civil-C\CAD\92\

APPENDIX E2 - ATTENUATION TANK 1 DETAILS



SECTION A-A

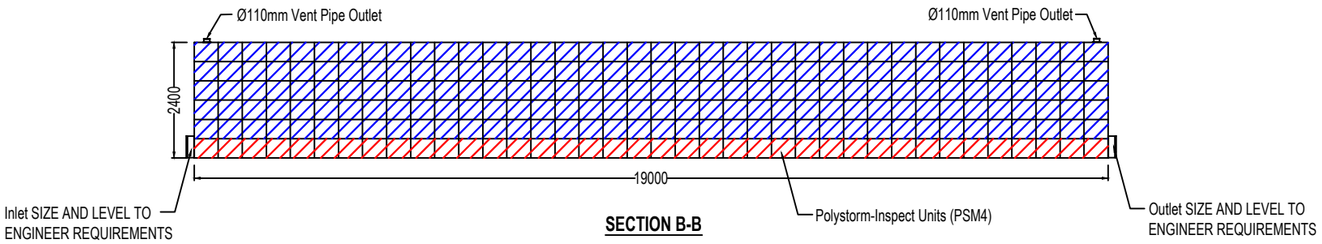


PROPOSED POLYSTORM STRUCTURE	
Plan Area	323m²
Tank Volume	775.2m³
Storage	736.44m³
Polystorm-R Units	3857 (PSM1A)
Polystorm-Inspect Units	19 (PSM4)

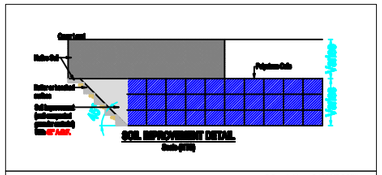
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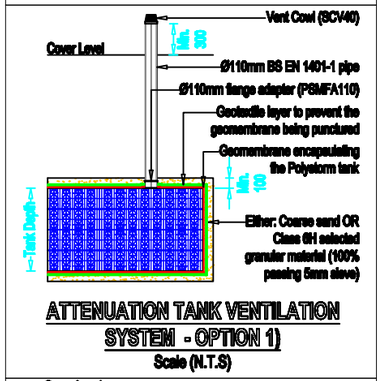
Polystorm-R Units (PSM1A)

Polystorm-Inspect Units (PSM4)

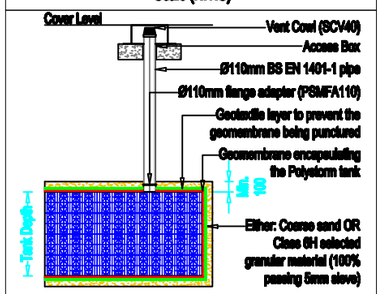


SECTION B-B

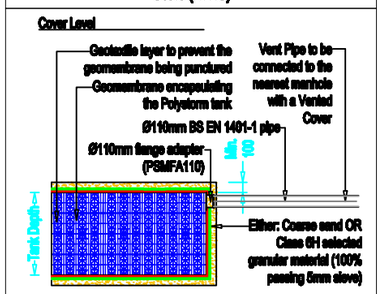




ATTENUATION TANK VENTILATION SYSTEM - OPTION 1)
Scale (N.T.S)



ATTENUATION TANK VENTILATION SYSTEM - OPTION 2)
Scale (N.T.S)



ATTENUATION TANK VENTILATION SYSTEM
Scale (N.T.S)

NOTES:-

1. THIS DRAWING DETAILS A PROPOSED POLYPIPE CIVILS & GREEN URBANISATION PRODUCT GENERAL ARRANGEMENT, REFLECTING OUR INTERPRETATION OF THE INFORMATION PROVIDED.
2. POLYPIPE CIVILS & GREEN URBANISATION (PCGU) PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH PCGU RECOMMENDATIONS (REFER TO PCGU TECHNICAL GUIDANCE FOR FURTHER INFORMATION); GIVING DUE CONSIDERATION TO THE SITE SPECIFIC CONDITIONS AND REQUIREMENTS, IN ADDITION TO ANY REQUIREMENTS MANDATED BY THE RELEVANT APPROVING AND ULTIMATE OWNER ORGANISATIONS).
3. DO NOT SCALE, REFER TO FIGURED DIMENSIONS ONLY.
4. ALL DIMENSIONS IN MILLIMETRES, UNLESS OTHERWISE STATED.
5. ALL DIMENSIONS ARE NOMINAL AND MAY VARY WITHIN MANUFACTURING OR CONSTRUCTION TOLERANCES.
6. ALL SITE TEMPORARY AND ENABLING WORKS BY OTHERS.
7. THIS DRAWING IS INTENDED FOR GUIDANCE ONLY. CONFIRMATION OF THE INFORMATION CONTAINED WITHIN THIS DOCUMENT SHOULD BE SOUGHT FROM THE OVERSEEING ENGINEER(S) PRIOR TO THE COMMENCEMENT OF FINAL DESIGN OR CONSTRUCTION ACTIVITIES.
8. PLEASE REFER TO POLYSTORM & POLYSTORM LITE TECHNICAL GUIDE.
9. THE PROPOSED POLYSTORM STRUCTURE GENERAL ARRANGEMENT HAS BEEN BASED ON PROVIDING THE MINIMUM STRUCTURE VOLUME STATED ONLY. NO STRUCTURAL OR HYDRAULIC ASSESSMENT HAS BEEN MADE OF THE SUITABILITY OF THE PROPOSED POLYSTORM STRUCTURE FOR THE PROPOSED APPLICATION, NOR HOW IT WILL INTEGRATES INTO THE PROPOSED DRAINAGE SYSTEM.
10. ALL MEMBRANE JOINTS TO BE WELDED RATHER THAN GLUED.

R1	06/09/24	INLET PIPE CONNECTION LOCATION HAS CHANGED TO SUIT.

Notes :- All the Dimensions by Millimeters

KEYTEC INSTALLATION SERVICES

KEYTEC INSTALLATION SERVICES
ROYLE HOUSE
COWM TOP BUSINESS PARK
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OL11 2PU
TEL: 01706 374416
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PROJECT
HAMMERSTONE ROAD DEPOT
ATTENUATION TANK

TITLE
DETAILS OF ATTENUATION/STORAGE TANK DETAILS USING POLYSTORM PSM1A UNITS.

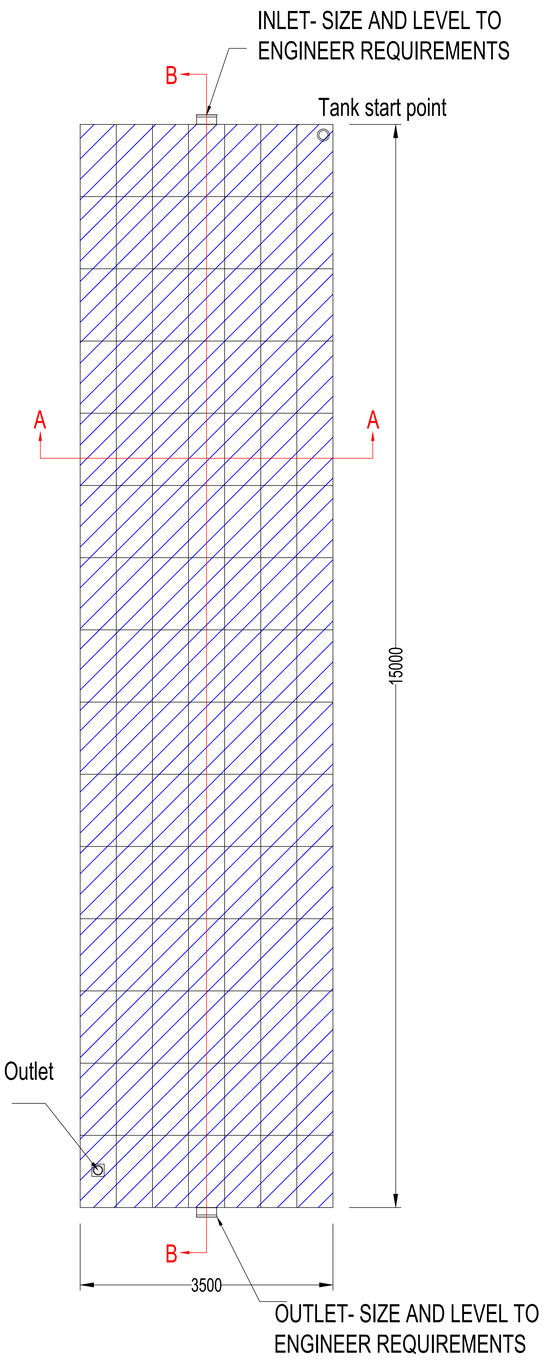
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N.T.S.	AY	KD

Date	Drawing No.	Revision
14/06/2024	PSM - 6.0	R1

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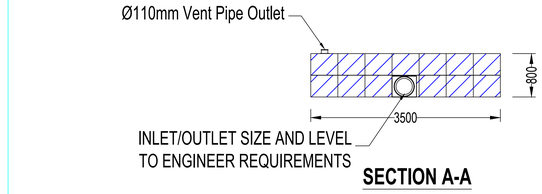
SCALE: 1:30

APPENDIX E3 - ATTENUATION TANK 2 DETAILS



PLAN

SCALE: 1:40



SECTION A-A

PROPOSED POLYSTORM STRUCTURE	
Plan Area	52.50m²
Tank Volume	42m³
Storage	39.90m³
Polystorm-R Units	210 (PSM1A)

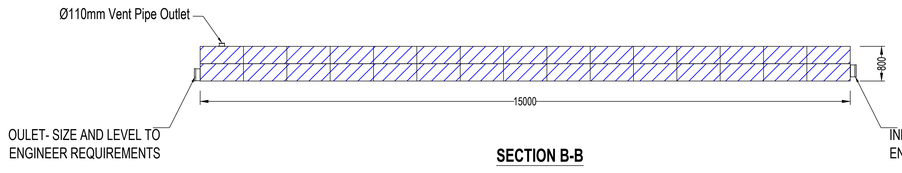
LEGEND:

Polystorm-R Units (PSM1A)

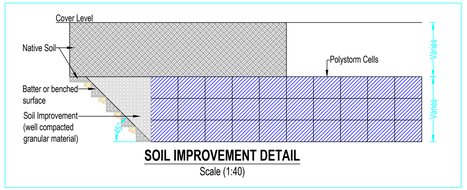
NOTE:

- Fall Arrest Grill to be provided by the developer / contractor (please refer to Consultant's drawings.
- The final position of the access cover should be confirmed by the Consultant and detailed on their drawing.
-Lifting Eyes are to be pointed type - to be provided by the Developer / Contractor (please refer to Consultant's drawings).
- All Polystorm tanks to be installed with a 1:500 fall, please note tank would still drain even if left flat due to our cells 3D flow.

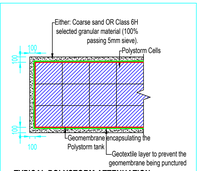
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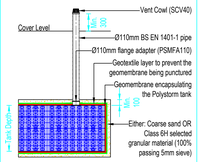
SECTION B-B



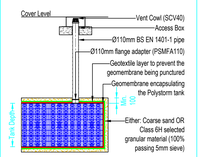
SOIL IMPROVEMENT DETAIL
Scale (1:40)



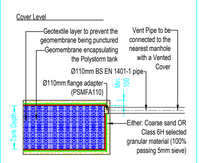
TYPICAL POLYSTORM ATTENUATION INSTALLATION DETAIL
Scale (1:40)



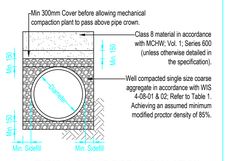
ATTENUATION TANK VENTILATION SYSTEM - OPTION 1)
Scale (1:40)



ATTENUATION TANK VENTILATION SYSTEM - OPTION 2)
Scale (1:40)



ATTENUATION TANK VENTILATION SYSTEM - OPTION 3)
Scale (N.T.S)



TYPICAL SINGLE PIPE INSTALLATION
Scale (1:40)

Table 1 -Pipe Bed & Surround Coarse Aggregate Material Grading

Product	Pipe Size (mm)	Minimum Sidefill (mm)	Material Grading (BS EN 13242, Clause 4.3.2)
Ridgistorm-XL	Ø750 - Ø900	150	4/10, 6/14, 10/20 or 20/40
	Ø1050 - Ø1200	425	
	Ø1500 - Ø3000	500	

NOTES
1. Coarse aggregate materials shall be in accordance with the relevent provisions of BS EN 13242; as detailed within WIS 4-08-02 amendment (Nov 2008). Tables A4 & 5.
2. Alternative pipe bed & surround material specifications shall not be used without prior written approval from the overseeing engineer.
3. For loading specific installation details, where concrete protection may be required, please request RST_SD_001 & 002.

NOTES - PE STUB PIPE ADAPTERS

	PIPE ADAPTOR
Ø160mm SDR26 PE - Ø150mm Polysewer	PS689
Ø250mm SDR26 PE - Ø225mm Polysewer	PS1089
Ø315mm SDR41 PE - Ø300mm Polysewer	PS1289
Ø450mm SDR17 PE - Ø400mm Ridgisewer	see note below*
Ø500mm SDR17 PE - Ø450mm Ridgisewer	see note below*
Ø560mm SDR17 PE - Ø500mm Ridgisewer	see note below*
Ø630mm SDR33 PE - Ø600mm Ridgisewer	see note below*

* - For this transition, Flexseals are required, please refer to their website.

LIFTING POINTS - UNSUITABLE FOR LIFT

1. Fabricated chamber supplied to site without direct means of lifting incorporated. The lift supervisor must assess and plan the lift, in the circumstances of the lift, and provide slings and / or other controls as deemed necessary to ensure a safe lift.

POLYSTORM NOTES

1. This drawing needs to be read in conjunction with all relevant Architects, Engineers and specialist drawings.
2. Stormwater Attenuation / Infiltration system shall be Polypipe Civil's Polystorm pre-formed geocellular system, with minimum 94% volumetric void. Units shall be installed using recommended jointing clips to maintain rigidity and minimise deflection.
3. Multi-layered Polystorm tank configurations shall be fixed with proprietary shear connectors between each vertical layer to maintain rigidity and minimise lateral displacement.
4. Drawings should be read in conjunction with the supportings structural calculations, which are illustrative and should be validated by a suitably qualified Engineer, or similar
5. For Field conditions, backfill should be placed and compacted in layers no greater than 300mm and for trafficked areas, backfill should be placed and compacted in layers no greater than 150mm.
6. The installer shall ensure that all expected temporary construction transient loads have been considered as part of the structural design and a minimum of 300mm backfill should be placed prior to initial compaction.
7. Polystorm Tanks should be installed in accordance with Polypipe Civils recommendations (refer to technical guidance for further information).

COVER SLAB THICKNESS

1. Where cover slabs are applicable, the slab thickness (shown in red) has been assumed and therefore needs to be confirmed by others.

STANDARD TOLERANCES

ALL DIMENSIONS IN MILLIMETRES, UNLESS OTHERWISE STATED.

Benching Slope	1:10 to 1:30 (1.9° - 5.7°)
Angles	+/- 1.5°
All Dimensions	+50mm / -30mm

STANDARD SPIGOTS IN ACCORDANCE WITH SPEC. ES23.

Team Leader inspection points identified by: (1) (2) (3)

JOINTING KEY

Socket — RS Ring seal joint; IEW Internal extrusion welding joint
Spigot — EF Electro-fusion joint

GENERAL NOTES

1. This drawing details Polypipe Civils proposed offering, reflecting our interpretation of the information provided.
2. Polypipe bespoke Ridgistorm-XL chambers are complete pre-formed units.
3. Polypipe products to be installed in accordance with Polypipe Civils recommendations (refer to Polypipe technical guidance for further information), giving due consideration to the requirements of the organisation who will take ultimate ownership of the installation.
4. Site conditions may require specific installation requirements. The installer should verify that the proposed installation method is acceptable, giving due consideration to the requirements of the relevant approving and adopting authorities, before construction activities commence.
5. Advice on any system requirements specific to the proposed Ridgistorm XL system should be sought from Polypipe Civils.
6. All PE stub connections will require adaptors (to be supplied by Contractor / Developer).

DRAWING NOTES

1. Drawings should not be scaled, refer to figured dimensions only.
2. All dimensions in millimetres, unless otherwise stated.
3. All dimensions are nominal and may vary within manufacturing or construction tolerances.
4. All site temporary and enabling works by others.
5. This drawing is intended for guidance only. Confirmation of the information contained within this document should be sought from the consulting engineers before final design or construction activities commence.

R1 14/01/2025 TANK SHAPE/SIZE REVISED BY CUSTOMER

KEYTEC INSTALLATION SERVICES

KEYTEC INSTALLATION SERVICES
BOYLE HOUSE
COWM TOP BUSINESS PARK
COWM TOP LANE
OL11 2PU
TEL: 01706 374416
EMAIL: TECHNICAL@KEYTEC.CO.UK

PROJECT

HAMMERSTONE ROAD

ATTENUATION TANK

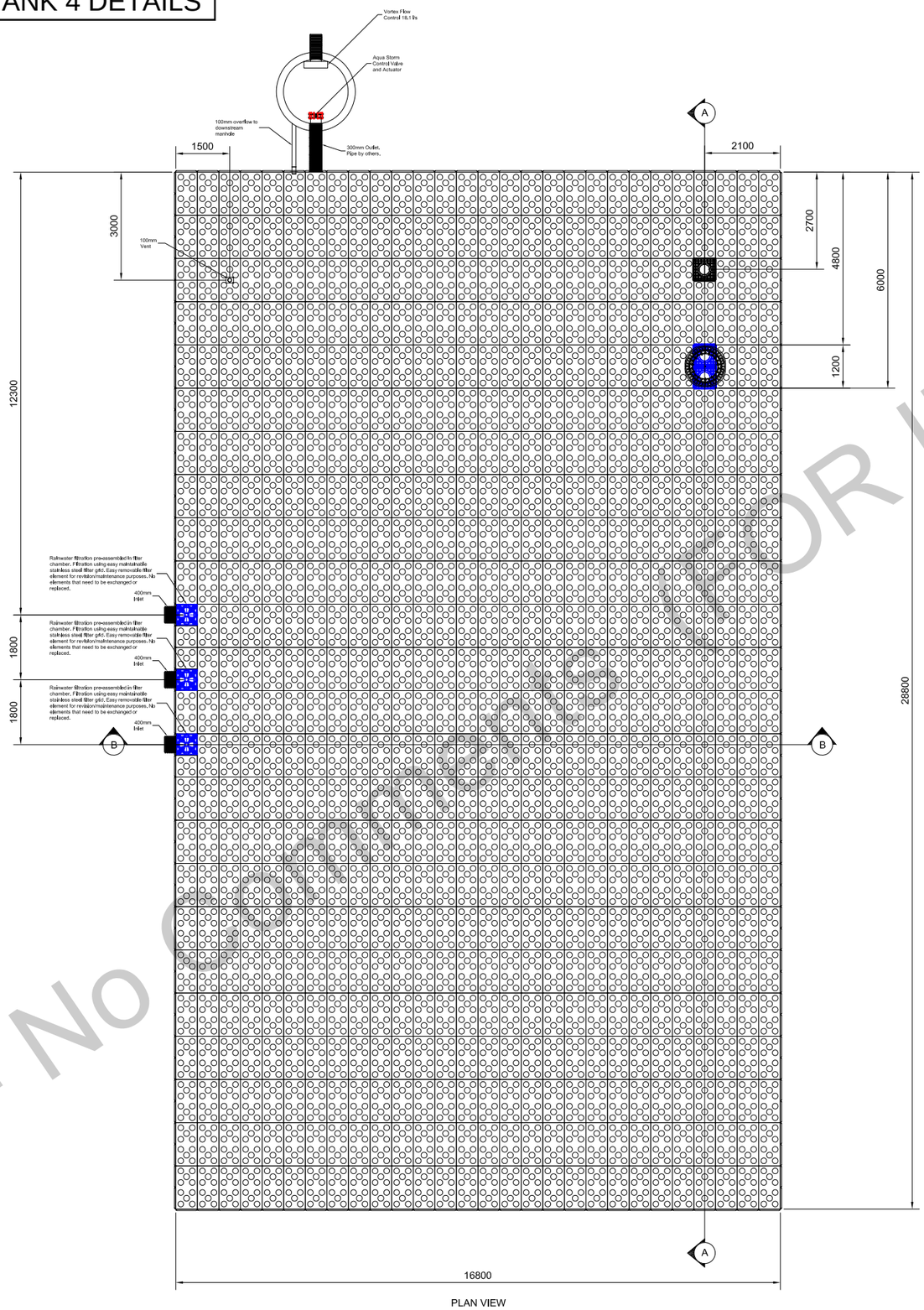
TITLE

DETAILS OF ATTENUATION/STORAGE TANK DETAILS USING POLYSTORM PAM1A UNITS

Scale	Drawn	Checked
AS SHOWN	FA	KD

Date	Drawing No.	Revision
16/01/2025	PSM - 2.0	R0

APPENDIX E4 - ATTENUATION TANK 4 DETAILS



PLAN VIEW

Project: Manchester - Hammerstone Road	
Title: Plantroom Layout Tank Layout	
System: **Geocellular Tank made from Aquality Storage Block SD** 28.8m x 16.8m x 1.392m	
Project-No: HRD-ABE-ZZ-ZZ-DR-M-5031	
Project state: S2	Date: 23/11/2023
Scale: NTS @A3	Revision: P03
Drawn by: AR	Checked by: CF

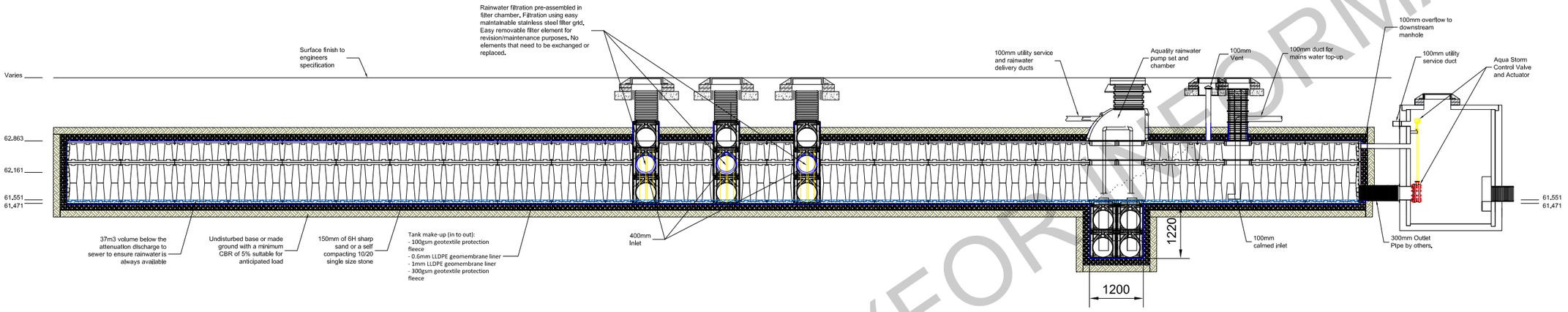
aquality
intelligent water management

Aquality Trading & Consulting Ltd
6 Wadsworth Road
London UB6 7JJ
www.aqua-lity.co.uk
Tel.: +44 (0)20 8991 3725

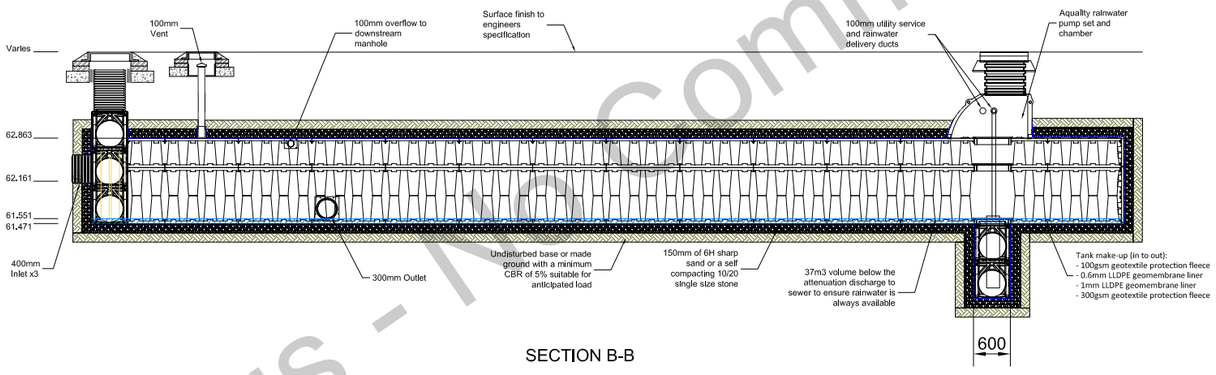
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APPENDIX E5 - ATTENUATION TANK 4 DETAILS



SECTION A-A



SECTION B-B

Project: Manchester - Hammerstone Road	
Title: Tank Layout	
System: **Geocellular Tank made from Aquality Storage Block SD** 28.8m x 16.8m x 1.392m	
Project-No: HRD-ABE-ZZ-ZZ-DR-M-5032	
Project state: S2	Date: 23/11/2023
Scale: NTS @A3	Revision: P03
Drawn by: AR	Checked by: CF

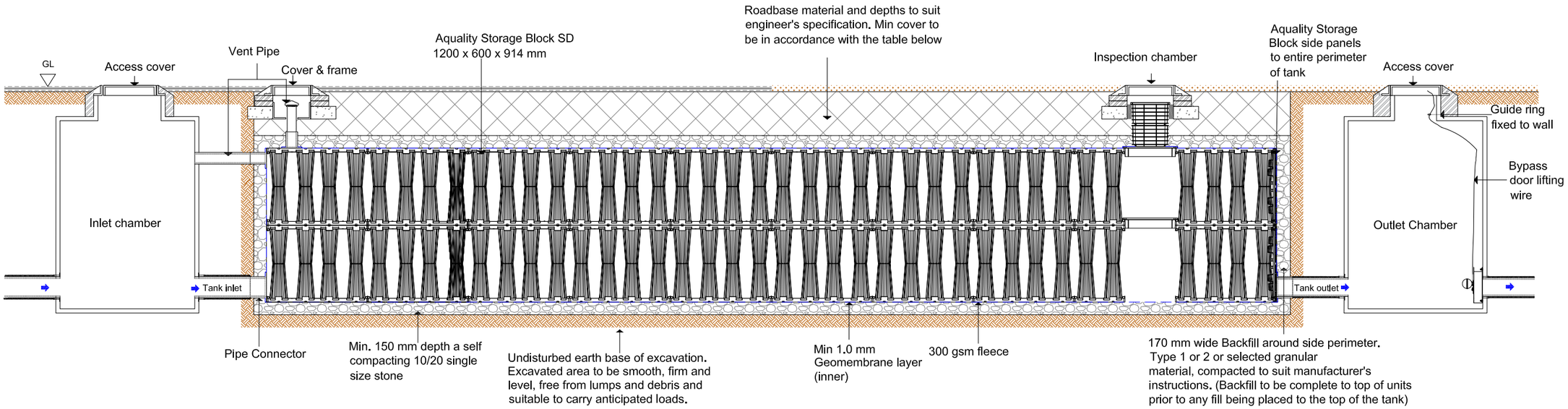
aquality
intelligent water management

Aquality Trading & Consulting Ltd
6 Wadsworth Road
London UB6 7JJ
www.aqua-lity.co.uk
Tel.: +44 (0)20 8991 3725

A Status - No Comments (FOR INFORMATION)

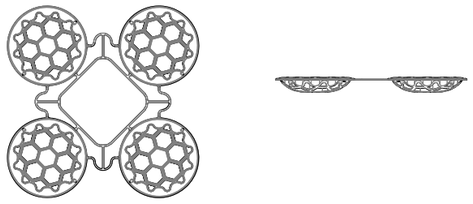
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APPENDIX E6 - ATTENUATION TANK 4 DETAILS



Note:

Top cover shown below to be installed on top layer of Aquality Modules only.



Minimum cover depths (1) over the top of Aquality Geocellular	
Location	Minimum cover depth (m) (4)
Non-Trafficked areas i.e. Landscaping	0.5
Car parks, vehicle up to 2500kg gross mass	0.6
Car parks, occasional vehicle greater than 2500kg (3) gross mass	Please contact Aquality
Occasional HGV traffic up to 44000kg GVW (HA loading)	Please consult with Aquality

(1) Assumes 27 degree load distribution through fill material and overlaying surface asphalt or block paving
(2) Minimum cover depth to avoid accidental damage from gardening/landscaping work
(3) Occasional Trafficking by refuse collection or similar vehicles (typically one per week)
(4) Please check minimum frost cover depths for geographical location

Project:
Manchester - Hammerstone Road

Title:
Aquality Sorage Block SD attenuation

System:
Aquality Storage Block SD attenuation (on-line)

Project-No:
HRD-ABE-ZZ-ZZ-DR-M-5033

Project state:	Date:
S2	22/09/2023
Scale: NTS @A3	Revision: P01
Drawn by: AR	Checked by: CF

aquality
intelligent water management

Aquality Trading & Consulting Ltd
6 Wadsworth Road
London UB6 7JJ
www.aqua-lity.co.uk
Tel.: +44 (0)20 8991 3725

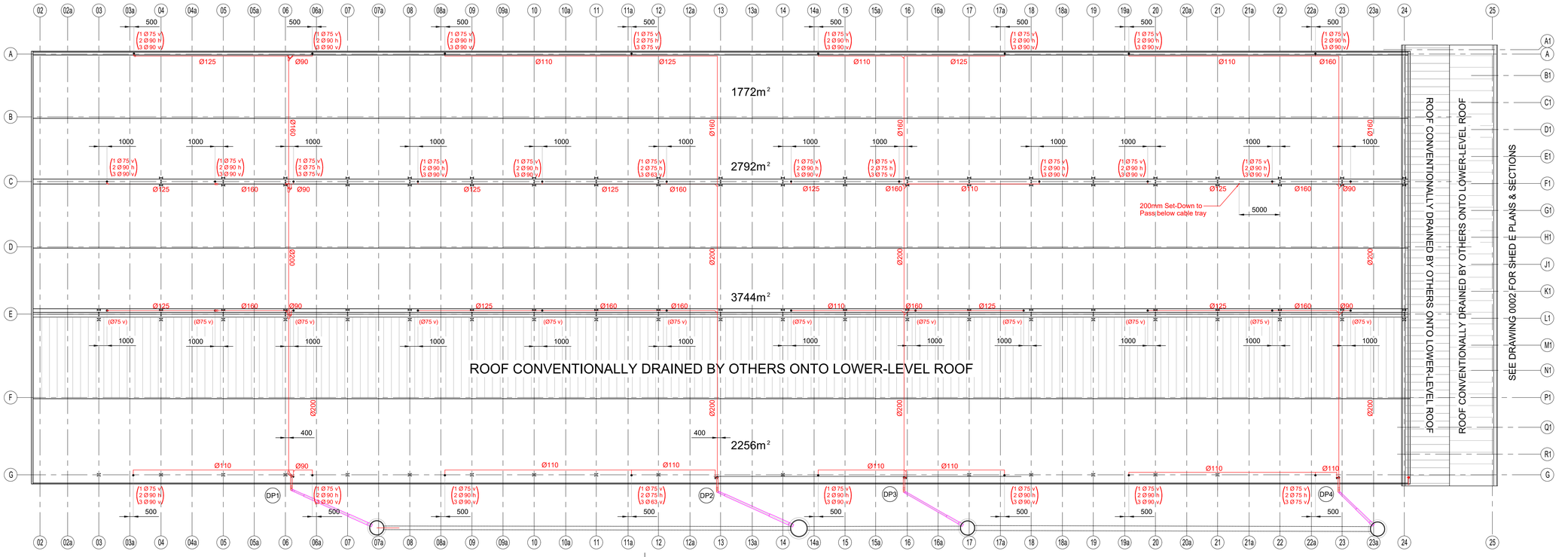
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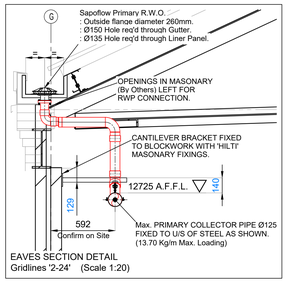
Appendix F

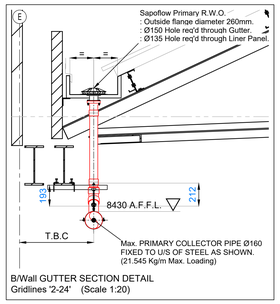
Sapoflow Details (Siphonic Drainage)

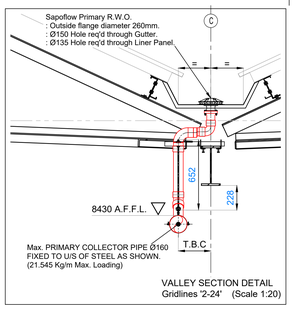
Vented Manhole Details

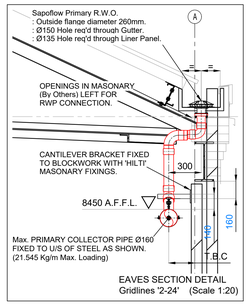
Rev P03 | Copyright © 2026 Curtins Consulting Ltd

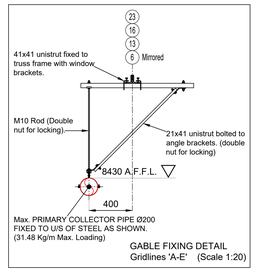


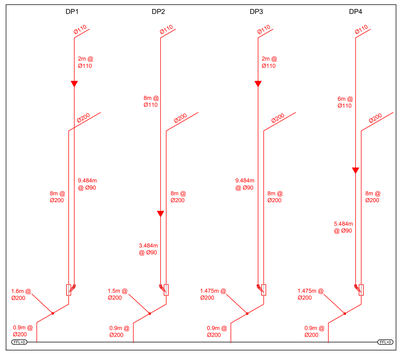


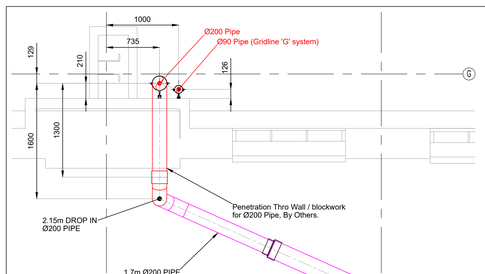


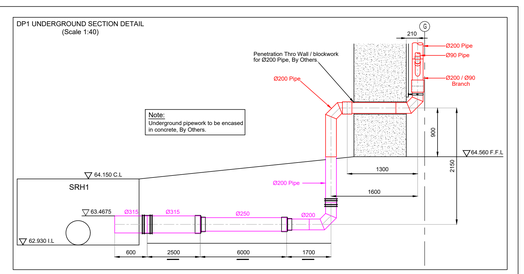


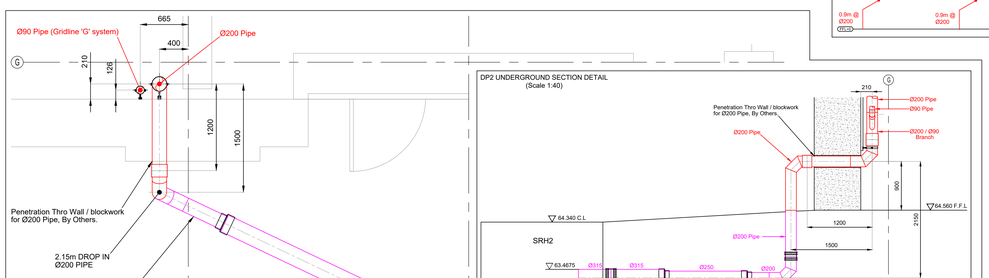












Construction

KEY REFERENCE :–
- Sapoflow Primary System R.W.O.
- Sapoflow Primary System Pipe Route.
- Sapoflow Primary Down Pipe.
- Sapoflow Primary Underground Pipe Route.

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM MAIN STRUCTURE: e.g. Roof Purlin

PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
#50	2000	6.76 Kg	#125	2000	27.40 Kg
#63	2000	9.07 Kg	#160	2000	43.09 Kg
#75	2000	11.68 Kg	#200	2000	62.96 Kg
#90	2000	15.58 Kg	#250	1500	73.71 Kg
#110	2000	21.87 Kg	#315	1500	120.0 Kg

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM UNISTRUT CHANNEL: NOTE: 41x21 UNISTRUT FOR PIPES UP TO AND INCLUDING Ø160, 41X41 UNISTRUT Ø200 & ABOVE.

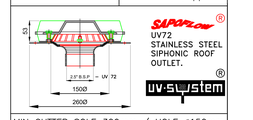
PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
#50	1000	3.38 Kg	#125	1500	20.55 Kg
#63	1000	4.54 Kg	#160	2000	43.09 Kg
#75	1000	5.84 Kg	#200	2000	62.96 Kg
#90	1500	11.69 Kg	#250	2000	98.28 Kg
#110	1500	16.40 Kg	#315	2000	160.0 Kg

RAINFALL INTENSITY 212 mm/hr — #90 DENOTES PIPE DIAMETER. (#63) DENOTES TAIL PIPE DIAMETER.

DOWNPIPE NUMBER.	DIMENSION DATA.	DISCHARGE FLOW (l/s)	DISCHARGE VELOCITY (m/s)
212 mm/hr Primary Systems.			
DP1	Downpipe To F.F.L. See Isometric	155.53	2.34
DP2	Downpipe To F.F.L. See Isometric	155.53	2.34
DP3	Downpipe To F.F.L. See Isometric	155.53	2.34
DP4	Downpipe To F.F.L. See Isometric	155.53	2.34
DP5	Downpipe To F.F.L. See Isometric	77.73	2.90

REV	DATE	DESCRIPTION
C04	14/08/23	UG Details amended
C03	06/07/23	Pipe route along gridline 'F1' on DP4 system amended.
C02	02/06/23	UG Details amended
C01	02/05/23	DP Isometric & UG Section details amended
P07	27/04/23	Pipe sizes & UG details added for DP's 3 & 4
P06	17/03/23	Pipe flipped on Grid 'C', were 'B' side now 'D'
P05	14/03/23	Pipe sizes & UG details added for DP's 1 & 2
P04	21/02/23	Roof Area's added
P03	27/01/23	Sections amended for grids '25' & '29'
P02	27/01/23	Issued for 'Co-Ordination'
P01	19/12/22	Issued for Rainwater Outlet Positions

UNISTRUT CHANNEL PIPE FIXING — FIXING TOP OF DOWNPIPE



MIN GUTTER SOLE 300mm / HOLE ø150mm

SAPOFLOW®
Siphonic Roof Drainage Systems.

SAPOFLOW LIMITED , FALL BANK INDUSTRIAL ESTATE , DODWORTH , BARNSLEY , SOUTH YORKSHIRE , S75 3LS .
Telephone 01226 297200
Fax 01226 204038
E-mail info@sapoflow.com
Website www.sapoflow.com

PROJECT
ANCHORAGE 2
HAMMERSTONE ROAD
SALFORD QUAYS

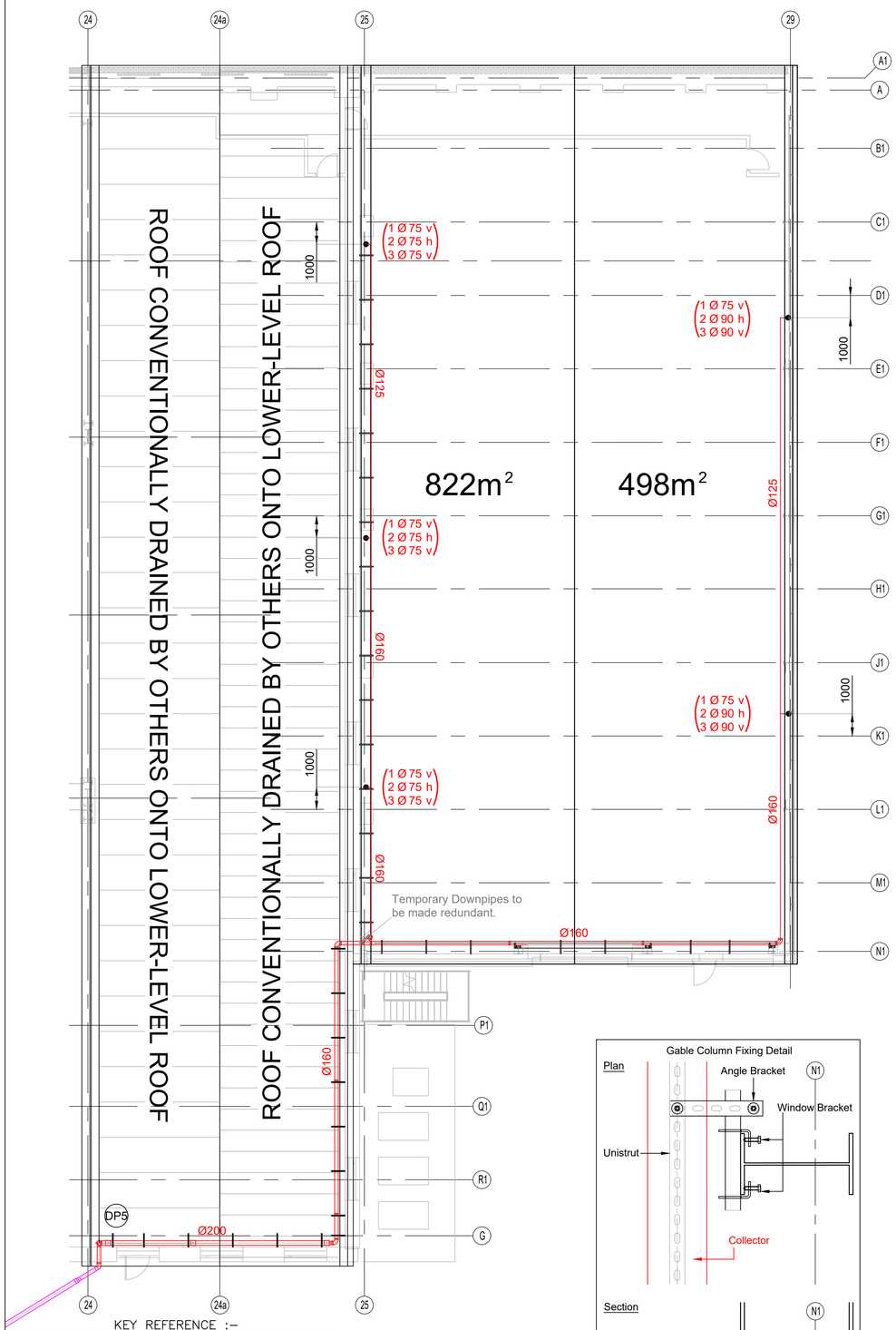
TITLE
SIPHONIC ROOF DRAINAGE PLAN

DESIGN	DRAWN	Checked
W. Beaumont	W.B /AutoCAD.	T.C
SCALE 1:200 @ A0	DATE 16/12/22	
PROJECT No. 21397	DRAWING No. HRD-SAP-01-RL-DR-X-0001	REV C04

Do not scale from this drawing. Use figured dimensions only. All dimensions are to be verified on site.
Pipe, outlet and fitting sizes and dimensions are subject to change to take account of individual hydraulic performance.
The drawing has been produced utilising information supplied by others for which Sapoflow Ltd can accept no responsibility.
Any alterations to the scheme shown are to be notified to Sapoflow Ltd prior to commencement of installation
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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION
In addition to the Hazards / Risks normally associated with the type of work detailed on this drawing, note the following:
1. Please refer to the O&M Manual for additional HSE Information

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Document Ref: SAP-D00111



KEY REFERENCE :–

- ● Sapoflow Primary System R.W.O.
- Sapoflow Primary System Pipe Route.
- ⊗ Sapoflow Primary Down Pipe.
- Sapoflow Primary Underground Pipe Route.

Do not scale from this drawing. Use figured dimensions only. All dimensions are to be verified on site.

Pipe, outlet and fitting sizes and dimensions are subject to alteration in order to ensure optimum hydraulic performance.

This drawing has been produced utilising information supplied by others for which Sapoflow Ltd can accept no responsibility.

Any alterations to the scheme shown are to be notified to Sapoflow Ltd prior to commencement of installation

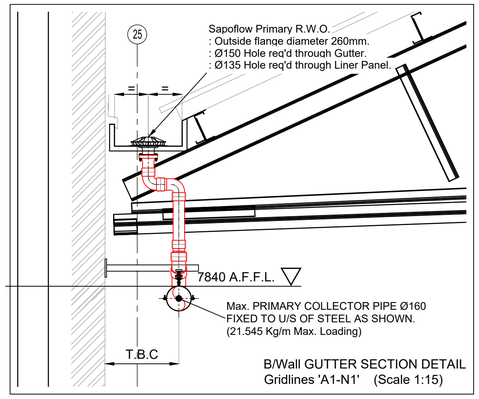
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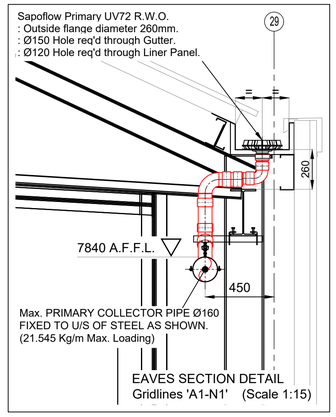
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In addition to the Hazards / Risks normally associated with the type of work detailed on this drawing, note the following:

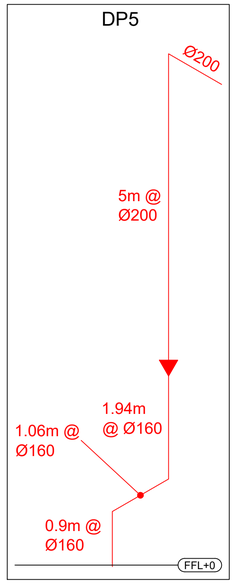
1. Please refer to the O&M Manual for additional HSE Information

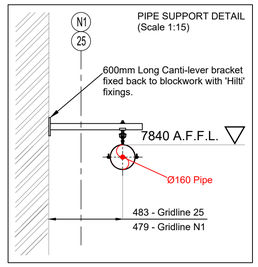


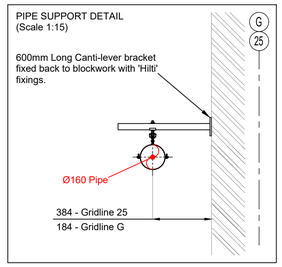
B/Wall GUTTER SECTION DETAIL
Gridlines 'A1-N1' (Scale 1:15)

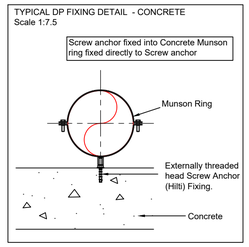


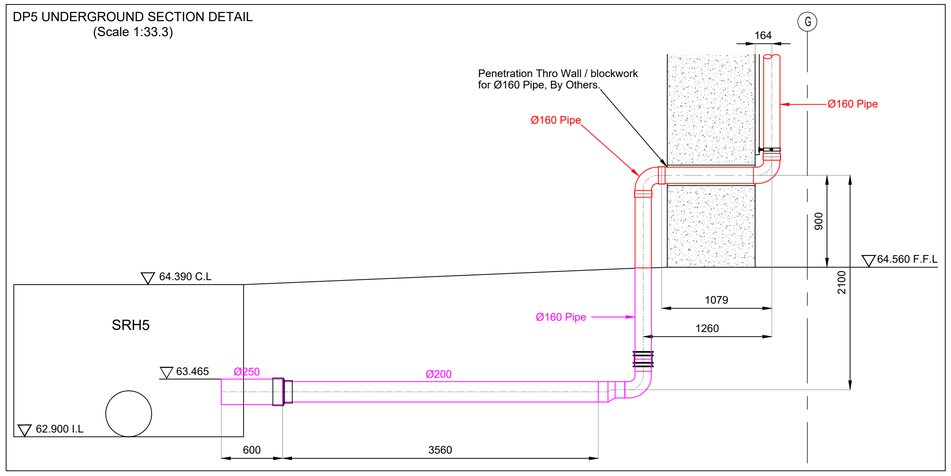
EAVES SECTION DETAIL
Gridlines 'A1-N1' (Scale 1:15)











BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM MAIN STRUCTURE: e.g. Roof Purlin

PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
ø50	2000	6.76 Kg	ø125	2000	27.40 Kg
ø63	2000	9.07 Kg	ø160	2000	43.09 Kg
ø75	2000	11.68 Kg	ø200	2000	62.96 Kg
ø90	2000	15.58 Kg	ø250	1500	73.71 Kg
ø110	2000	21.87 Kg	ø315	1500	120.0 Kg

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM UNISTRUT CHANNEL: NOTE: 41x21 UNISTRUT FOR PIPES UP TO AND INCLUDING Ø160, 41X41 UNISTRUT Ø200 & ABOVE.

PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
ø50	1000	3.38 Kg	ø125	1500	20.55 Kg
ø63	1000	4.54 Kg	ø160	2000	43.09 Kg
ø75	1000	5.84 Kg	ø200	2000	62.96 Kg
ø90	1500	11.69 Kg	ø250	2000	98.28 Kg
ø110	1500	16.40 Kg	ø315	2000	160.0 Kg

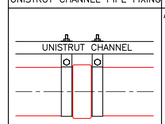
RAINFALL INTENSITY: 212 mm/hr

ø90 DENOTES PIPE DIAMETER.
(ø63) DENOTES TAIL PIPE DIAMETER.

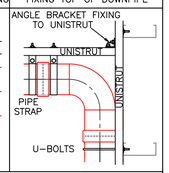
DOWNPIPE NUMBER.	DIMENSION DATA.	DISCHARGE FLOW (l/s)	DISCHARGE VELOCITY (m/s)
212 mm/hr Primary Systems.			
DP5	Downpipe To F.F.L. See Isometric	77.73	2.90

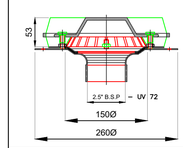
REV	DATE	DESCRIPTION
C05	05/09/23	UG Details amended
C04	14/08/23	UG Details amended
C03	02/06/23	Pipe route extended + UG Details added
C02	21/02/23	Roof Area's added
C01	03/02/23	Issued for Construction

UNISTRUT CHANNEL PIPE FIXING



FIXING TOP OF DOWNPIPE





SAPOFLOW ®
UV72
STAINLESS STEEL
SIPHONIC ROOF
OUTLET.
® uv-system

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SOUTH YORKSHIRE , S75 3LS .

Telephone 01226 297200
Fax 01226 204038
E–mail info@sapoflow.com
Website www.sapoflow.com

PROJECT
ANCHORAGE 2
HAMMERSTONE ROAD
SALFORD QUAYS

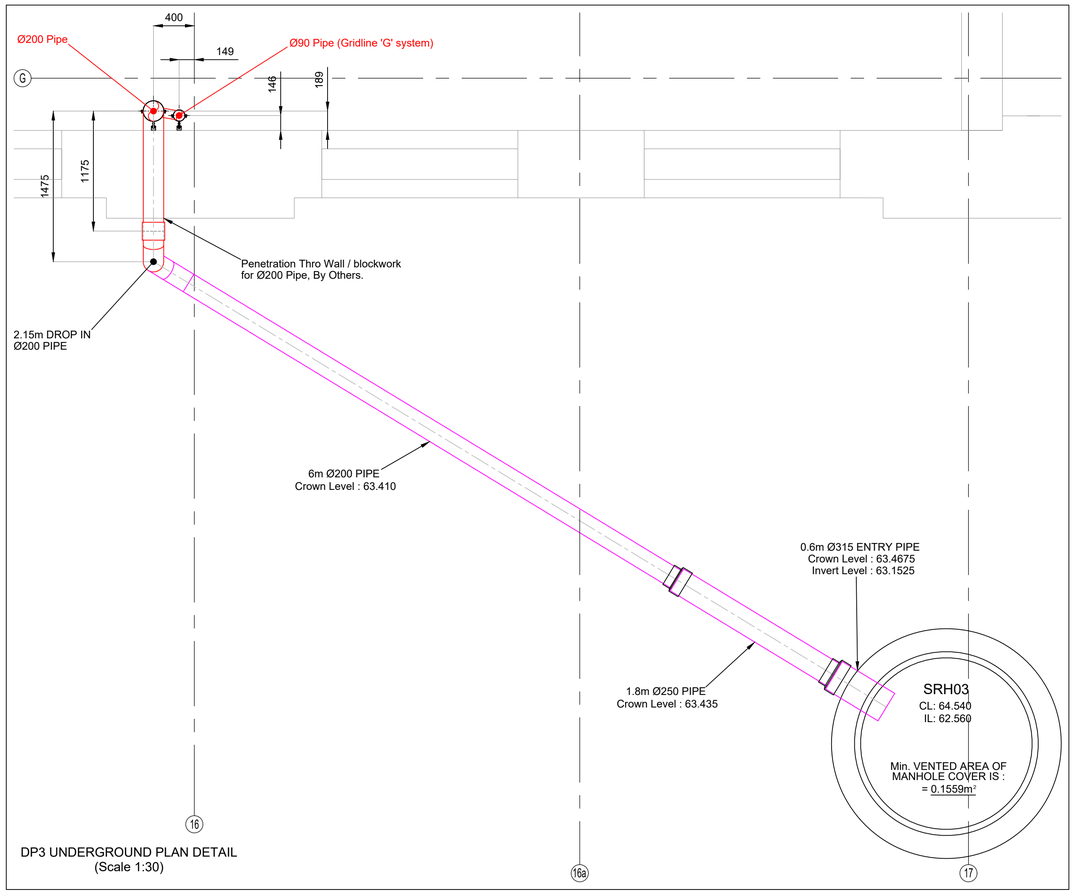
TITLE
SHED E
SIPHONIC ROOF DRAINAGE PLAN

DESIGN	DRAWN	Checked
W. Beaumont	W.B /AutoCAD.	T.G

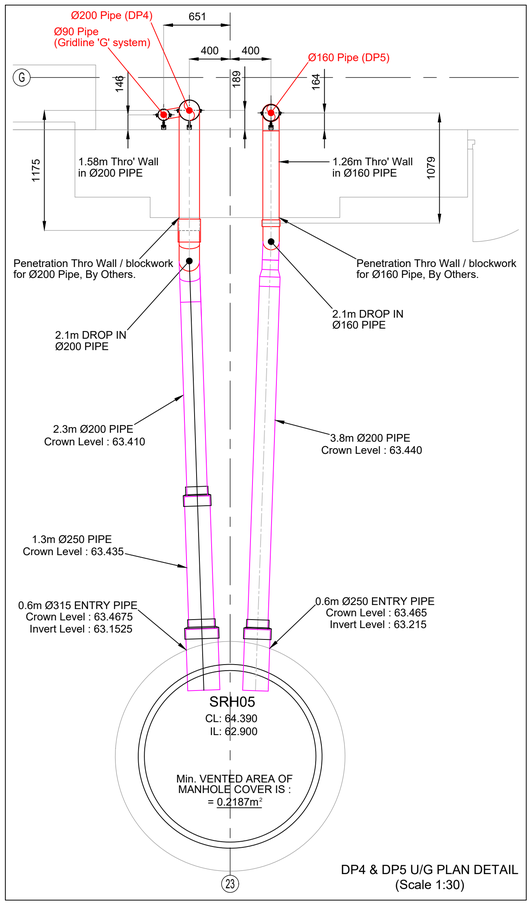
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PROJECT No.	DRAWING No.	REV
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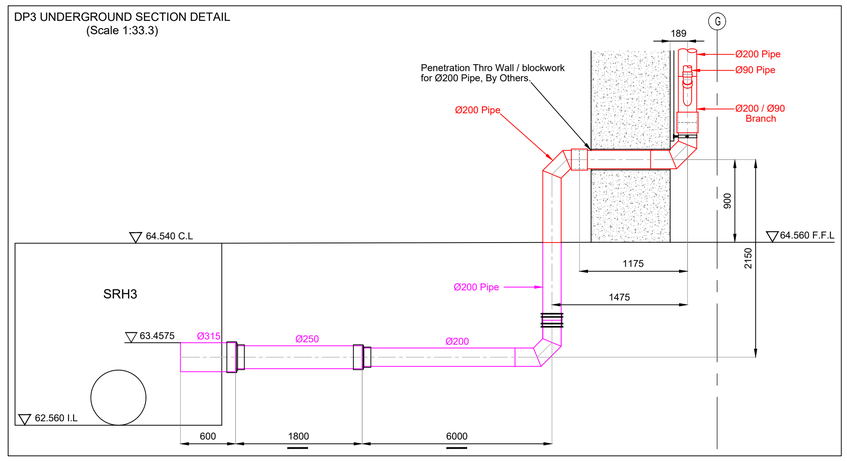
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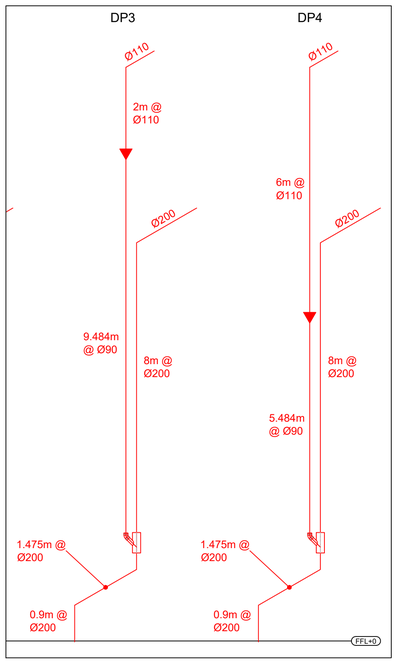


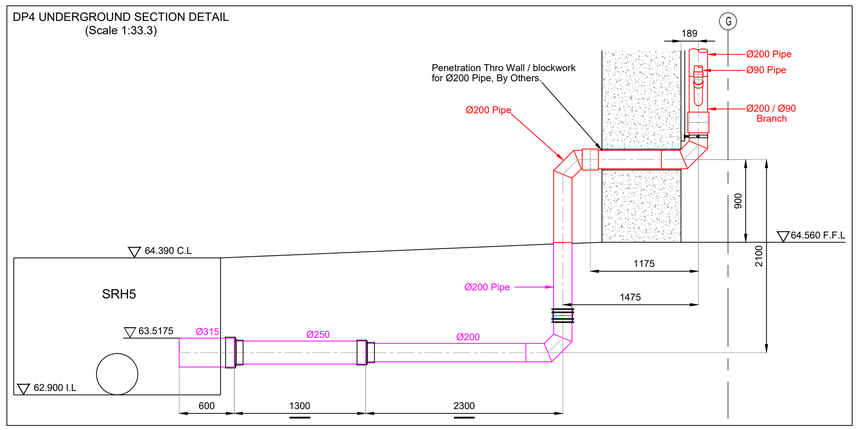
DP3 UNDERGROUND PLAN DETAIL
(Scale 1:30)



DP4 & DP5 U/G PLAN DETAIL
(Scale 1:30)







Construction

KEY REFERENCE :–

- Sapoflow Primary System R.W.O.
- Sapoflow Primary System Pipe Route.
- ⊗ Sapoflow Primary Down Pipe.
- Sapoflow Primary Underground Pipe Route.

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM MAIN STRUCTURE: e.g. Roof Purlin

PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
ø50	2000	6.76 Kg	ø125	2000	27.40 Kg
ø63	2000	9.07 Kg	ø160	2000	43.09 Kg
ø75	2000	11.68 Kg	ø200	2000	62.96 Kg
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ø110	2000	21.87 Kg	ø315	1500	120.0 Kg

BRACKET SPACINGS & LOADINGS FOR H.D.P.E. PIPE SUPPORTED FROM UNISTRUT CHANNEL: NOTE: 41x21 UNISTRUT FOR PIPES UP TO AND INCLUDING Ø160, 41X41 UNISTRUT Ø200 & ABOVE.

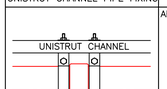
PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET	PIPE DIAMETER (mm)	BRACKET SPACINGS (mm)	LOADING PER BRACKET
ø50	1000	3.38 Kg	ø125	1500	20.55 Kg
ø63	1000	4.54 Kg	ø160	2000	43.09 Kg
ø75	1000	5.84 Kg	ø200	2000	62.96 Kg
ø90	1500	11.69 Kg	ø250	2000	98.28 Kg
ø110	1500	16.40 Kg	ø315	2000	160.0 Kg

RAINFALL INTENSITY 212 mm/hr — ø90 DENOTES PIPE DIAMETER. (ø63) DENOTES TAIL PIPE DIAMETER.

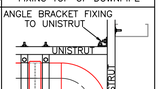
DOWNPIPE NUMBER.	DIMENSION DATA.	DISCHARGE FLOW (l/s)	DISCHARGE VELOCITY (m/s)
212 mm/hr Primary Systems.			
DP3	Downpipe To F.F.L. See Isometric	155.53	2.34
DP4	Downpipe To F.F.L. See Isometric	155.53	2.34

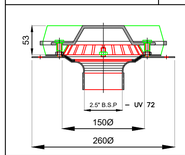
REV	DATE	DESCRIPTION
C05	05/09/23	UG Details amended
C04	14/08/23	UG Details amended
C03	10/07/23	Status amended on portal
C02	02/06/23	UG Details amended
C01	02/05/23	DP Isometric & UG Section details amended
P01	03/02/23	Issued for Comment/Approval

UNISTRUT CHANNEL PIPE FIXING



FIXING TOP OF DOWNPIPE





SAPOFLOW®
UV72
STAINLESS STEEL
SIPHONIC ROOF
OUTLET.
UV-SYSTEM®

MIN GUTTER SOLE 300mm / HOLE ø150mm

SAPOFLOW®
Siphonic Roof Drainage Systems.

SAPOFLOW LIMITED ,
FALL BANK INDUSTRIAL ESTATE ,
DODWORTH , BARNSLEY ,
SOUTH YORKSHIRE , S75 3LS .
Telephone 01226 297200
Fax 01226 204038
E–mail info@sapoflow.com
Website www.sapoflow.com

PROJECT
ANCHORAGE 2
HAMMERSTONE ROAD
SALFORD QUAYS

TITLE
SIPHONIC UNDERGROUND DRAINAGE DETAILS

DESIGN	DRAWN	Checked
W. Beaumont	W.B /AutoCAD.	T.G

SCALE	DATE
1:30	27/04/23

PROJECT No.	DRAWING No.	REV
21397	HRD–SAP–01–RL–DR–X–0003	C05

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Siphonic roof drainage association
UK Representative of UV-System
Registered in England No. 2717962
Document Ref: SAP.0001(1)

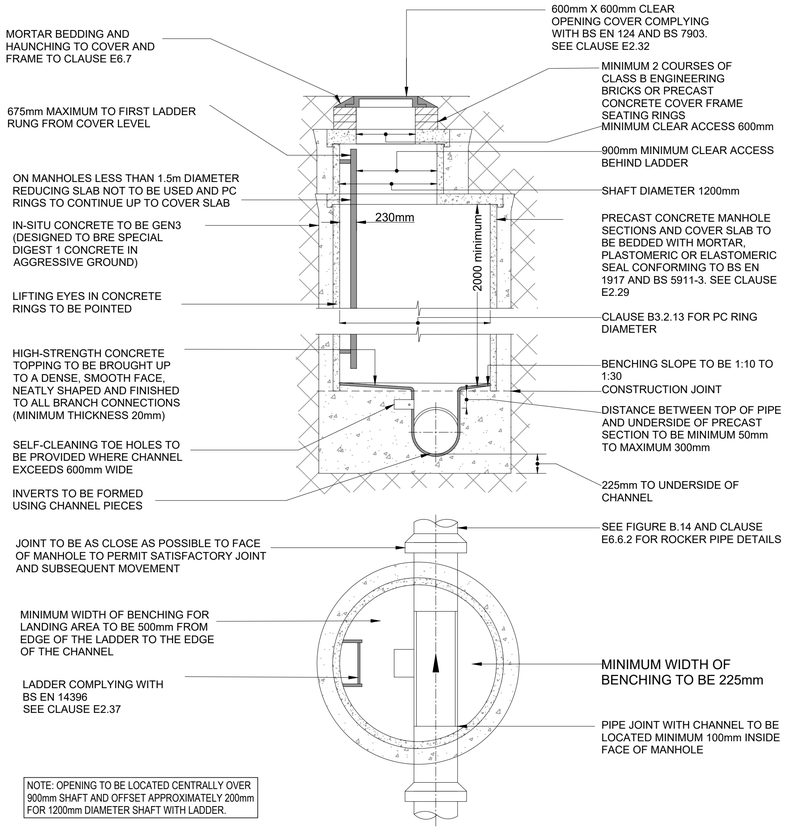
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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

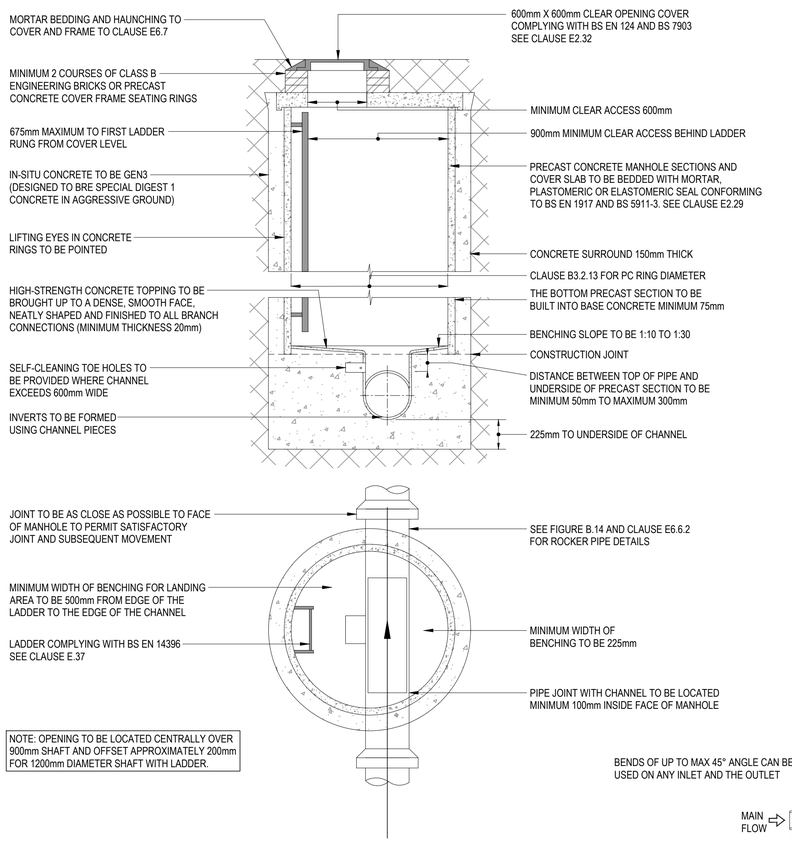
In addition to the Hazards / Risks normally associated with the type of work detailed on this drawing, note the following:

1. Please refer to the O&M Manual for additional HSE Information



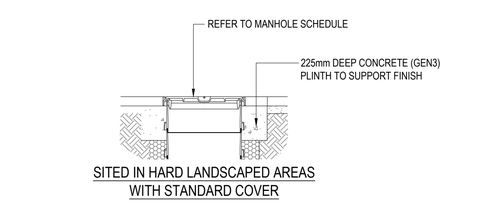
NOTE: OPENING TO BE LOCATED CENTRALLY OVER 900mm SHAFT AND OFFSET APPROXIMATELY 200mm FOR 1200mm DIAMETER SHAFT WITH LADDER.

TYPICAL MANHOLE DETAIL - TYPE A1
(DEPTH FROM COVER TO SOFFIT OF PIPE 3m TO 6m)

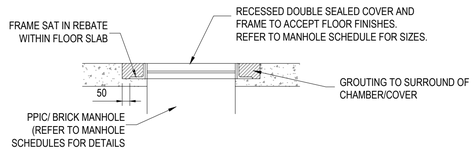


NOTE: OPENING TO BE LOCATED CENTRALLY OVER 900mm SHAFT AND OFFSET APPROXIMATELY 200mm FOR 1200mm DIAMETER SHAFT WITH LADDER.

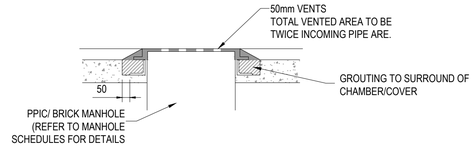
TYPICAL MANHOLE DETAIL - TYPE A2
(DEPTH FROM COVER TO SOFFIT OF PIPE 3m TO 6m)



SITED IN HARD LANDSCAPED AREAS
WITH STANDARD COVER

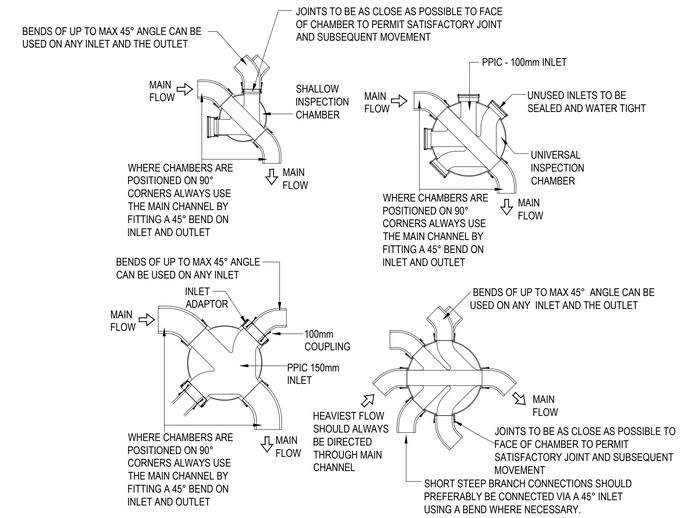


INTERNAL COVER DETAIL

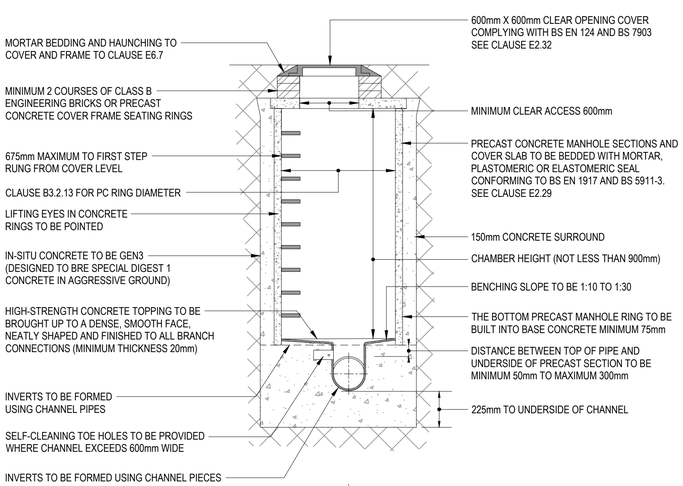


VENTED COVER DETAIL

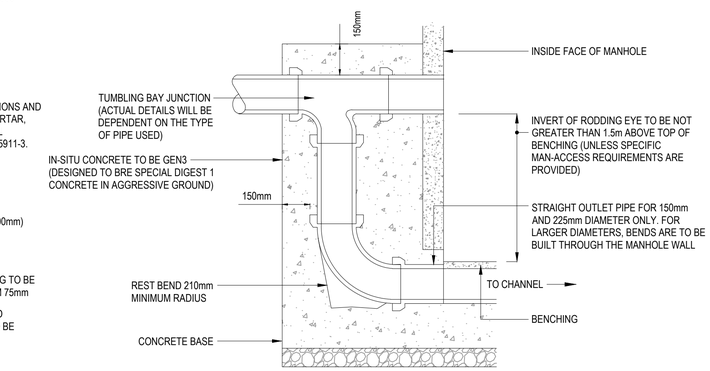
TYPICAL INSPECTION CHAMBER COVER DETAILS



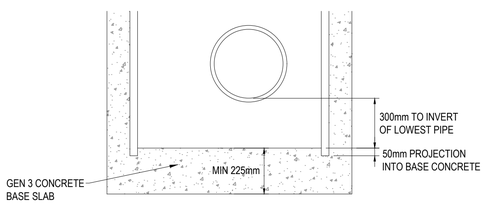
INSPECTION CHAMBER BASE DETAILS



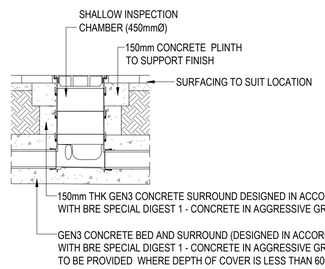
TYPICAL MANHOLE DETAIL - TYPE B
(MAXIMUM DEPTH FROM COVER TO SOFFIT OF PIPE 3.0 m)



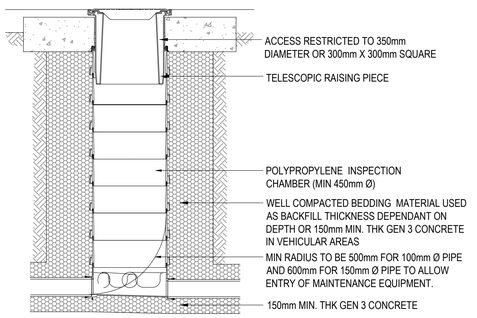
EXTERNAL VERTICAL BACKDROP



CATCH PIT DETAIL



SHALLOW INSPECTION CHAMBER
MAX DEPTH 0.6m



DEEP INSPECTION CHAMBER
DEPTHS BETWEEN 1.2m AND 3.0m

TYPICAL INSPECTION CHAMBER DETAILS - PPIC

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
4. FOR GENERAL NOTES REFER TO DRAWING.

Rev:	Description:	Date:	By:	Chkd:
C02	STAGE 5 ISSUE	24.09.24	JC	ATL
P05	VENTED COVER DETAIL ADDED	29.04.24	JC	ATL
P04	UPDATED FOR NEW TENDER	02.02.24	ATL	MW
C01	CONSTRUCTION ISSUE	23.09.22	ATL	MW
P03	STAGE 4 ISSUE	09/04/21	MW	MW
P02	STAGE 3 ISSUE	18/11/20	MW	MW
P01	STAGE 3 ISSUE	29/01/19	MW	CG

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Status:
STAGE 5

Project:
HAMMERSTONE ROAD DEPOT

Drg Title:
DRAINAGE DETAILS
SHEET 1

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29/01/19	MW	MW	CG
	Scale: 1:NTS				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev.

HRD - CUR - XX - ZZ - DR - C - 92520 -C02

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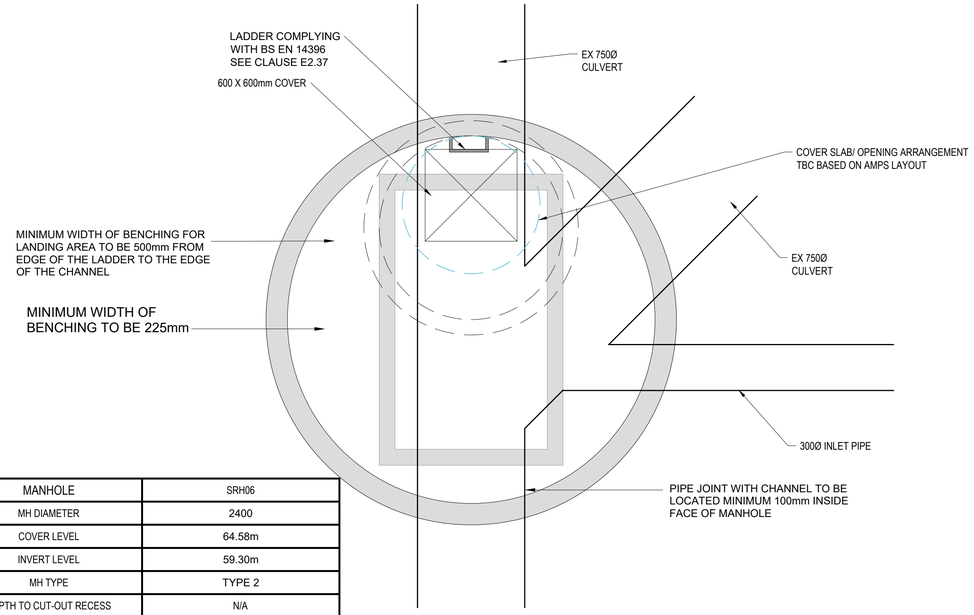
Appendix G

Connection Manhole Details

Connection Manhole Method Statement

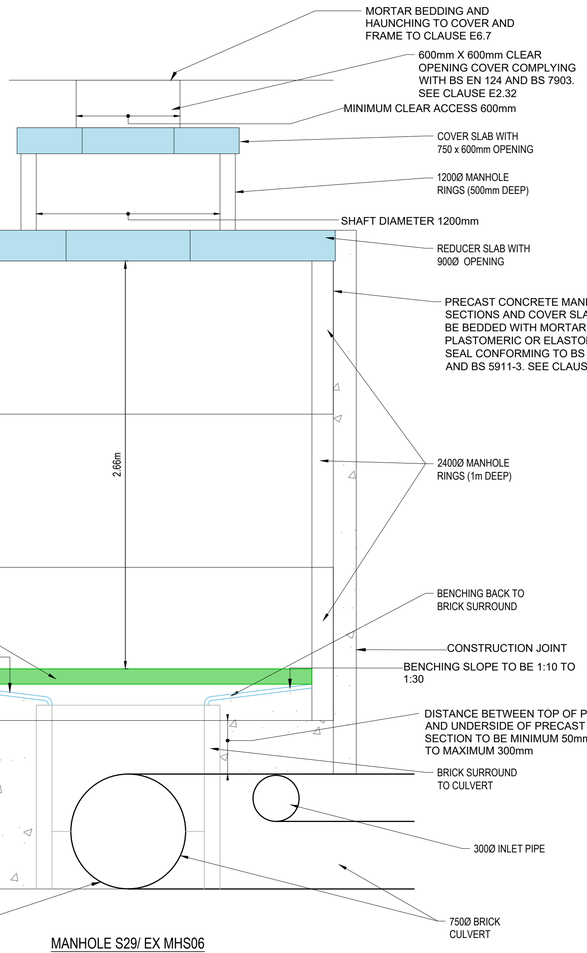
Connection Manhole Risk Assessment

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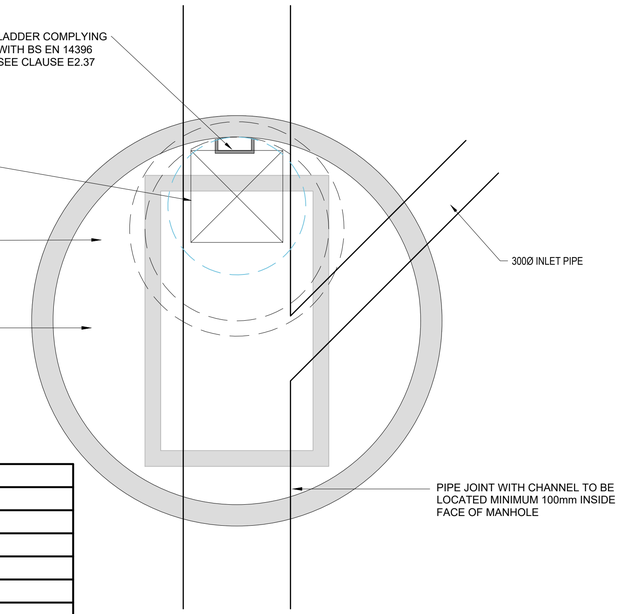


MANHOLE	SRH06
MH DIAMETER	2400
COVER LEVEL	64.58m
INVERT LEVEL	59.30m
MH TYPE	TYPE 2
DEPTH TO CUT-OUT RECESS	N/A
DEPTH TO SOFFIT	4530mm
COVER SIZE	600x600mm
COVER DEPTH	150mm
COVER SPEC	D400
LADDER OR DOUBLE STEPS	LADDER
SAFETY CHAIN	N/A - AMPS SYSTEM
SAFETY RAILS	N/A - AMPS SYSTEM
INVERT ACCESS STEP	N/A - AMPS SYSTEM
HOLE SIZE IN COVER SLAB	750X600 ECCENTRIC OPENING

MANHOLE S29/ EX MHS06
PLAN VIEW

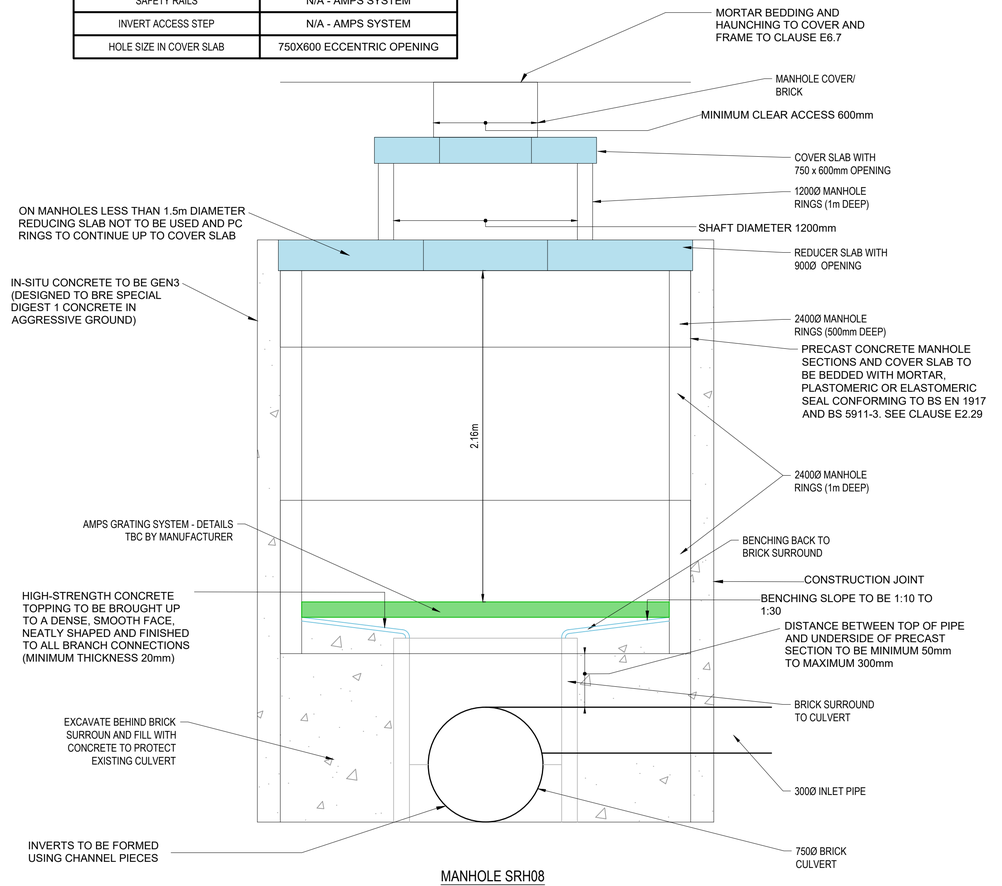


MANHOLE S29/ EX MHS06
SECTION



MANHOLE	SRH08
MH DIAMETER	2400
COVER LEVEL	64.57m
INVERT LEVEL	59.74m
MH TYPE	TYPE 2
DEPTH TO CUT-OUT RECESS	N/A
DEPTH TO SOFFIT	4080mm
COVER SIZE	600x600mm
COVER DEPTH	150mm
COVER SPEC	D400
LADDER OR DOUBLE STEPS	LADDER
SAFETY CHAIN	N/A - AMPS SYSTEM
SAFETY RAILS	N/A - AMPS SYSTEM
INVERT ACCESS STEP	N/A - AMPS SYSTEM
HOLE SIZE IN COVER SLAB	750X600 ECCENTRIC OPENING

MANHOLE SRH08
PLAN VIEW



MANHOLE SRH08
SECTION

GENERAL NOTES:

1. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.

Rev:	Description:	Date:	By:	Chkd:
P03	ANNOTATION ADDED	29.04.24	JC	ATL
P02	UPDATED FOR NEW TENDER	02.02.24	ATL	MW
P01	ISSUED FOR INFORMATION	23.11.23	KS	ATL

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Status:
STAGE 5

Project:
HAMMERSTONE ROAD DEPOT

Drg Title:
DRAINAGE DETAILS
SHEET 8
CONNECTIONS TO CULVERT

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	27/11/23	KS	KS	ATL
	Scale: 1:20				

Project Code:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
HRD	- CUR	- XX	- ZZ	- DR	- C	- 92-528	- P03

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S22	METHOD STATEMENT

CONTRACT:	Hammerstone Road	CONTRACT NO:	232	DATE:	30.10.23.

METHOD STATEMENT No.	014	REV.	B
TITLE	Connection Manholes	LOCATION	MH S06 and MH S08
START DATE	30.10.23.	DURATION	36 weeks overall duration

ACCEPTANCE

1. All operatives to wear appropriate PPE for task ahead.
2. If unsure of any aspect of the works, cease works and seek advice from your supervisor, if systems of work change, then RAMS to be updated in accordance with the change.
3. All operatives to have read, understood and signed the method statement.

DESCRIPTION AND METHODOLOGY OF WORKS

Prior to Works

1. Operatives' inductions will be booked in on the M-Site System by the Adana Manager the previous day.
2. Operatives will complete the online pre-enrolment prior to arriving on site.
3. Morgan Sindall site induction will be attended for Adana personnel before any works commence.
4. Working hours will be 7.30 until 17.00.
5. Barriers will be in place outside to segregate the works area.
6. Permit to Excavate will be in place for any excavation works.
7. Area will be CAT scanned and any services exposed by hand.
8. Daily Risk Assessments / Briefings will be carried out by the manager/ supervisor at the start of each day.
9. PPE will be Boots, Vest, Hardhat, Gloves and Glasses as standard.
10. Every Three weeks, our Safety Officer will carry out an on- site safety report.

Access, Deliveries and Storage

11. Access to Site will be via the Morgan Sindall traffic route through the MCC car park.
12. All deliveries will be co-ordinated with Morgan Sindall and the MCC Gate Man at the morning briefing.
13. We will form a compound / Lay down area as per agreed Location Plan
14. Material storage area will be segregated with Barriers.
15. Deliveries will be always supervised by a competent Banks man (entering, unloading and leaving).
16. All deliveries where people must enter the back of the wagon must have edge protection set up. No operatives are to climb onto the back of a delivery wagon without edge protection.
17. Some materials or items will be off loaded with a Hiab before offloading can commence, a copy of the drivers Hiab certificate, will be available in his cab.
18. Where deliveries are to be offloaded with the excavator, lifting plan will be read and understood by all involved.
19. When loading materials into excavations, operatives must remain out of the excavation, until the materials are within 500mm of the bottom of the excavation.
20. Work and Storage areas will be thoroughly tidied as required and at the end of each shift.

Site Contacts:

Site Manager: Neil Kirton [redacted]

General Rules

1) Permit to dig obtained and cat scan of area to be carried out prior to breaking ground by Trained operatives.
2) If excavations are deemed to bit at risk of containing asbestos, a Watching Brief will be present (trained in asbestos awareness) to comply with the Asbestos Management Plan.
3) Any known services to be exposed by hand or with Vac Ex, no excavation within 500mm of known or identified services.
4) Excavation inspections carried out daily prior to commencing.
5) Safe start briefing to be carried out daily.
6) Excavations will be segregated with double clipped Herras fencing with warning signs.
7) No operatives are to be below materials being lifted or lowered by the excavator.
8) Stop blocks must be used where wheeled plant or vehicles are within 2m of the trench.
9) Excavations will only be entered by a fixed of propritry access.
10) Any entering of excavations will be carried out to the rescue plan below.
11) All trench shoring including the construction of proprietry systems will be used by operatives familiar with Groundforce Systems.
12) Trench boxes and manhole boxes will be constructed to design in a designated and segregated area and the carried to work face by excavator as required.
13) Confined spaces will only be entered by trained operatives with full Gas Detection and emergency escape kit.
14) All safety apparatus will be calibrated, with certificates stored in the Adana files.
15) Where Edge protection cannot be used, any operative working at the side of the excavation must be wearing a harness, connected to a solid fixing capable of holding or weighing a minimum of 250KG
16) This Method statement will be read in conjunction with the Excavator Lifting plan for the excavator carrying out the works.

Live Services: The areas we are working could well have very shallow existing services.

1) Service drawings will be reviewed by Supervisor, Engineer and site team prior to commencing works in each area.
2) The services will be marked by the site engineer but, this is only a guidance and may not be the true location.
3) The CAT scan and generator will be used to further determine the location of the known service.
4) Any street light columns or other utility pits nearby will be opened and investigated to determine other services which may not be on the drawings.
5) All services known or, picked up in further surveying, will be marked on the ground.
6) We will then expose any services within our excavations by hand by operatives wearing fireproof overalls and with insulated tools.
7) Overhead services will be pointed out to all workers involved along with a tool box talk. will
8) Where hardstanding's are above and, we cannot excavate by hand, we will break the surface by mechanical mans but a minimum of 500mm from the location, either side of the line of location.
9) We will remove the hard standings and excavate further down to form two pits either side of the service.
10) Hand dig will then continue sideways from inside the pit, until the service is exposed.
11) Once exposed, the Adana Manager and Morgan Sindall Manager will be invited to inspect.
12) At this point works will be held until the Managers advise further.

Removal of Hard Standings (Some of our excavations will require the removal of existing tarmac and concrete)

1. Permit to excavate must always be in place even when only cutting and removing surfaces.
2. Area must always be segregated with barriers or herras with signage in place.
3. When cutting, full dust suppression must be in place either vaccumn or water.
4. Dust must be reviewed constantly during works.
5. Anybody working directly at the point of works must wear dust masks and goggles.
6. During cutting, breaking and peckering, a mandatory hearing protection zone will be set up.
7. In this zone, ear defenders must be worn by everybody.

Addendum 1 Minimal Traces of Asbestos found to be in the ground.

1. Manager / Engineer to advise on areas where asbestos traces are thought to be present.
2. Traces are within the ground so are not Airbourne however, testing of the air will be carried out during works as a check.
3. Operatives in direct contact with the material will wear paper suits, / wet suits, wellies, and half face masks.
4. At the end of works including prior to breaks and entering the welfare area, the PPE will be cleaned down using the jetwash at the container.
5. A watching brief, with asbestos awareness training will be in attendance with excavation works to look out for any visible amounts of asbestos.
6. If any visible amounts are found, works will be stopped until they can be removed safely by a specialist contractor.
7. No cross contamination of muck into the welfare or office area.
8. Operatives will then remove the PPE and store at the designated area provided at the container.
9. Operatives to take extra care cleaning hands and face prior to eating or leaving site.
10. When returning to the works, the operatives will put their PPE on again.
11. Any damaged PPE or PPE that cannot be cleaned to be replaced before returning to site.
12. Muck being transported will be loaded onto the dumper via the excavator. If the excavated material is dry, we will dampen down with the jetwash.
13. Dumper will only be half filled when transporting hazardous muck to further avoid spillage.
14. Muck storage areas will be fenced off and covered over with visqueen at the end of each shift or during rain.
15. At the end of each shift, all plant will be decontaminated with the jet wash.
16. Work Area will be dampened down and cleaned at the end of each shift or as required.

Sequence of Works for Manholes

1. Location of culvert and connecting manhole will be set out by the engineer.
2. Engineer will give assumed level of the top of the culvert.
3. Excavator will excavate the first 1m of dig to the plan of the proprietary manhole box to be used
4. Proprietary manhole box will built at an agree location and then lifted over and installed in the excavation.
5. Excavation will continue with the manhole box being pushed deeper, as the excavation within, continues.
6. As we approach a level of 1m from top of pipe, hand digging will be introduced to prevent damage to the brick culvert.
7. Proprietary access system will be installed, and the excavation will be treated as a confined space: with operatives having full escape kit and lanyards attached to a davit arm system attached to the top of the manhole box.
8. Dewatering system will be set up as below section
9. **Confined space Permit obtained from Morgan Sindall and Confined space RAMS refereed to**

10. Operative will excavate 500mm slip trench across the footprint of the box and then, the excavator will be used to reduce the surround.
11. This will continue until the operative finds the top of the culvert.
12. Once found, the top and sides of the brick culvert will be exposed by hand
13. The excavator bucket can be used to load with excavated material and remove from the box.
14. Brickwork will be broken using handheld breakers until the top half of the culvert is removed to the dimensions of the new manhole.
15. Extra care will be taken to avoid bricks falling into the culvert although and fallen debris will be removed from the channel when safe to do so.
16. There is no requirement for over pumping as the channel of the culvert is to remain in place however, we will review the weather forecast to avoid carrying out the works when the culvert is at its fullest.
17. We will excavate the sides of the culvert down to underside, to the full width of the new manhole and then fill with concrete to the bottom half of the culvert (underside of inlet pipes) this will form the manhole base.
18. Once the bottom base is cured, we will continue to install the inlet pipe stubs and form the full manhole base including benching of the channels.
19. We will then install the concrete rings, any accessories and then the cover slab.
20. The manhole will then be surrounded and backfilled, as the manhole box is pulled out of the ground.

EMERGENCY PROCEDURE

- Operatives working in trenches will be attached by Harness and Lanyard to the davit arm system if, there are no obstructions above his working area such as services and struts.
- If there are obstructions above, then the operative can disconnect as long as a second operative (also wearing a harness) is present to connect him if required.
- If an operative is required to be removed from the trench due to illness or an incident, then the following procedure will be implemented: If the operative can be made safe and secure in the trench until the emergency services can attend then the operative will remain in the trench. Should the operative be required to be removed from the trench immediately then the operative will be lifted with the aid of the davit arm and then moved to a position of safety by a number of operatives at the top of the excavation.
- If this cannot be done with the davit arm, then the harness will be attached to the lifting point on the excavator and under the direction of the top man the excavator will be used to carefully lift the operative from the trench. Should the emergency services be in attendance then the operative will be placed on a stretcher and the excavator used to lift the stretcher from the trench. All lifting equipment will have a 6-month dated test certificate.

Dewatering Ground:

Silt Mitigation

- Any groundwater to be discharged from site will be done so via a silt trap water treatment system (Silt Buster Tank in our case)
- The Silt Buster Water Treatment System will be set up at a location agreed with Morgan Sindall
- The outflow will be connected to a surface water location, such as a gulley or manhole, agreed with Morgan Sindall.
- Any dewatering or over pumping pumps must be discharged into the tank.
- Silt buster tank will be inspected at the start and end of each shift as part of our daily plant inspections.
- Tank will be emptied as per manufacturers guidelines.
- Silt will be carted off site by the muck away contractor.
- Any waste transfer documents will be presented to Morgan Sindall prior to works and, at the end of the project.

Over pumping

- We will try to carry out connection works in drier conditions however, over pumping may still be required to bypass any existing flow.
- Pump supplier will be invited to site to look at works and, determine the size of the pump required.
- Pump will either be 110V or powered by HVO dependant on size.

- The pump will be set up at an access point upstream from the connection or dry working area.
- Outlet pipe connected to the Silt buster and from there, into an access point downstream from the connection or dry working area.
- A bund will be installed at the inlet to the connection or dry working area to stop incoming water while works are carried out.
- Pump will be an automatic (gravitational pump) which will only activate when water fills up.
- The pump will be powered by a generator so that it can be left on overnight.
- The pump system will be checked at the start and end of each shift as part of our daily plant inspections.

Dry Work Area

- To remove groundwater and keep a dry working area, we will use submersible pumps.
- A small sump (circa 300 x 300 x 300mm) will be hand excavated in the bottom of the excavation to allow water to pond there.
- The submersible pump will be sat into the sump.
- Where sumps cannot be formed such as on concrete manhole, we use puddle pumps.
- These pumps will be either connected toa 6kva generator or local 110v supply.
- The pump will pump water out of the area via a 50mm flexible outlay hose laid out over the ground and connected into the silt buster.

Working with Mobile Plant and remaining in the Safety Zones:

• Movement of plant on site, outside of segregated wok zones, to be controlled by trained and competent banksman
• Planned and known Plant movements to be made aware to operatives at daily safe start and any specific pedestrian exclusion zones identified and communicated. Appropriate on-site exclusion zones to be implemented around operational machines/excavators at all times and managed and maintained by plant banksman and supervisor
• Plant to be operated by trained and competent operatives
• Loose fitting jackets shall be taken off by the machine operator and hung safely to the rear of the cab but so as not to obscure visibility or interfere with any machine controls BEFORE the machine or plant engine is switched on.
• Keys must never be left in the ignition when not seated in plant.
• Loose fitting clothing must not be worn by machine operators when in the cab. If large coats are worn these should be 'bomber style jackets.' The sleeves and midriff should be elasticated or tight fitting, and the jacket should remain zipped up to prevent potential interference with controls.
• There must be no banksman or other personnel within the slewing or operational area of the machine when the operator is first accessing his cab and starting the machine/positioning himself.
• Machine banksmen and other working personnel must always remain at a safe distance (out of the slew reach of the machine) from operating plant and it must be ensured that their movements are clearly known to the operator.
• If anyone requires entering the working area, they must signal the plant operator beforehand and confirm acknowledgement by the driver. If there is anyone in the working area of the plant the excavator must be stopped, and the dead man's handle engaged.
• If anyone is required to work near to the excavator, a position of safety must be established prior to operations commencing. Positive confirmation that the operative is in this location must be established before any plant movements are undertaken.
• Always turn off the engine and remove the keys from the cab before leaving the machine.
• Plant to have warning beacons and horns in good working order and pre use checks recorded

Plant

1. The excavator will contain a plant file with copies of certificates for the excavator, roller and dumper
2. Each day inspections will be carried out, by the excavator driver for each of this plant and the check sheet filled in and signed. The sheets will be kept in the plant file until the end of the week, and then handed to the Adana Site Manager.
3. A copy of the permit to excavate will be kept in the plant file, in the excavator cab at all times.
4. A fuel bowser will be used to store fuel, a spill kit must be kept on the side of the bowser and a drip tray must be beneath the hose while any refuelling of plant takes place.
5. COSHH Cage will be sat on a plant nappy.

6. Fuel storage to be locked at all times.
7. The COSHH sheet for diesel and petrol will be read and understood before any refuelling takes place.
8. Any smaller plant for mixing, cutting, breaking and drilling will be fully certified with copies kept in the site stores.
9. Only competent operatives will use each item of plant.
10. The HAVs trigger time for any items of plant must be adhered to and, any operative using plant must record their personnel trigger times on the HAVs Record Sheet

LIST OF MATERIALS TO BE USED

6F2, MOT Type 1, Drainage Materials, Ducting Materials, Concrete, COSHH Materials as below

COSHH Register		
Assessment Number	**Product**	**Use**
001	Gas Oil	Fuelling large plant
002	Ready Mix Concrete	Slabs, Surrounds, Foundations
003	Unleaded Petrol	Fuelling small plant
004	2 Stroke	Fuelling small plant
005	Pipe Grease	Lubricating Pipes and ducts
006	Cement / Mortar	Brickwork / Ironworks / General Mixing

LIST OF ANY SUBCONTRACTORS TO BE USED	***Method Statement approved***		***Method Statement attached***	
	YES	**NO**	**YES**	**NO**

EQUIPMENT TO BE USED	**YES**	**NO**	**EQUIPMENT TO BE USED**	**YES**	**NO**
LIFTING	✓		**NON MECHANICAL HAND TOOLS**	✓	
MECHANICAL HOIST		✓	**MECHANICAL TOOLS**	✓	
MEWP		✓	**EXCAVATION SHORING**	✓	
LADDER	✓		**TASK LIGHTING**		✓
HOIST		✓	**CAT**	✓	
TEST EQUIPMENT	✓		**VENTILATION / EXTRACTION EQUIPTMENT**	✓	✓
TASK LIGHTING	✓		**LIFTING ACCESSORIES**		✓
SCAFFOLDING		✓	**MECHANICAL PLANT (*State Below)***	✓	
PUMPS	✓				

			Excavator, Dumper, Roller		

RISK ASSESSMENTS					
HAZARD IDENTIFICATION	**YES**	**NO**	**HAZARD IDENTIFICATION**	**YES**	**NO**
SLIPS AND TRIPS	✓		COSHH	✓	
MANUAL HANDLING	✓		**NOISE**	✓	
HAND TOOLS	✓		**WORK AT HEIGHT**	✓	
EXCAVATIONS	✓		**DUST/FUMES**	✓	
MACHINERY/LIFTING EQUIPMENT		✓	**LIGHTING**		✓
FIRE	✓		**3RD PARTY CONTRACTOR**	✓	
FALL OF MATERIAL	✓		**ENVIROMENTAL**	✓	
ELECTRICAL		✓	**HEATING**		✓
WHO MIGHT BE HARMED					
	YES	**NO**		**YES**	**NO**
OWN PERSONNEL	✓		**OFFICE STAFF/VISITORS**	✓	
OTHER CONTRACTORS	✓		**MEMBERS OF THE PUBLIC**		✓
PROPOSED CONTROL MEASURES TO REDUCE RISKS					

1) *Risk Assessments*
2) *Toolbox talks*
3) *Site inductions*
4) *Workers to be competent and hold an up to date CSCS card*
5) *Mandatory site PPE to be worn at all times:*

PPE REQUIRED					
	YES	**NO**		**YES**	**NO**
SAFETY HELMET	✓		**EYE PROTECTION (LEP)**	✓	
PROTECTIVE FOOTWEAR	✓		**EYE PROTECTION (IMPACT RESISTANT)**	✓	
HIGH VISIBILITY CLOTHING	✓		**FACE RESPIRATOR**		✓
GLOVES	✓		**BODY HARNESS**		✓
HEARING PROTECTION	✓		**OTHER** *(state)*	Asbestos PPE, Suits and half face mask	

PERMITS REQUIRED					
	YES	**NO**		**YES**	**NO**

HOTWORKS	✓		**RISER SHAFTS**		✓
CRANE / HIAB CHECK LIST		✓	**LOAD**		✓
EXCAVATION	✓				
CONFINED SPACE ENTRY	✓		OTHER *(state)*		

TRAINING CERTIFICATES REQUIRED (*Adana Matrix Available)*					
	YES	**NO**		**YES**	**NO**
CSCS CARDS	✓		**MEWP (IPAF 1a,1b,3a,3b,PAV)**		✓
SCAFFOLD		✓	**MOBILE TOWER ACCESS (*Pasma)***		✓
TELEHANDLER		✓	**VEHICLE MARSHALL**	✓	
DUMPER	✓		**ABRASIVE WHEELS**	✓	
ROLLER	✓		**HIAB**		✓
EXCAVATOR	✓		**STREET WORKS**		✓
CONFINED SPACES	✓		**SLINGER/SIGNALLER**	✓	
CARTRIDGE OPERATED TOOLS	✓		**OTHER *(state)***	Asbestos awareness	

EMERGENCY ARRANGEMENTS			
FIRST AID MEASURES REQUIRED		**RESCUE/SECURITY MEASURES REQUIRED**	
NAME OF FIRST AIDER ON SITE: Neil Kirton Morgan Sindall		Call 999 for emergency services contact the local accident and emergency: Manchester Royal Infirmary Tel: 0161 276 1234 Oxford Road Manchester Greater Manchester M13 9WL	
RESCUE		**SPILLAGE/ENVIROMENTAL CONTROL REQUIREMENTS**	**(✓)**
BY WHOM	EMEGENCY SERVICES ADANA PERSONNEL PRINCIPAL CONTRACTOR	**PLANT NAPPIES**	✓
		SPILL KITS	✓
HOW	EG: VIA THE SITE MAIN ENTRANCE	**DRIP TRAYS/NAPPIES AT REFUELING AREAS**	✓
		BUNDED FUEL BOWSERS	✓
		BUNDED COSHH CAGES	✓

AMMENDMENT TO CURRENT SYSTEMS			
DATE	**YES/NO**	**AMMENDMENTS**	**M.S**

	TRAFFIC ROUTES	EMERGENCY ARRANGEMENTS	EXISITNG SYSTEMS OF WORK	OTHER		REV
27.11.23.			✓		Asbestos Addendum	Rev A
27.11.23.		✓			Manhole EX06 Confined space	Rev A
07.05.24.		✓	✓		Ladder to Connection Manhole	Rev B
30.05.25.			✓		Further detail of manhole connections	Rev C

NAME		DATE
Neil Kirton	[redacted]	**07.05.24.**

INFORMATION CONTROL			
METHOD STATEMENT WRITTEN BY:	Neil Kirton, Site Manager, Adana Construction	[redacted]	
METHOD STATEMENT CHECKED BY:	Keir Hardie, Contracts Manager		
METHOD STATEMENT REVIEW DATE		**REVISION No**	

Risk Assessment

Risk Assessment reference:	**014 rev B**	**Activity:**	**Connection Manholes**
Work Area / Location:	MH S06 and MH S08		
Name of assessor:	Neil Kirton	**Worker Participant:**	Hesham Kahlil
Date Assessed	07.05.2024	**Review Date**	09.11.2024.

Likelihood of Hazardous Event:	1 = Very unlikely	2 = Unlikely	3 = Likely	4 = Very likely	5 = Almost certain
Severity of Consequence:	1 = Minor delay	2 = Minor injury / ill health	3 = Up to 7 day injury / ill health loss	4 = Over 7 day injury / ill health loss	5 = Fatality

Likelihood x Severity = Risk Factor			**Risk Rating**	
1 – 8 Low	9-15 **Medium**	16-25 **High**	**1 – 8** = Low	**Review at least every 2 years**
			9 – 15 = Medium	**Additional controls as reasonably practicable. Review regularly**
			16 – 25 = High	**Activity Not Permitted Additional control measures Required**

HAZARD	**HAZARDOUS EVENT**		**Level of Risk** Before control measures				**RISK CONTROLS** (What action is necessary?)	**Level of Risk** With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	**Likelihood** (1-5)	**Severity of Consequence** (1-5)	**Risk Factor**	**Risk Rating (L, M, H)**		**Likelihood** (1-5)	**Severity of Consequence** (1-5)	**Risk Factor**	**Residual Risk Rating**
Mobile Plant and Vehicles	Operatives, Public	Collision, crushing	3	4	12	M	Plant and Vehicles to be always banked –Daily plant checks and maintenance recorded. Exclusion zones in place around mobile plant Segregation between walkways and plant routes, Only trained and competent operatives to operate mobile pant. Site speed limits adhered to	1	4	4	L
Excavations	Operatives	Falling into excavation. Collapse of excavation	4	4	16	H	Excavations to be fenced off using crowd barriers or Herras Daily excavation inspections. Strictly no entering an excavation unless the sides are stepped with adequate access and egress (steps or tied ladder)	2	4	8	L
Falls on level	Operatives	Tripping over material or uneven ground	4	3	12	M	Housekeeping and leveling off of work area Bandings to be placed directly in skips Operatives to use site walkways, Any openings in the slab must be barriered off at all times or covered with ply	2	3	6	L
Dust	Operatives, Public	Breathing dust	4	3	12	M	Dust suppression with any cutting / hoover with circ saws and grinders, Cutting Tent / Zone set up Dampening down of dry stone if required. Face fit tested operatives and FFP3 masks used.	1	1	1	L
Environmental	Public	Silt getting into the drainage system	4	4	16	H	Use of a silt buster with all discharged water	1	1	1	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Environmental fuel spillage	Operatives, Public	Spillages	3	4	12	M	Drip trays, nappies and spill kits with all plant and bowsers, refueling method statement.	2	1	2	L
Enviro Concrete	Public	Concrete contamination	3	3	9	M	Concrete wash out skip used. Visqueen to prevent spillages, Tidiness following pours	2	1	2	L
HAVs	Operatives	Damage to nerves / white finger	3	3	9	M	HAVs awareness and monitoring and control sheets completed daily	1	3	3	L
Manual Handling	Operatives	Strain Injury	4	3	12	M	Excavator to lift all concrete items Manual handing training All operatives fit and well and to report and injuries prior to works	1	2	2	L
COSHH materials	Operatives	Concrete (irritant) Fuel (Fire/ environment)	3	3	9	M	Operatives to read and understand the COSHH for each substance used Wearing of correct PPE COSHH storage cage for fuel	1	2	2	L
Fall of Materials	Operatives	Materials falling into excavation hitting operatives	3	4	12	M	Materials stored away from excavation Operatives to stay out of excavation until excavator has lowered materials below shoulder height	1	2	2	L
Noise	Operatives	Hearing Damage	4	4	16	H	Ear defenders to be worn when working close to pecker on excavator. Ear defenders worn as PPE when using Petrol / mechanical tools Ear defenders worn while driving piles	1	1	1	L
Hot Works	Operatives, Public	Fire / Burns	2	3	6	L	Cutting mesh to be done in secluded area away from flammable materials Hot works permit system	1	1	1	L
Buried Services	Operatives	Cable Strike Electrocution Gas / Explosion	4	5	15	H	Use of VAC Excavation around suspected services Permit to Excavate System in Place, CAT scan area prior to excavation, Trial Holes, method statement for exposing buried services No mechanical excavation within 500mm of known or detected services.	1	5	5	L
Hygiene	E,O	Disease and Contamination	3	4	12	M	Maximum use to be made of all waste disposable facilities. All work areas to be cleared on completion of work daily. All welfare facilities to be kept in a clean and tidy condition. Appropriate PPE to be used at all times (long gloves all skin covered). Personnel hygiene Wash hands at all times before eating, drinking or smoking Hot water to be available at all times Extra care with live drains	1	2	2	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Traces of Asbestos within the ground	Operatives	Cross contamination	3	4	12	M	Operatives in direct contact with the material will wear paper suits, / wet suits, wellies, and half face masks. At the end of works including prior to breaks and entering the welfare area, the PPE will be cleaned down using the jetwash at the container. No cross contamination of muck into the welfare or office area. Operatives will then remove the PPE and store at the designated area provided at the container. Operatives to take extra care cleaning hands and face prior to eating or leaving site. Any damaged PPE or PPE that cannot be cleaned to be replaced before returning to site. Muck being transported will be loaded onto the dumper via the excavator. If the excavated material is dry, we will dampen down with the jetwash. Dumper will only be half filled when transporting hazardous muck to further avoid spillage. Muck storage areas will be fenced off and covered over with visqueen at the end of each shift or during rain. At the end of each shift, all plant will be decontaminated with the jet wash. Work Area will be dampened down and cleaned at the end of each shift or as required.	2	4	8	L
Traces of Asbestos within the ground	Operatives	Breathing in Asbestos	2	5	10	M	Air testing to be carried out by Main Contractor A watching brief, with asbestos awareness training will be in attendance with excavation works to look out for any visible amounts of asbestos. If any visible amounts are found, works will be stopped until they can be removed safely by a specialist contractor Muck being transported will be loaded onto the dumper via the excavator. If the excavated material is dry, we will dampen down with the jetwash Muck storage areas will be fenced off and covered over with visqueen at the end of each shift or during rain. At the end of each shift, all plant will be decontaminated with the jet wash. Work Area will be dampened down and cleaned at the end of each shift or as required.	1	5	5	L
Lifting / Fall of material	Operatives	Crushing	3	5	15	M	Trained Slingers on lifting operations Lifting plan and SWL adhered too Certified Lifting accessories (6 monthly) Weekly lifting accessory inspections	1	5	5	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Wind / Materials	All	Materials Blowing	2	4	8	L	All Sheeting and Voidform to be weighted down with Herras Blocks or paving as laid	1	4	4	L
Joinery Works and Tools	Operatives	Injuries using tools	3	3	9	M	Operatives deemed to be competent and familiar with their tools	2	3	6	L
Collapse Of Excavations and existing Structures	Site Operatives Plant Operators	Fatality Major Injury	5	5	25	H	• Ground conditions to be assessed before works commence • Temporary works drawings to be carried out and approved for any trench box, sheet piling works. • Do not park or travel plant close to edge of excavation, barriers and stop blocks installed at minimum 1m from edge of excavation • Stockpiled materials to be kept away from excavations so it does not create a surcharge. Any live surcharges from adjacent structures or vehicle routes to be taken into account in the design. • Structural engineers to provide loading for any existing structures/vehicle routes so it can be allowed for in design • Excavations to be visually checked at the start of each day and logged weekly. • Pumps to be available to prevent water from destabilizing any temporary works structure or sides of excavations, if heavy rain occurs the area is to be monitored regularly. • Excavations to be installed so batter is at safe angle of repose, nominally 45 degrees, or steps incorporated into the sides, size of step dependent on ground type, where it is loose ground generally choose battered scenario.	1	5	5	L
Access and Egress	Site Operatives Other Site users	Minor Injury	3	4	12	M	• Safe access installed into all excavations • Primary method of access is to install universal excavation steps with handrails, ensuring steps are secured and wont slip/move. • Steps can be formed into the sides of the excavation were universal steps are not practical to install, ensure steps are firm and free of loose materials, use concrete blinding if ground is loose. • Handrail to be installed to the formed steps • Access into cofferdams in excavation stage to be via safe ladder access platforms and a tied ladder, were access is tight a secure ladder can be used with a gated access. • Trench boxes to use safe ladder access platforms incorporated into trench box system. • Lighting to be provided where required to all access and egress areas.	1	4	4	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Confined space entry works	Operatives entering confined spaces	fatality	4	5	20	H	• Fully trained, certified and competent persons to carry out confined space works in accordance with their training. • If works are high risk, then operatives to have additional High Risk confined spaces training. A separate RA to be completed for these works. • Top man to be present at all times with confined space works. • Confined space permit obtained before works commence. • Air monitoring to be undertaken using a calibrated/certified 4 in 1 gas detectors, confined space should be left for 10 minutes to ventilate before starting gas monitoring. • Gas monitors should always be or near the operative working in the confined space. • A calibrate/certified 10-minute escape kit to be used and kept down in the confined space with operative. • Any works entering manholes should be done via a tripod, winch and harness, all apparatus to be calibrated and certified and used in accordance with manufacturers guidance. Area should be barriered of and manhole lid opening should have temporary protection when lid is removed and operatives are not working. • Good access will be in place provided, (see access and egress) • Ensure plant engines are not kept running when close to tops of excavations to prevent Co2 from entering excavations. • When breaking into live sewers, Confined space procedures to be adhered to. • Were possible eliminate the need to enter confined space, look for alternative methods, when building manholes these could have benching installed with only the 1st ring installed on no biscuit to assist with ventilation and more working space. Also consider removing biscuit or rings when requiring to enter manhole after it is built where practicable. • No smoking or use of any other sources of ignition to be used within a confined space. • For any cutting, dust must be monitored as per RAMs with full suppression used	1	5	5	L

Risk Assessment

HAZARD	HAZARDOUS EVENT		Level of Risk Before control measures				RISK CONTROLS (What action is necessary?)	Level of Risk With control measures			
	Who might be harmed?	How might they be harmed? (Most likely outcome NOT worst possible case)	Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Risk Rating (L, M, H)		Likelihood (1-5)	Severity of Consequence (1-5)	Risk Factor	Residual Risk Rating
Adverse Weather	Operatives working in excavations Plant operators	Major injury	3	4	12	M	• Pumps to be set up to prevent water from destabilizing the temporary works structure and sides of the excavations, if heavy rain occurs then monitory to be done regularly to check stability. Also monitor water levels in trench and if pumps cannot cope then operatives are to cease works • If a continued dry period of weather occurs the temporary works and excavations to be monitored for signs of ground dehydration. • If conditions are windy ensure all loose materials are secure	2	4	8	L
Unauthorized entry into excavations Falls from height	Other site users Public	Major injury	2	4	8	M	• Excavations to be barriered of with warning signage erected • Deep excavations to have Heras fencing erected and clipped together or scaffold handrail installed around the work area. • Trench boxes to have handrails installed to the top of the box or the box is to be left 1m above ground level • Sheet piles to be left 1m above ground level where possible or handrail system fitted to the top of the sheet piles.	2	4	8	M
Collapse of persons Rescue plan	Operatives within excavation	Fatality Major injury	2	4	8	M	• When working in trench boxes, sheet piled areas trenches operative in the trench to wear a harness with a fixed length lanyard/inertia reel connected to the top of the shoring system, the lanyard is to be long enough for the operative to work but incase of an emergency or collapse due to asphyxiation an excavator can connect to the operative's lanyard without the need to enter the excavation. If practicable The davit arm system could also be used which connects to the operative fixed lanyard to winch the persons out. If the operative suffers a fall or break and it is safe to enter the excavation, then the top man to call for assistance, IP to be made comfortable and can then be brought out using the machine or davit to the harness or rescue stretcher using the crane excavator. • Ensure clear route for emergency services • Shallower trenches will have steps into excavations for emergency services to access and reach IP. • Operatives working in manholes to have a rescue tripod, winch and harness with top man in attendance at all times.	1	4	4	L

Risk Assessment

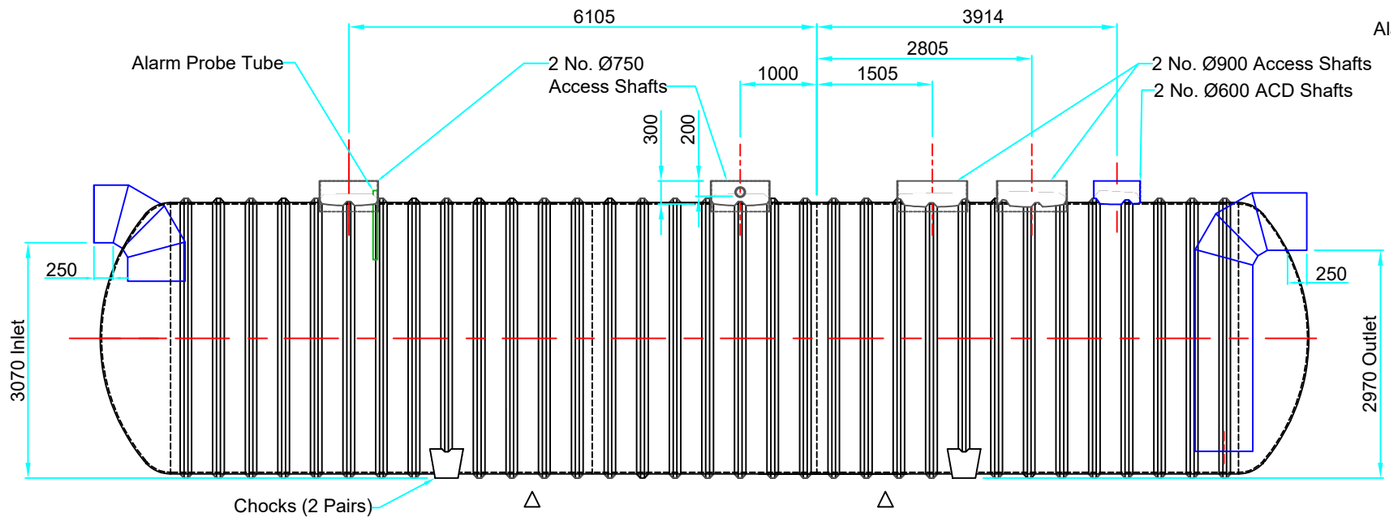
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Working Inside manholes	Confined space operatives Other site operatives	Major Injury Asphyxiation, flood	3	5	15	M	• Where possible bench manholes and any other associated works when the first ring is only installed with no biscuit which ensures better access, ventilation and working space. • Operatives to never be directly under materials which are being lowered into manhole, if chamber is large enough ensure they are stood to one side, good communication with top man. • Ensure materials that are lowered into manhole are adequately secured. • Always ensure when manhole lids are removed that they are temporarily covered or lid replaced when operatives are not in work area. • Ensure sufficient lighting to carry out the works • Overpumping and dewatering to form Dry working areas	1	5	5	L
							•				
Leptospirosis Ground contamination	Site operatives	Flu like symptons	3	4	12	M	• Ensure good welfare facilities available with clean hot water. • Barrier creams available • Operatives to ensure good hygiene and wash before eating, drinking, smoking and leaving site • Ensure PPE is provided and there are enough replacements for changing dirty items • Where Practicable disinfectant areas before works commence • If a cut or abrasion occurs, remove PPE and wash immediately, tend to cut/abrasion and replace PPE. • Keep any open sores out of the water or wear Impervious PPE. • If Flu like symptoms occur, seek medical attention, if leptospirosis is contracted then inform your employer.	1	4	4	L

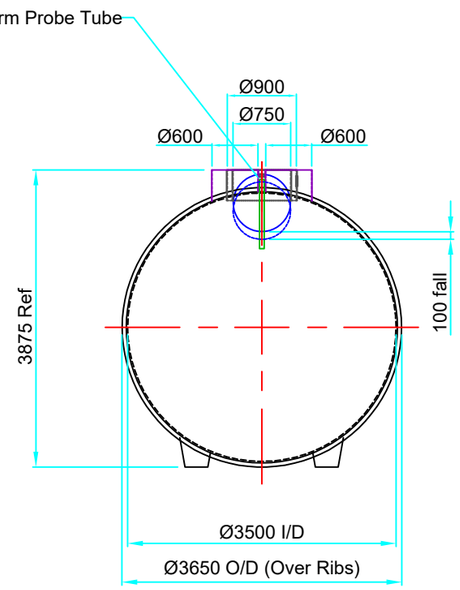
Appendix H

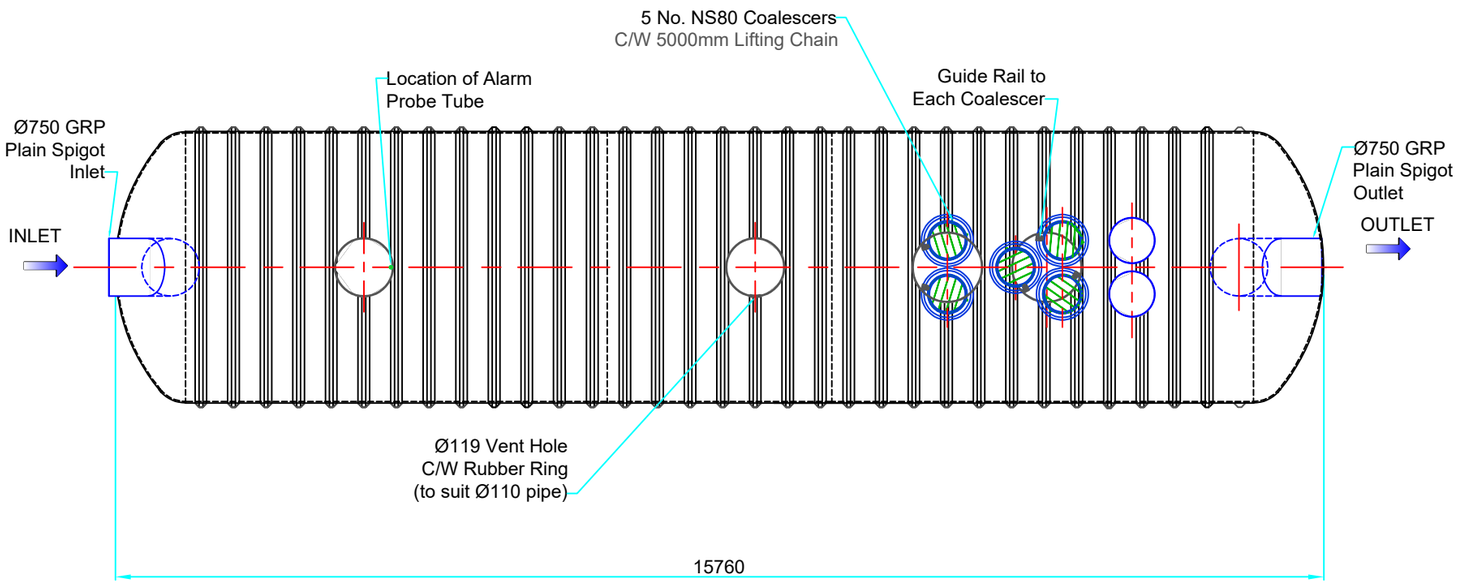
Petrol Interceptor Details

SERIAL No.	32749	Date		Approved By (Print)		Signed	

CUSTOMER APPROVAL SIGN OFF







ORIENTATION: A
INLET: Ø750 GRP Plain Spigot
OUTLET: Ø750 GRP Plain Spigot

NOTE:-
This Tank is to be supplied with:
2 No. Ø600 Access Shaft Extensions - 2000mm High
2 No. Ø750 Access Shaft Extensions - 2000mm High
1 No. Ø900 Access Shaft Extension - 2000mm High
C/W 2 No. Coalescer Guide Rail Top Brackets,
1No. Chain Hook
1 No. Ø900 Access Shaft Extension - 2000mm High
C/W 3 No. Coalescer Guide Rail Top Brackets,
1No. Chain Hook
5 No. Ø25 Guide Rail Extension 2000mm Long
5 No. Lifting Chains 5000mm Long

Key to Symbols: △ Lifting Point | Hold- down strap rib locations where mechanical anchoring is required | Manufacturing Joint | ◯ BoQ's reference no.

	22.08.24	A	Issued For APPROVAL	RR
Distribution	Date	Rev	Issued only for purpose indicated:	BY:

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SPEL PRODUCTS

DIMENSIONS ARE SUBJECT TO DIMENSIONAL TOLERANCES. If critical, check physically prior to installation

Water table & Burial Depth:
The customer must check tank specification is compatible with ground water table level (in winter) and burial depth. If in doubt refer to SPEL Data Manual Section 7 or contact SPEL Products Sales or Technical Department

Title: SPEL 500 Series Puraceptor Model P400/1CSC Orientation (A)

Contract: Travis Perkins (Manchester)
NWCH Harmmerstone, Gorton,
Manchester, M18 8EQ
Order No.: T00061553

Gross Capacity 144,500 Ltrs
Tank Specification STANDARD
Laminate Specification GP

All sizes in mm
If in doubt ASK!

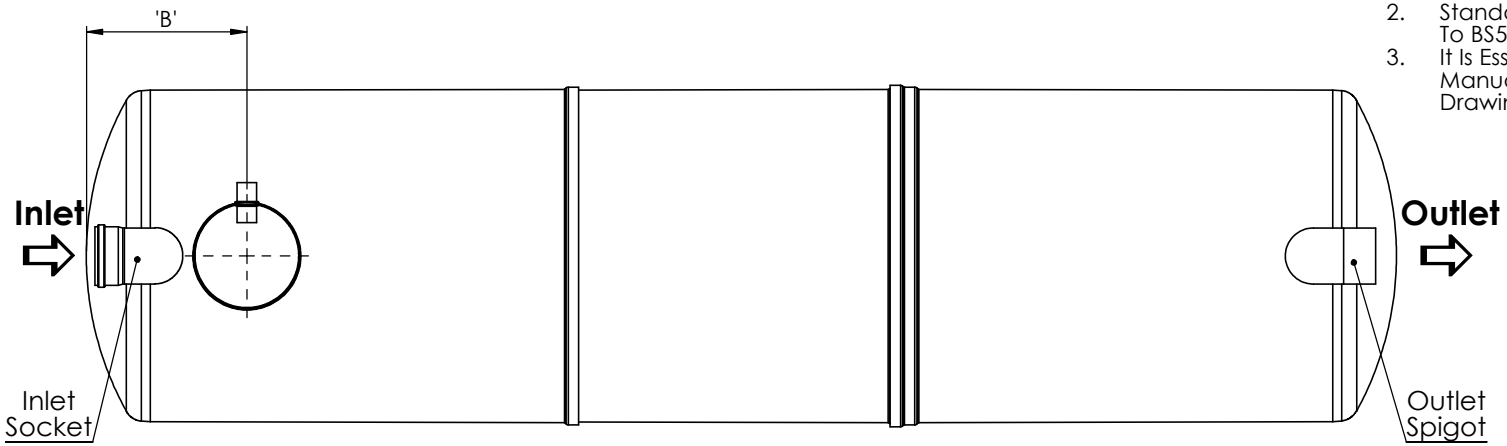
SPEL Life in Water
Lancaster Road, Shrewsbury
Shropshire, SY1 3NQ, England
Telephone: +44 (0)1743 445200
www.spelproducts.co.uk

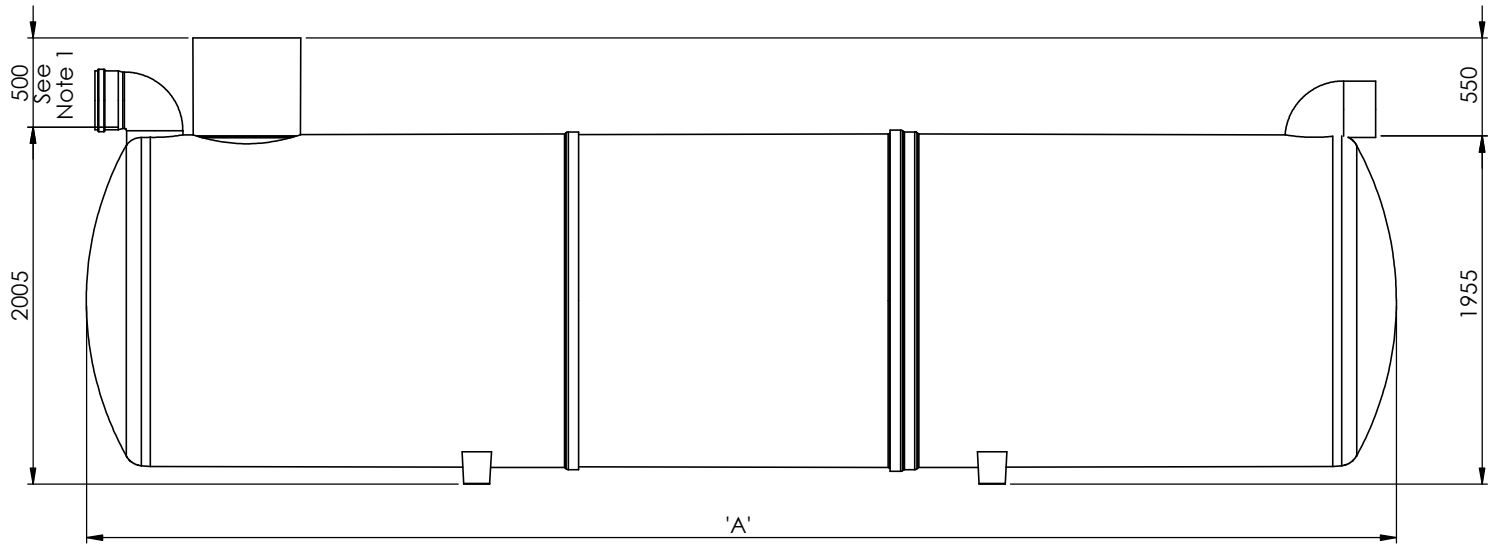
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Checked	SRB
Date	22.08.24
Scale	1:80 Sheet A3
Revision	A

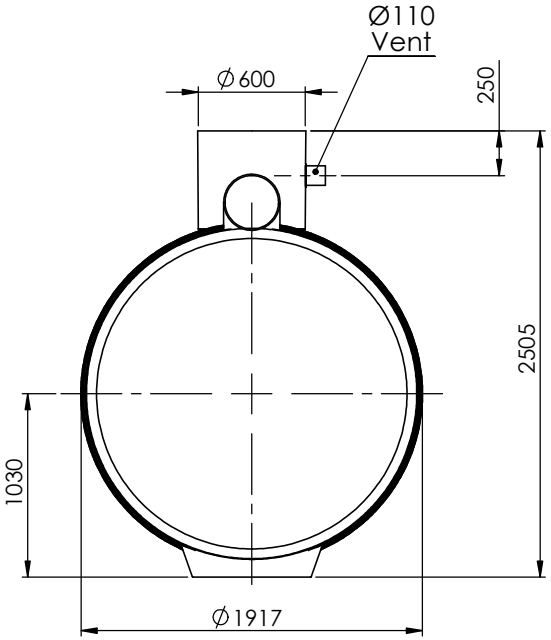
TANK SERIAL No. 32749
INTERNAL ORDER No. 23142/007

Notes: -

1. Units Can Be Provided With Extension Shafts In 0.5m Increments.
2. Standard Inlet/ Outlet Pipes Are PVCu Underground Drainage To BS5481, Other Pipe Sizes And Types Available.
3. It Is Essential That This Drawing Is Read In Conjunction With The Manual (Supplied With Unit) Giving Installation Details. This Drawing Should Be Used For Dimensional Information Only.







Unit	Working Capacity	DIM 'A'	DIM 'B'	Inlet/ Outlet STD. Size	Approx Weight (kg)		Fall Across The Unit
					Empty	Full	
W1/ 150	15000	5780	900	300	620	15620	50
W1/ 190	19000	7355		300	750	19750	50

Please Check with Kingspan Environmental For The Latest Issue Of This Drawing

Issue	Date	Drawn by	Approved by	Description
02	30/10/14	L.Steward		CC1179 - Re-drawn In Solidworks/ Change To New Ø1.8 Cases

All Dimensions In mm | Scale: Do Not Scale | Third Angle Projection

R:\Drawing Data\02 - Sales Drawings\DS\DS - 08\DS0855P W1 150 - W1 190 Washdown & Silt Separator (1 Stage)

Material : Various | Tolerance (unless stated) : n/a
Finish : n/a | Thickness : n/a
Weight : n/a | Surface Area : n/a m²
Modelled By :

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Drawing : DS0855P

W1/150 - W1/190 Washdown & Silt Separators. (1-Stage)

Kingspan Environmental

Outlook

RE: RE: Hammerstone Washdown & silt separator

From Pooja Aggarwal <[redacted]
on behalf of
[redacted]
Date Thu 2024-12-12 14:00
To Andy Losty <[redacted]>

2 attachments (237 KB)
012582 GL0025P-02 Wash Down & Silt Separators.pdf; DS0855P-02 W1 150 - W1 190 Washdown & Silt Separators (1 Stage).pdf;

Hi Andy,

Thanks for the enquiry.

Please see the attached.

Regards
Pooja

From: Andy Losty <[redacted]
Sent: Thursday, December 12, 2024 1:56 PM
To: accivilssales <[redacted]>
Subject: [EXTERNAL] Re: RE: Hammerstone Washdown & silt separator

[EXTERNAL EMAIL] This email is from an external sender. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good Morning

We are working on a scheme at a depot in Manchester, and my colleague received the below e-mail.

This scheme has been on hold, and has come back online this year.

I was looking at your website, and could not fins any details regarding the W1/150 Washdown Seperator below.

I would be grateful if you could provide updated details for this. (including tank and installation details).

Thanks in advance for your assistance.

Regards

Andy Losty
Project Civil Engineer
[redacted]

From: accivilssales
Sent:
To: Marta Wolska
Cc: accivilssales
Subject: Re: RE: Hammerstone Washdown & silt separator

Hi Marta,

Thanks for your inquiry.

We will advise our W1-150 **(46-60 Cars or 31-45 Lorries)**on the basis of 55 vehicles per day washing.

Please see the below table and see if this is what you are looking for.

Model Ref	Total Capacity (Ltrs)	Max.rec. Silt (Ltrs)	Max. Flow Rate (L/S)	Length (MM)	Diameter (MM)	Access Shaft Di-ameter (MM)	Base Inlet Invert (MM)	Base To Outlet Invert (MM)	Stan-dard Fall Across (MM)	Min Inlet Invert (MM)	Standar Pipewor Diamete (MM)
W1/010	1000	500	3	1123	1225	460	1150	1100	50	500	160
W1/020	2000	1000	5	2074	1225	460	1150	1100	50	500	160
W1/030	3000	1500	8	2952	1225	460	1150	1100	50	500	160
W1/040	4000	2000	11	3898	1225	460	1150	1100	50	500	160
W1/060	6000	3000	16	4530	1440	600	1360	1310	50	500	160
W1/080	8000	4000	22	3200	2020	600	2005	1955	50	500	160
W1/100	10000	5000	27	3915	2020	600	2005	1955	50	500	160
W1/120	12000	6000	33	4640	2020	600	2005	1955	50	500	160
W1/150	15000	7500	41	5435	2075	600	1940	1890	50	500	160
W1/190	19000	9500	52	6865	2075	600	1940	1890	50	500	160

Regards
Pooja

Pooja Aggarwal

Commercial Support & Sales – Surface Water Management

Kingspan

Kingspan Water & Energy Ltd.
College Road North, Aston Clinton | Aylesbury | Buckinghamshire | HP22 5EW
[redacted]
www.kingspanwaterandenergy.com

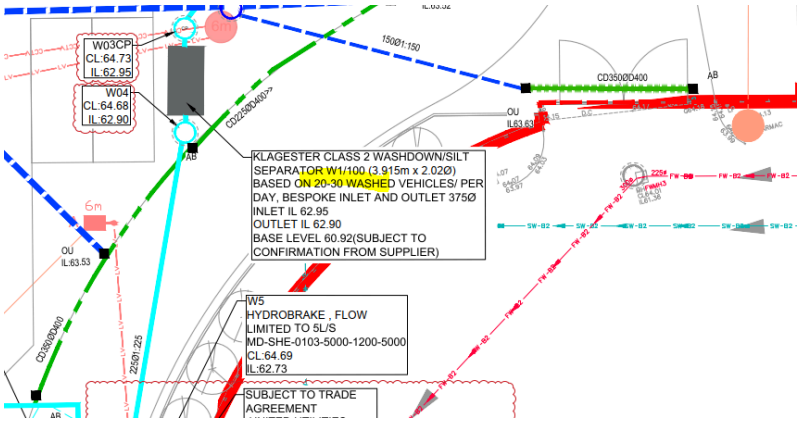


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[redacted]

Dear Sir/ Madam
Currently for our site we have proposed W1/100.
We have just received confirmation form the Client that 55 vehicle will be washed per day. 3.25l/s and maximum discharge volume per day 29.4m3
Could you please advise which washdown separator will be the most suitable?



Marta Wolska Principal Civil Engineer
Curtins
T. 0161 236 2394 | marta.wolska@curtins.com

[redacted]

Subject: RE: Trade Effluent Licence - Hammerstone

Hi Joel,

After getting the Wash Down requirements from Emma and the Flow rates from the proposed equipment I have been able to Calculate the following (the workings as per the attached spread sheet) on top of the information provided in the history of this email.

Maximum volume to be discharged (m^3 per 24 hours) = 29.4m3
Maximum rate of discharge (litres per second) = 3.25 ltrs/sec

Please come back to me if you need any further calculation, but can we now submit this application?

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager
Construction
[redacted]
MORGAN SINDALL
Morgan Sindall Construction & Infrastructure Ltd
6th Floor, Anchorage 2
Salford Quays, Manchester, M50 3YW
T 0161 874 1000 **F** 0161 874 1001
morgansindall.com
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Please consider the environment before printing this email

From: Williams, Philip (MS)
Sent: 08 February 2023 14:42
[redacted]

Subject: RE: Trade Effluent Licence - Hammerstone

Hi Joel,

Sorry I cannot provide any more information than my previous email.

Please speak to Lindsay or the end users for the rest of the information together with the Wet signature.

I can only provide the information relating to the Construction of the Wash Down Area, not how it will be used.

We are however desperate to get this issued as we need the Permit to start the construction.

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager

[redacted]

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[redacted]

Subject: RE: Trade Effluent Licence - Hammerstone

Hi Philip,

Many thanks for coming back again. I do however need all the info that you can provide completing on the G02 form along with a wet signature from an authorised contact (Section 12). I can then get It submitted to UU along with the supporting plan.

Apologies if this seems pedantic it's just if I don't have a hard signed copy from the customer that I can pass on in support it will just delay the process anyway when I am asked for one as it is a requirement for these applications.

Kind Regards

Joel

[redacted]

Subject: RE: Trade Effluent Licence - Hammerstone

Hi Joel,

Further to my email below, find below the information we can provide, but also some of the items we can't provide.

5.5 Volume of Trade Effluent
We cannot provide the volumes for Trade Effluent as this is down to the End User and the following needs to be established

- Number of vehicles washed in the same time
- Number of vehicles washed per day
- Water consumption to wash one vehicle

6.2 Drainage Plan
As previously provided, I have attached the Current Drainage Plan with the Washdown Drainage coloured Cyan.
There are a couple of issues

- The other drainage systems on this drawing may be getting changed or omitted as we resolve budget constraints
- The drainage from the Wash Down Area collects the On-site Surface Water from the same area

Please let me know if or/and how you want the drawing revised

6.3 Connection to sewer location
Hammerstone Road

6.4 Is this a proposed or an existing connection to the Sewerage network? (tick as appropriate)

☐ Proposed ☐ Existing

Into which Sewerage network is the discharge intended to be made? (tick as appropriate)

☐ Foul sewer ☐ Surface water sewer

☐ Combined sewer ☐ Direct to waste water treatment works

6.5 Is there any rainfall discharged through the Trade Effluent sample point? (tick as appropriate)

☐ Yes ☐ No

6.6 Surface area drainage

Contaminated surface area draining through Trade Effluent sample point

0 ..... m^2

Non-contaminated surface area draining through Trade Effluent sample point

1204 ..... m^2

7.1 How is water supplied to the premises? (tick all that apply)

Mains supply or supplies ☐ Private borehole

Private third party network ☐ Other, eg rain water harvesting

Please keep me updated with the progress of the submission, as we need to submit a Section 106 to start these works

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager

[redacted]

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6th Floor, Anchorage 2
Salford Quays, Manchester, M50 3YW
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[redacted]

Subject: RE: Trade Effluent Licence - Hammerstone

Thanks Joel,

I will discuss with Marta, our Civil Engineer, but on 1st review we can provide responses for the following –

5.5 Volume of Trade Effluent

Maximum volume to be discharged (m^3 per 24 hours)	.....
Maximum rate of discharge (litres per second)	.....

Maximum volume to be discharged (m^3 per 24 hours)	.....
Maximum rate of discharge (litres per second)	.....

Proposed starting date for discharge (or approximate starting date for an existing discharge)

6.1 Sample Point Location
The sample point must be such that it will provide a sample of the Trade Effluent discharged to the public sewer without domestic sewage contamination, and provide safe and reasonable access at all times
Provide a description of the location of the sample point (and X-Y coordinates if known):

Location .....

6.2 Drainage Plan

Failure to supply a suitable draining plan will result in a rejection of your application.

Enclose a drainage drawing for the premises with the following marked on the plan:

- **The location of the sample point**
- **Point of entry into the Sewerage system, appropriately coloured as follows**

Red – Sewer network **Blue – On-site surface water**

Green – Trade Effluent **Brown – Domestic Waste**

6.3 Connection to sewer location

Provide the name of the street (or other identifying description) where the connection to the sewer is located

.....

6.4 Is this a proposed or an existing connection to the Sewerage network? (tick as appropriate)

☐ Proposed ☐ Existing

Into which Sewerage network is the discharge intended to be made? (tick as appropriate)

☐ Foul sewer ☐ Surface water sewer

☐ Combined sewer ☐ Direct to waste water treatment works

6.5 Is there any rainfall discharged through the Trade Effluent sample point? (tick as appropriate)

☐ Yes ☐ No

6.6 Surface area drainage

Contaminated surface area draining through Trade Effluent sample point

..... m^2

Non-contaminated surface area draining through Trade Effluent sample point

..... m^2

7.1 How is water supplied to the premises? (tick all that apply)

Mains supply or supplies ☐ Private borehole

Private third party network ☐ Other, eg rain water harvesting

Other abstraction

After discussion, I will come back to you with a formal response.

Cheers

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager

[redacted]

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[redacted]

Hi Phil.

Many thanks for the update and great to see we now have an understanding of how to progress.

I attach a copy of the G02 TE discharge application, if this can be completed with as much detail as possible I will then formally submit to UU for review and approval via the bi-lateral process. I appreciate some of the requested information may have been provided in separate exchanges but this needs to now be formally completed and returned to us with the relevant supporting detail.

I look forward to receipt back and getting this in for us.

Kind Regards

Joel

[redacted]

Subject: Trade Effluent Licence - Hammerstone

Dear all,

Matthew Lowe from UU called me last week. (Thanks for the call Matthew) and we discussed the proposed Washdown and the flow restriction of 5litre/sec we are installing as part of our contract.

On discussion, Mathew informed me that "Wave" will need to make a "G02" application. As I understand it – a new application, as the proposed Washdown has an outfall to a different public drain and the flow rates differ from the current Permit.

For everyone's information, I have attached our current proposed layout and drainage design for this area which shows-

- Grit Traps - A Washdown/ Silt Separator based on 20-30 vehicles per
- A Hydro Brake – To limit the flow to 5 ltrs/sec, which has the associated chambers/manholes and attenuation tanks

Please bear in mind that we cannot start works in this area until we have this Permit, as it is required for our Section 106 application (An agreement to allow discharge to a Public Sewer), so your earliest action will be appreciated.

If anyone requires any further construction information or design calculations, please let me know by return.

Cheers

Best regards

Phil Williams BSc (Civil Engineering)
Senior Design Manager
Construction

[redacted]

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Andy Losty
Project Civil Engineer
[redacted]
Merchant Exchange
17-19 Whitworth Street West
Manchester, M1 5WG
curtins.com

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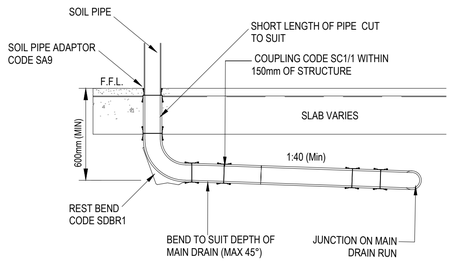
Appendix I

Linear Drainage Channel Details

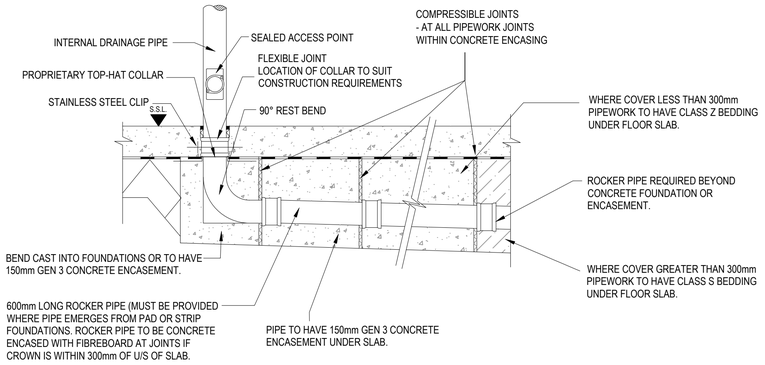
Linear Drainage Channel DOP

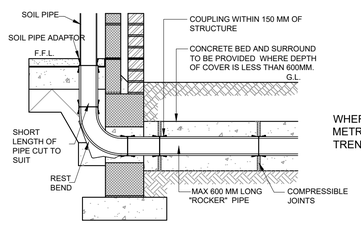
In-situ Channel Details

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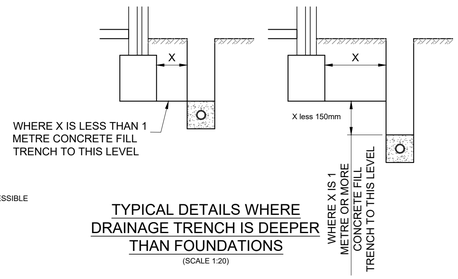
TYPICAL SVP CONNECTION TO MAIN RUN





SOIL & VENT PIPE / STUB STACK / W.C. CONNECTION DETAIL

(SCALE 1:20)

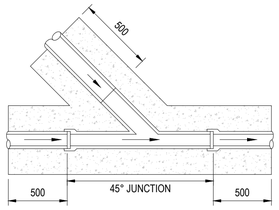


TYPICAL DETAILS WHERE DRAINAGE TRENCH IS DEEPER THAN FOUNDATIONS

(SCALE 1:20)

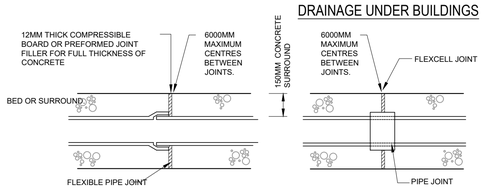
GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
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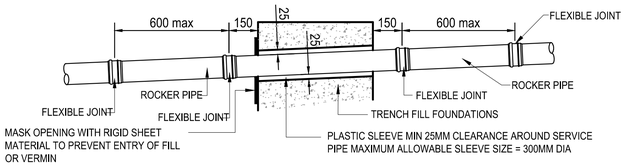
TYPICAL SADDLE CONNECTION

DRAINAGE UNDER BUILDINGS



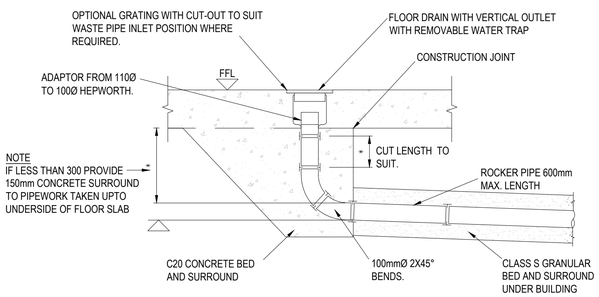
EXPANSION JOINT FOR CONCRETE BED AND SURROUND

(SCALE 1:20)

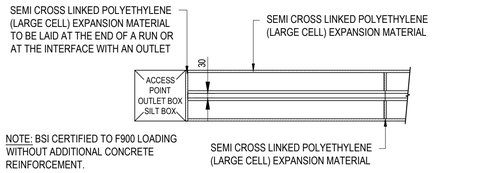


PIPES PASSING THROUGH GROUND BEAM

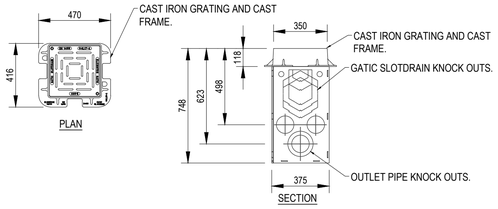
SCALE 1:20



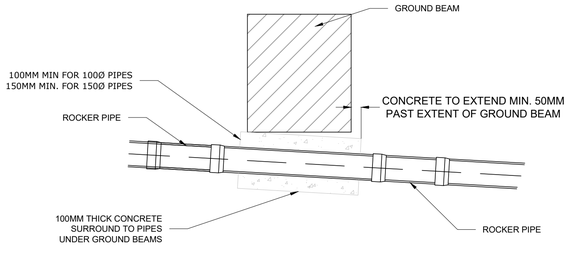
INTERNAL FLOOR DRAIN



GATIC PLAN DETAIL

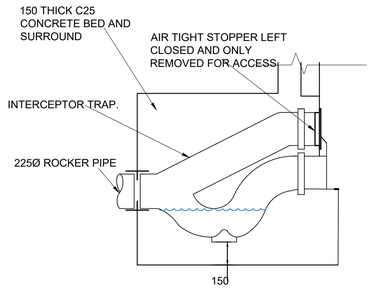


GATIC SLOTDRAIN 350mm OUTLET UNIT SECTION AND PLAN DETAILS NTS

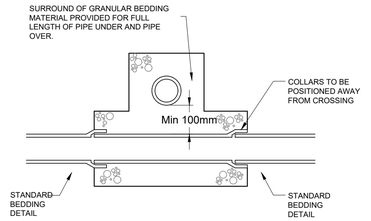


TYPICAL PIPE DETAIL UNDER GROUND BEAMS

(SCALE 1:20)



INTERCEPTOR TRAP

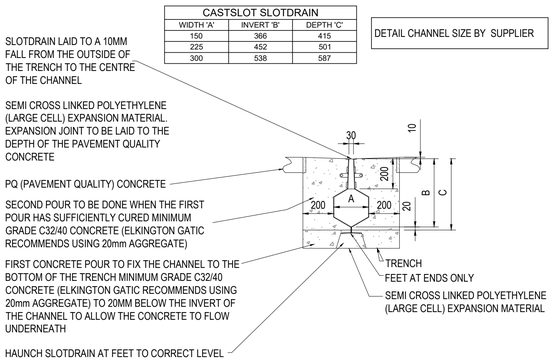


PIPE CROSSINGS DETAIL

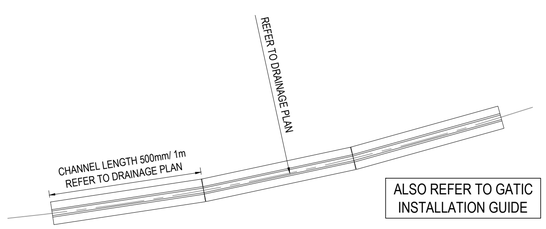
(SCALE 1:20)

CASTSLOT SLOTDRAIN		
WIDTH 'A'	INVERT 'B'	DEPTH 'C'
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225	452	501
300	538	587

DETAIL CHANNEL SIZE BY SUPPLIER



GATIC CASTLOST TREADSAFE CONCRETE INSTALLATION



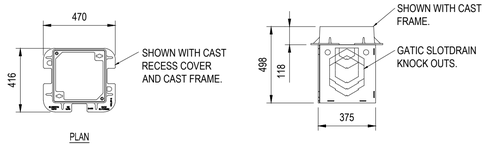
ALSO REFER TO GATIC INSTALLATION GUIDE

GATIC CASTSLOT TREADSAFE INSTALLATION TO RADII

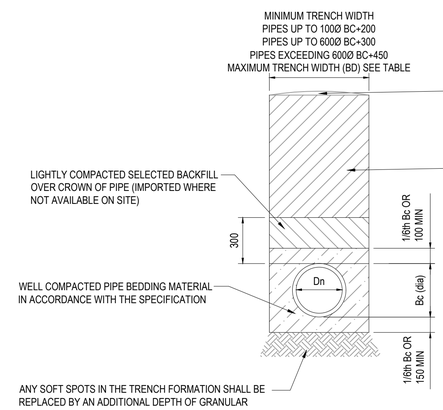
Gatic CastSlot, UltraSlot & PaveSlot Minimum External Radius											
Channel Width	Channel Length	1mm Gap	2mm Gap	3mm Gap	4mm Gap	5mm Gap	6mm Gap	7mm Gap	8mm Gap	9mm Gap	10mm Gap
100	3m	320.9m	160.5m	107.0m	80.3m	64.2m	53.5m	45.9m	40.2m	35.7m	32.1m
100	1m	107.0m	53.6m	35.7m	26.8m	21.5m	17.9m	15.4m	13.5m	12.0m	10.8m
100	500mm	53.6m	26.8m	17.9m	13.5m	10.8m	9.0m	7.7m	6.8m	6.0m	5.4m
150	3m	471.6m	235.9m	157.3m	118.0m	94.4m	78.7m	67.5m	59.1m	52.5m	47.3m
150	1m	157.3m	78.7m	52.5m	39.4m	31.6m	26.3m	22.6m	19.8m	17.6m	15.9m
150	500mm	78.7m	39.4m	26.3m	19.8m	15.9m	13.3m	11.4m	10.0m	8.9m	8.0m

Gatic CastSlot, UltraSlot & PaveSlot Minimum Internal Radius											
Channel Width	Channel Length	1mm Gap	2mm Gap	3mm Gap	4mm Gap	5mm Gap	6mm Gap	7mm Gap	8mm Gap	9mm Gap	10mm Gap
100	3m	320.8m	160.4m	106.9m	80.2m	64.1m	53.4m	45.8m	40.0m	35.6m	32.0m
100	1m	106.9m	53.5m	35.6m	26.7m	21.4m	17.8m	15.3m	13.3m	11.9m	10.7m
100	500mm	53.5m	26.7m	17.8m	13.4m	10.7m	8.9m	7.6m	6.7m	5.9m	5.3m
150	3m	471.5m	235.7m	157.1m	117.8m	94.3m	78.5m	67.3m	58.9m	52.3m	47.1m
150	1m	157.2m	78.6m	52.4m	39.3m	31.4m	26.2m	22.4m	19.6m	17.4m	15.7m
150	500mm	78.6m	39.3m	26.2m	19.6m	15.7m	13.1m	11.2m	9.8m	8.7m	7.9m

TABLE EXTRACTS FROM GATIC INSTALLATION GUIDE



350 ACCESS BOX SECTION AND PLAN DETAILS NTS

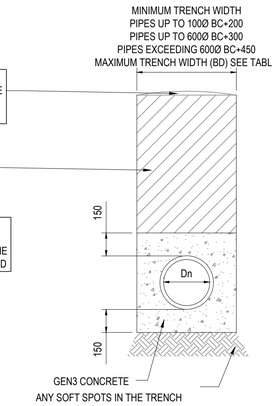


CLASS S - 360° GRANULAR SURROUND PIPE BEDDING DETAIL

THE FLEXIBLE JOINTS IN THE PIPES SHALL BE MAINTAINED AT THE END OF EACH PIPE WITH COMPRESSIBLE SHEET CUT ACCURATELY TO FIT THE PIPE PROFILE TO BREAK THE CONCRETE SURROUND

Dn	Bd
150	0.6
225	0.7
300	0.85
375	1.05
450	1.15
525	1.25
600	1.35
675	1.45
750	1.50

MAXIMUM TRENCH WIDTH



CLASS Z - CONCRETE BED AND SURROUND PIPE BEDDING DETAIL

COVER < 900mm IN VEHICULAR LOADING AND OPEN FIELD.
COVER <600mm ELSEWHERE EXCEPT UNDER BUILDINGS.

Rev:	Description:	Date:	By:	Chkd:
C02	STAGE 5 ISSUE	24.09.24	JC	ATL
P05	UPDATED IN LINE WITH COMMENTS	13.02.24	ATL	MW
P04	UPDATED FOR NEW TENDER	02.02.24	ATL	MW
C01	CONSTRUCTION ISSUE	23/09/22	ATL	MW
P03	STAGE 4 ISSUE	09/04/21	MW	MW
P02	STAGE 3 ISSUE	04/11/20	MW	MW
P01	STAGE 3 ISSUE	29/01/19	MW	CG

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Status: STAGE 5

Project: HAMMERSTONE ROAD DEPOT

Drg Title: DRAINAGE DETAILS SHEET 2

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29/01/19	MW	MW	CG
	Scale: 1:20				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

HRD - CUR - XX - ZZ - DR - C - 92521 -C02

\\ma-fs-1\Projects\068001 - 068000\068065 - Hammerstone Road Depot\CAD\5 4 Production\4B Models & Drawings_Civil-C\C-AD1(92)

Declaration of Performance
Gatic CastSlot Treadsafe

CE

QA Document Number:	ED0025 REV. 1
Manufacturer's Address:	Gatic Poulton Close, Dover, Kent, CT17 0UF Telephone: +44 (0) 1304 203545 Fax: +44 (0) 1304 215001 Web: www.gatic.com
Intended Use:	Gatic CastSlot Treadsafe - For the catchment and drainage of surface water in areas for pedestrian and/or vehicular traffic.
Product Range:	CAT00001, CAT00002, CAT00003, CAT00004, CAT00005, CAT00006, CAT00007, CAT00008 CAT00009, CAT00010, CAT00011, CAT00012, CAT00013, CAT00014, CAT00015, CAT00016 CAT00017, CAT00018, CAT00019, CAT00020, CAT00021, CAT00022, CAT00023, CAT00024
System of Attestation of performance:	System 3
Notified Body:	NB 0086 - BSi Product Services
Type Test Report No.:	285/4618749
1. Water Tightness - Jointing of Drainage Channels:	No Leakage
2. Load Bearing Capacity - Deflection Under Load:	
Maximum Load	F900*
Permanent Set	NPD
3. Durablity:	NPD
Material:	1.5/2.5/3mm Thick mild steel sheet grade 'DX51D' (Pre-Galvanised) Continuously hot dipped galvanised 'Z275' minimised spangled, passivated to 'BS EN 10346 : 2009' [DX51D+Z275-M-A-C] (Fe P02 G Z275 MA C).
Applied Standard:	EN 1433:2002 + A1 2005

This declaration herewith confirms that the described manufactured items comply with the relevant parts of BS EN 1433:2002 + A1 2005 for linear drainage channels in areas for pedestrian and/or vehicular traffic for the catchment and drainage of surface water, *when installed in compliance with the manufacturers installation instructions.

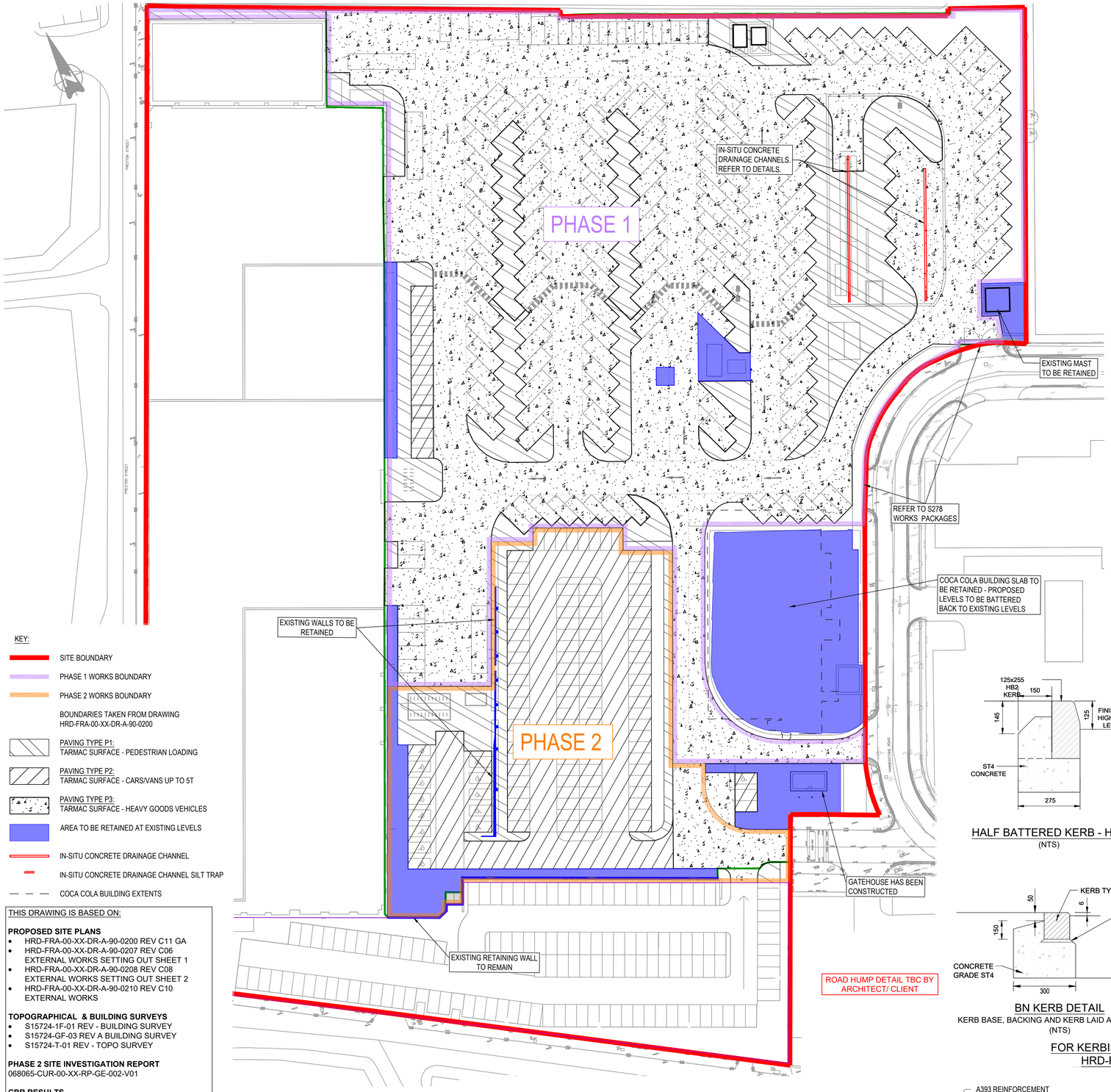
[redacted]

Simon Bradbeer - RD&I Director - Gatic - Poulton Close - Dover - Kent - CT17 0UF

Date: 24/10/2016

bsi. ISO 9001 Quality Management FM593418

bsi. ISO 14001 Environmental Management EMS593419



KEY:

- SITE BOUNDARY
- PHASE 1 WORKS BOUNDARY
- PHASE 2 WORKS BOUNDARY

BOUNDARIES TAKEN FROM DRAWING HRD-FRA-00-XX-DR-A-90-0200

- PAVING TYPE P1: TARMAC SURFACE - PEDESTRIAN LOADING
- PAVING TYPE P2: TARMAC SURFACE - CARS/VANS UP TO 5T
- PAVING TYPE P3: TARMAC SURFACE - HEAVY GOODS VEHICLES
- AREA TO BE RETAINED AT EXISTING LEVELS
- IN-SITU CONCRETE DRAINAGE CHANNEL
- IN-SITU CONCRETE DRAINAGE CHANNEL SILT TRAP
- COCA COLA BUILDING EXTENTS

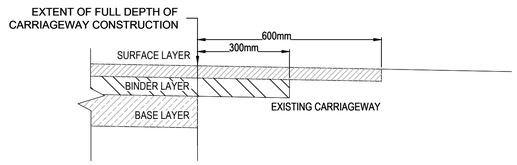
THIS DRAWING IS BASED ON:

PROPOSED SITE PLANS
- HRD-FRA-00-XX-DR-A-90-0200 REV C11 GA
- HRD-FRA-00-XX-DR-A-90-0207 REV C06 EXTERNAL WORKS SETTING OUT SHEET 1
- HRD-FRA-00-XX-DR-A-90-0208 REV C08 EXTERNAL WORKS SETTING OUT SHEET 2
- HRD-FRA-00-XX-DR-A-90-0210 REV C10 EXTERNAL WORKS

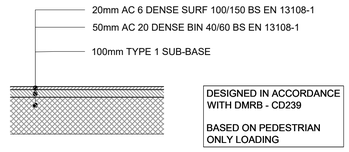
TOPOGRAPHICAL & BUILDING SURVEYS
- S15724-1F-01 REV - BUILDING SURVEY
- S15724-GF-03 REV A BUILDING SURVEY
- S15724-T-01 REV - TOPO SURVEY

PHASE 2 SITE INVESTIGATION REPORT
068065-CUR-00-XX-RP-GE-002-V01

CBR RESULTS
785148.R01(00) - PLATE LOADING TEST REPORT



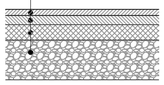
TIE-IN BETWEEN PROPOSED & EXISTING CARRIAGEWAY



DESIGNED IN ACCORDANCE WITH DMRB - CD239

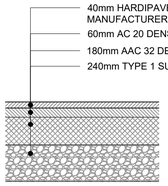
BASED ON PEDESTRIAN ONLY LOADING

PAVING TYPE P1:
TARMAC SURFACE - PEDESTRIAN LOADING



DESIGNED IN ACCORDANCE WITH MINERAL PRODUCTS ASSOCIATION 'CONSTRUCTION & SURFACING OF CAR PARKS' & 'DMRB CD225.' DESIGN SUITABLE FOR CARS ONLY UP TO 1.8T

PAVING TYPE P2:
TARMAC SURFACE - CARS/VANS UP TO 5T



DESIGNED IN ACCORDANCE WITH HARDIPAVE REQURIEMENTS & DMRB CD225 & CD226.'

BASED ON REGULAR HEAVY VEHICLE ACCESS; 10MSA LOADING

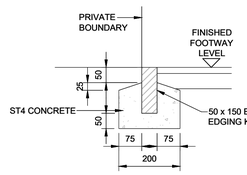
PAVING TYPE P3:
TARMAC SURFACE - HEAVY GOODS VEHICLES

TABLE 1: ALTERNATIVE PAVEMENT FOUNDATION THICKNESSES FOR VARYING CBR VALUES
APPLIES PAVING TYPE P2 & P3 (ALTERNATIVE OPTION) ONLY

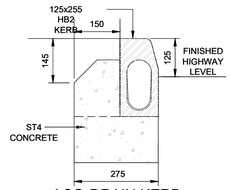
CBR VALUE	SUB-BASE ONLY THICKNESS	SUB-BASE ON CAPPING	
		SUB-BASE	CAPPING
5%	280mm	200mm	250mm
10%	240mm	150mm	200mm
15% & ABOVE	200mm	150mm	150mm

VALUES IN TABLE 1 ARE DERIVED FROM FIGURES 3.18 & 3.20 OF CD225. REFER TO DRAWING HRD-CUR-XX-00-DR-C-98-000 FOR CBR TEST RESULT LOCATIONS & VALUES.

HALF BATTERED KERB - HB2
(NTS)

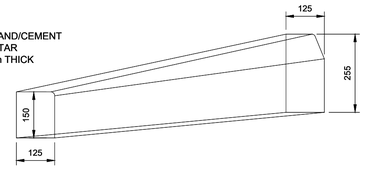


EK - EDGING KERB DETAIL
(NTS)



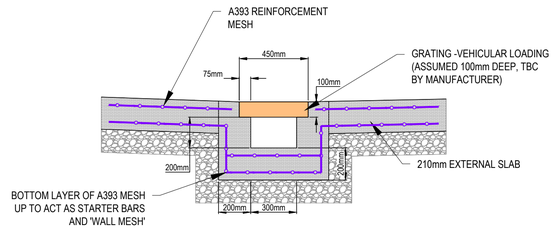
ACO-DRAIN KERB
(NTS)

BN KERB DETAIL
KERB BASE, BACKING AND KERB LAID AT SAME TIME
(NTS)

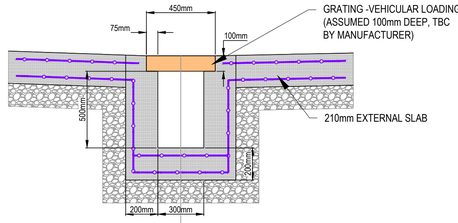


TRANSITION KERB (HB- BN) - TK1
(NTS)

FOR KERBING LOCATIONS REFER TO DRAWING HRD-FRA-00-XX-DR-A-90-0207 & 0208



IN-SITU CONCRETE DRAINAGE CHANNEL



IN-SITU CONCRETE DRAINAGE CHANNEL SUMP UNIT SECTION

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH CURRENT BRITISH STANDARDS AND BUILDING REGULATIONS.
4. THE LANDSCAPE ARCHITECT'S DRAWING HAS BEEN USED AS A BASE FOR THIS PLAN. PLEASE REFER TO THE LATEST LANDSCAPING LAYOUT.
5. REFER TO LANDSCAPE ARCHITECTS SPECIFICATION FOR SURFACE FINISHES.
6. KERBING REQUIREMENTS/DETAILS TO BE CONFIRMED BY LANDSCAPE ARCHITECT.
7. REFER TO LANDSCAPE ARCHITECTS SPECIFICATION FOR JOINTING MATERIAL. CONSIDERATION REQUIRED OF COMPATIBILITY OF JOINTING AND BEDDING MATERIAL AND WHETHER SUB-SURFACE DRAINAGE IS REQUIRED.
8. ALL SUB-BASES AND CAPPING LAYERS TO BE GRADED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS (SFHW).
9. ALL PAVEMENT CONSTRUCTIONS ARE BASED ON AN ASSUMED CBR VALUE OF 5%. TO BE CONFIRMED BY INSITU TESTING AT FORMATION.
10. IT IS RECOMMENDED THAT CBR TESTS ARE CARRIED OUT TO CONFIRM AND SUB-BASE ADJUSTED IN ACCORDANCE WITH THE CAPPING AND SUB-BASE THICKNESS TABLE.
11. CBR TEST PROCEDURE IS DETAILED WITHIN DMRB IAN73/06 AND BS 1377-4.
12. MEASURED CBR VALUE TO BE AT FORMATION LEVEL AND TO BE A 'SOAKED' CONDITION.
13. ANY VARIATIONS IN GROUND CONDITIONS SHOULD BE NOTIFIED TO THE ENGINEER PRIOR TO CONSTRUCTION.
14. THE CONSTRUCTION DEPTHS GIVEN ARE THE MINIMUM REQUIRED (COMPACTED).
15. THE CONSTRUCTION DEPTHS GIVEN ASSUME FORMATION IS NON-FROST SUSCEPTIBLE.
16. WHERE FORMATION IS FROST SUSCEPTIBLE PROVIDE CAPPING MATERIAL TO GIVE A MINIMUM 450mm OVERALL CONSTRUCTION THICKNESS.
17. THE CONSTRUCTIONS GIVEN ARE FOR PRIVATE AREAS ONLY AND NOT FOR ADOPTABLE AREAS.
18. IN AREAS WHERE LEVELS ARE TO BE RAISED, ACCEPTABLE FILL MATERIAL IS TO BE USED TO THE UNDERSIDE OF THE PROPOSED CONSTRUCTION MAKE UP.
19. NO REGULATING OR FILL MATERIAL HAS BEEN INCLUDED IN CONSTRUCTION BUILD UP. CONTRACTOR TO INCLUDE FOR REGULATING/FILL MATERIAL IN THEIR RATES.
20. IN AREAS WHERE LEVELS ARE TO BE LOWERED, EXISTING CONSTRUCTION IS TO BE REMOVED (FULL DEPTH).
21. CONSTRUCTION OF CONCRETE SURFACES SUBJECT TO CASTING IN APPROPRIATE BAY SIZES / LENGTHS.
22. CONTRACTOR TO ALLOW FOR CONTRACTION JOINTING WITHIN CONCRETE AREAS.
23. TYPE 1 SUB-BASE IN ACCORDANCE WITH SFHW.
24. CAPPING MATERIAL TO BE 6F1, 6F2 OR 6F5 MATERIAL IN ACCORDANCE WITH SFHW 600 SERIES.

Rev:	Description:	Date:	By:	Chkd:
C03	UPDATED TO SUIT LATEST SITE LAYOUT	20.09.24	JC	ATL
P12	UPDATED IN LINE WITH COMMENTS/ UPDATED SITE LAYOUT	04.04.24	KS	ATL
P11	UPDATED FOR NEW TENDER	19/01/24	ATL	MW
C02	TIE IN DETAILS ADDED	25.11.22	ATL	MW
C01	CONSTRUCTION ISSUE	23.09.22	ATL	MW
P10	UPDATED SITE PLAN	05.07.22	LK	MW
P09	UPDATED IN LINE WITH REVISED ARCHITECT'S SITE PLAN	03.08.21	ATL	MW
P08	UPDATED IN LINE WITH ARCHITECT'S COMMENTS 27.04.21	28.04.21	ATL	MW
P07	DRAWING NUMBER CHANGE	15/04/21	ATL	ATL
P06	STAGE 4 UPDATE: LAYOUT UPDATED	13.04.21	ATL	MW

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Status: STAGE 5

Project: HAMMERSTONE ROAD

Drg Title: EXTERNAL SURFACES

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29.01.19	MW	MW	CG
	Scale: 1:500				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

HRD - CUR - XX - 00 - DR - C - 94-700 -C03

\\ms-fs-1\Projects\068001 - 069000\068065 - Hammerstone Road Depot\0MS 4 Production\4B Models & Drawings_Civil-O-CAD\

Appendix J

Drainage Calculations

Rev P03 | Copyright © 2026 Curtins Consulting Ltd

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
RE PP1	0.054	5.00	64.228	1050		388217.969	396792.564	0.728
BEND PP2	0.015	5.00	64.190			388222.636	396809.328	0.806
BEND PP3	0.017	5.00	64.173			388227.222	396811.236	0.822
BEND PP4	0.010	5.00	64.201			388228.707	396816.433	0.886
BEND PP5	0.036	5.00	64.226			388227.505	396819.384	0.932
BEND PP6	0.012	5.00	64.224			388230.577	396830.686	1.008
S13b			64.240	1500		388233.850	396833.005	1.051
S13a			64.950	600		388235.913	396840.504	2.150
OU-11	0.080	5.00	64.306	350	350	388236.173	396848.221	0.846
S13			64.740	1500		388215.386	396857.536	2.200
OU-12	0.140	5.00	64.076	350	350	388161.927	396916.150	1.000
OU-13	0.126	5.00	64.031	350	350	388160.669	396911.323	1.000
S14			64.109	1500		388161.619	396906.443	1.449
OU-14	0.061	5.00	64.083	350	350	388154.700	396888.867	1.000
JUN-02			64.198			388157.755	396886.834	1.595
OU-15	0.087	5.00	64.232	350	350	388134.099	396812.930	1.000
S15	0.020	5.00	64.337	1500		388139.128	396813.380	1.155
OU-16	0.054	5.00	64.189	350	350	388143.485	396846.718	0.891
JUN-03			64.298			388148.482	396847.344	1.468
OU-17	0.067	5.00	64.136	350	350	388149.095	396867.801	1.000
S16			64.268	1500		388153.752	396866.521	1.788
OU-18	0.020	5.00	64.610	350	350	388162.166	396859.305	1.000
JUN-04			64.663			388169.376	396866.553	2.309
OU-08	0.017	5.00	64.159	350	350	388224.815	396784.079	1.000
OU-01	0.003	5.00	64.420	350	350	388204.601	396773.900	1.000
S09			64.460	1500		388187.528	396795.319	1.860
OU-02	0.068	5.00	64.063	350	350	388193.388	396777.976	1.000
S01			64.150	600		388191.908	396776.688	1.172
OU-07	0.040	5.00	64.345	350	350	388197.166	396791.687	1.350
OU-04	0.130	5.00	64.093	350	350	388149.305	396788.915	1.000
OU-03	0.055	5.00	64.252	350	350	388164.599	396784.686	1.000
S03			64.291	1500		388166.728	396786.723	1.343
S04			64.433	1500		388171.539	396798.394	2.061
OU-05	0.060	5.00	64.417	350	350	388157.495	396819.066	1.000
OU-06	0.030	5.00	64.592	350	350	388173.489	396817.213	1.000
S05			64.659	1500		388177.568	396820.189	2.512
S11	0.013	5.00	64.531	450		388196.518	396814.994	0.731

Flow+ v15.0 Copyright © 1988-2026 Causeway Technologies Ltd

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
S12	0.013	5.00	64.676	450		388200.834	396830.772	0.700
S17A			64.822	1500		388181.897	396835.980	2.722
S17			64.680	1500		388188.257	396867.644	2.930
OU-19	0.081	5.00	64.640	350	350	388257.958	396935.573	1.000
S18			64.560	1500		388236.014	396932.498	1.278
OU-20	0.073	5.00	64.507	350	350	388223.207	396917.885	1.000
OU-21	0.060	5.00	64.564	350	350	388239.483	396908.335	1.000
S19			64.480	1500		388230.077	396910.923	1.288
KO-01	0.033	5.00	64.202	350	350	388262.984	396869.222	0.790
OU-22	0.047	5.00	64.496	350	350	388265.455	396876.733	0.881
S20			64.730	1500		388261.407	396877.847	1.569
OU-23	0.060	5.00	64.573	350	350	388229.757	396871.909	1.000
OU-24	0.060	5.00	64.528	350	350	388234.487	396890.122	1.000
JUN S22A			64.576			388229.800	396886.545	1.634
OU-26	0.073	5.00	64.279	350	350	388215.721	396889.840	0.817
OU-25	0.073	5.00	64.312	350	350	388211.947	396875.699	0.805
S22			64.330	1500		388213.557	396891.015	1.580
OU-27	0.090	5.00	64.473	350	350	388192.039	396926.186	1.350
S23			64.499	600		388189.987	396910.486	1.843
OU-28	0.118	5.00	64.457	350	350	388185.887	396903.148	1.000
JUN-05			64.483			388187.729	396902.281	1.861
OU-29	0.061	5.00	64.500	350	350	388181.023	396884.928	1.000
S24			64.597	1500		388182.786	396884.320	2.050
OU-30	0.052	5.00	64.198	350	350	388203.533	396881.236	1.350
S25			64.637	1500		388191.349	396882.020	2.730
S26			64.660	1500		388188.359	396874.610	2.994
PI			64.577	600		388181.875	396876.751	3.007
S27			64.754	1800		388170.636	396879.830	3.499
TANK			64.540			388177.005	396903.633	3.370
JUN S17A			64.652			388200.818	396862.879	2.215
S28			64.536	1500		388179.853	396906.968	3.384
S29			64.553	1800		388191.433	396939.763	4.003
JUN S13C			64.475			388222.564	396851.580	1.848

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
11.000	RE PP1	BEND PP2	17.402	0.600	63.500	63.384	0.116	150.0	225	5.27	50.0
11.001	BEND PP2	BEND PP3	4.967	0.600	63.384	63.351	0.033	150.0	225	5.35	50.0
11.002	BEND PP3	BEND PP4	5.405	0.600	63.351	63.315	0.036	150.0	225	5.43	50.0
11.003	BEND PP4	BEND PP5	3.186	0.600	63.315	63.294	0.021	150.0	225	5.48	50.0
11.004	BEND PP5	BEND PP6	11.712	0.600	63.294	63.216	0.078	150.0	225	5.67	50.0
11.005	BEND PP6	S13b	4.011	0.600	63.216	63.189	0.027	150.0	225	5.73	50.0
11.006	S13b	S13a	7.777	0.600	63.189	62.800	0.389	20.0	225	5.77	50.0
12.000	OU-11	JUN S13C	14.017	0.600	63.460	62.702	0.758	18.5	150	5.10	50.0
11.009	S13	JUN S17A	15.517	0.600	62.540	62.437	0.103	150.0	300	6.30	50.0
17.000	OU-12	S14	9.712	0.600	63.076	62.960	0.116	83.7	225	5.11	50.0
18.000	OU-13	S14	4.971	0.600	63.031	62.960	0.071	70.0	225	5.05	50.0
17.001	S14	JUN-02	19.986	0.600	62.660	62.603	0.057	350.0	450	5.42	50.0
19.000	OU-14	JUN-02	3.670	0.600	63.083	62.903	0.180	20.4	225	5.02	50.0

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Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
17.002	JUN-02	S16	20.704	0.600	62.603	62.480	0.123	168.3	450	5.64	50.0
15.000	OU-15	S15	5.049	0.600	63.232	63.182	0.050	100.0	300	5.05	50.0
15.001	S15	JUN-03	35.229	0.600	63.182	62.830	0.352	100.0	300	5.43	50.0
16.000	OU-16	JUN-03	5.036	0.600	63.298	62.980	0.318	15.8	150	5.03	50.0
15.002	JUN-03	S16	19.888	0.600	62.830	62.631	0.199	100.0	300	5.64	50.0
20.000	OU-17	S16	4.830	0.600	63.136	63.104	0.032	150.0	225	5.08	50.0
15.003	S16	JUN-04	15.624	0.600	62.480	62.369	0.111	140.7	450	5.79	50.0
21.000	OU-18	JUN-04	10.223	0.600	63.610	62.676	0.934	10.9	150	5.06	50.0
15.004	JUN-04	S17	18.912	0.600	62.354	62.160	0.194	97.5	450	5.95	50.0
1.000	OU-08	S09	38.944	0.600	63.159	62.750	0.409	95.2	150	5.63	50.0
2.000	OU-01	S01	12.996	0.600	63.420	63.053	0.367	35.4	225	5.10	50.0
1.001	S09	S04	16.282	0.600	62.600	62.520	0.080	203.5	300	5.88	50.0
3.000	OU-02	S01	1.962	0.600	63.063	62.978	0.085	23.1	300	5.01	50.0
2.001	S01	S09	19.139	0.600	62.978	62.675	0.303	63.2	225	5.29	50.0
4.000	OU-07	S09	10.300	0.600	62.995	62.750	0.245	42.0	150	5.11	50.0
5.000	OU-04	S04	24.170	0.600	63.093	62.522	0.571	42.3	300	5.17	50.0
6.000	OU-03	S03	2.947	0.600	63.252	62.948	0.304	9.7	150	5.02	50.0
6.001	S03	S04	12.624	0.600	62.948	62.672	0.276	45.7	150	5.16	50.0
1.002	S04	S05	22.614	0.600	62.372	62.297	0.075	300.0	450	6.20	50.0
7.000	OU-05	S05	20.104	0.600	63.417	63.000	0.417	48.2	225	5.18	50.0
9.000	OU-06	S05	5.049	0.600	63.592	63.000	0.592	8.5	150	5.02	50.0
1.003	S05	S17A	16.374	0.600	62.147	62.100	0.047	350.0	600	6.41	50.0
1.004	S11	S05	9.581	0.600	63.800	63.000	0.800	12.0	150	5.05	50.0
10.000	S12	S17A	19.640	0.600	63.976	62.450	1.526	12.9	150	5.12	50.0
1.004_1	S17A	S17	32.296	0.600	62.100	62.000	0.100	323.0	600	6.81	50.0
1.005	S17	S26	6.967	0.600	61.750	61.735	0.015	450.0	600	6.91	50.0
22.000	OU-19	S18	22.158	0.600	63.640	63.357	0.283	78.3	225	5.25	50.0
22.001	S18	S19	22.377	0.600	63.282	63.192	0.090	250.0	300	5.63	50.0
23.000	OU-20	S19	9.781	0.600	63.507	63.300	0.207	47.3	150	5.11	50.0
24.000	OU-21	S19	9.756	0.600	63.564	63.300	0.264	37.0	225	5.08	50.0
22.002	S19	S22	25.870	0.600	63.230	63.127	0.103	250.0	300	6.06	50.0
25.000	KO-01	S20	8.768	0.600	63.412	63.237	0.175	50.0	225	5.08	50.0
26.000	OU-22	S20	4.198	0.600	63.615	63.236	0.379	11.1	150	5.02	50.0
25.001	S20	JUN S22A	32.782	0.600	63.161	62.942	0.219	150.0	225	5.59	50.0
13.000	OU-23	S13	20.325	0.600	63.573	63.370	0.203	100.0	225	5.26	50.0
27.000	OU-24	JUN S22A	5.896	0.600	63.528	62.942	0.586	10.1	225	5.02	50.0
25.002	JUN S22A	S22	16.847	0.600	62.942	62.830	0.112	150.0	225	5.86	50.0
28.000	OU-26	S22	2.462	0.600	63.462	63.273	0.189	13.0	225	5.01	50.0
14.000	OU-25	JUN S17A	16.977	0.600	63.507	62.587	0.920	18.5	150	5.12	50.0
22.003	S22	S25	23.960	0.600	62.750	62.205	0.545	44.0	450	6.19	50.0
29.000	OU-27	S23	15.834	0.600	63.123	62.731	0.392	40.4	225	5.13	50.0
29.001	S23	JUN-05	8.510	0.600	62.656	62.622	0.034	250.0	300	5.27	50.0
30.000	OU-28	JUN-05	2.036	0.600	63.457	62.697	0.760	2.7	225	5.00	50.0
29.002	JUN-05	S24	18.629	0.600	62.622	62.547	0.075	250.0	300	5.58	50.0
31.000	OU-29	S24	1.865	0.600	63.500	63.481	0.019	100.0	150	5.03	50.0
29.003	S24	S25	8.867	0.600	62.547	62.207	0.340	26.1	300	5.63	50.0
32.000	OU-30	S25	12.209	0.600	62.848	62.780	0.068	179.5	150	5.27	50.0
22.004	S25	S26	7.991	0.600	61.907	61.666	0.241	33.2	600	6.22	50.0
1.006	S26	PI	6.828	0.600	61.666	61.651	0.015	450.0	600	7.01	50.0

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Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.009	PI	S27	5.432	0.600	61.570	61.554	0.016	339.5	600	7.08	50.0
1.010	S27	TANK	21.145	0.600	61.255	61.170	0.085	248.8	375	7.39	50.0
1.011	TANK	S28	2.452	0.600	61.170	61.161	0.009	272.4	375	7.43	50.0
11.010	JUN S17A	S17	13.434	0.600	62.437	62.160	0.277	48.5	300	6.40	50.0
1.012	S28	S29	37.587	0.600	61.152	60.550	0.602	62.4	300	7.74	50.0
11.007	S13a	JUN S13C	17.346	0.600	62.800	62.627	0.173	100.0	225	6.00	50.0
11.008	JUN S13C	S13	9.327	0.600	62.627	62.540	0.087	107.2	300	6.10	50.0

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
Rainfall Events	Singular	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m³/ha)	20.0
M5-60 (mm)	17.000	Starting Level (m)	
Ratio-R	0.400	Check Discharge Rate(s)	x
Summer CV	1.000	Check Discharge Volume	✓
Winter CV	1.000	100 year 360 minute (m³)	
Analysis Speed	Detailed		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m³)	

Node S29 Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to 100yr+40% CC 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440 minute storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	1.300	1440	1.300

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Node S28 Online Hydro-Brake® Control

Flap Valve	✓	Objective	(HE) Minimise upstream storage
Downstream Link	1.012	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0252-3300-0600-3300
Invert Level (m)	61.152	Min Outlet Diameter (m)	0.300
Design Depth (m)	0.600	Min Node Diameter (mm)	1500
Design Flow (l/s)	33.0		

Node S28 Online Orifice Control

Flap Valve	x	Invert Level (m)	62.170	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.190		

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	61.170
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	124

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	323.0	0.0	2.400	323.0	0.0	2.401	0.0	0.0

Node S13b Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	11.005
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.189	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	11	Diameter (mm)	600

Node BEND PP6 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	11.004
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.216	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	10	Diameter (mm)	600

Node BEND PP5 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	11.003
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.294	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	8	Diameter (mm)	600

Node BEND PP4 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	11.002
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.315	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	7	Diameter (mm)	600

Node BEND PP3 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	11.001
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.351	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	7	Diameter (mm)	600

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Node BEND PP2 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	11.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	63.384	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	7	Diameter (mm)	600

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	92.521	26.180	30 year 1440 minute summer	8.788	2.355
1 year 15 minute winter	64.927	26.180	30 year 1440 minute winter	5.906	2.355
1 year 30 minute summer	60.022	16.984	100 year 15 minute summer	291.766	82.560
1 year 30 minute winter	42.121	16.984	100 year 15 minute winter	204.748	82.560
1 year 60 minute summer	40.398	10.676	100 year 30 minute summer	191.982	54.324
1 year 60 minute winter	26.839	10.676	100 year 30 minute winter	134.724	54.324
1 year 120 minute summer	24.980	6.602	100 year 60 minute summer	129.253	34.158
1 year 120 minute winter	16.596	6.602	100 year 60 minute winter	85.873	34.158
1 year 180 minute summer	19.271	4.959	100 year 120 minute summer	78.836	20.834
1 year 180 minute winter	12.527	4.959	100 year 120 minute winter	52.377	20.834
1 year 240 minute summer	15.301	4.043	100 year 180 minute summer	59.966	15.431
1 year 240 minute winter	10.165	4.043	100 year 180 minute winter	38.980	15.431
1 year 360 minute summer	11.775	3.030	100 year 240 minute summer	46.975	12.414
1 year 360 minute winter	7.654	3.030	100 year 240 minute winter	31.209	12.414
1 year 480 minute summer	9.342	2.469	100 year 360 minute summer	35.264	9.075
1 year 480 minute winter	6.207	2.469	100 year 360 minute winter	22.923	9.075
1 year 600 minute summer	7.682	2.101	100 year 480 minute summer	27.350	7.228
1 year 600 minute winter	5.249	2.101	100 year 480 minute winter	18.171	7.228
1 year 720 minute summer	6.859	1.838	100 year 600 minute summer	22.137	6.055
1 year 720 minute winter	4.609	1.838	100 year 600 minute winter	15.126	6.055
1 year 960 minute summer	5.653	1.489	100 year 720 minute summer	19.562	5.243
1 year 960 minute winter	3.745	1.489	100 year 720 minute winter	13.147	5.243
1 year 1440 minute summer	4.127	1.106	100 year 960 minute summer	15.851	4.174
1 year 1440 minute winter	2.773	1.106	100 year 960 minute winter	10.500	4.174
30 year 15 minute summer	226.195	64.005	100 year 1440 minute summer	11.278	3.023
30 year 15 minute winter	158.733	64.005	100 year 1440 minute winter	7.579	3.023
30 year 30 minute summer	147.452	41.724	100 year +40% CC 15 minute summer	408.473	115.584
30 year 30 minute winter	103.475	41.724	100 year +40% CC 15 minute winter	286.647	115.584
30 year 60 minute summer	98.615	26.061	100 year +40% CC 30 minute summer	268.775	76.054
30 year 60 minute winter	65.517	26.061	100 year +40% CC 30 minute winter	188.614	76.054
30 year 120 minute summer	59.946	15.842	100 year +40% CC 60 minute summer	180.954	47.821
30 year 120 minute winter	39.827	15.842	100 year +40% CC 60 minute winter	120.222	47.821
30 year 180 minute summer	45.598	11.734	100 year +40% CC 120 minute summer	110.370	29.168
30 year 180 minute winter	29.640	11.734	100 year +40% CC 120 minute winter	73.327	29.168
30 year 240 minute summer	35.759	9.450	100 year +40% CC 180 minute summer	83.953	21.604
30 year 240 minute winter	23.758	9.450	100 year +40% CC 180 minute winter	54.572	21.604
30 year 360 minute summer	26.939	6.932	100 year +40% CC 240 minute summer	65.765	17.380
30 year 360 minute winter	17.511	6.932	100 year +40% CC 240 minute winter	43.693	17.380
30 year 480 minute summer	20.981	5.545	100 year +40% CC 360 minute summer	49.370	12.705
30 year 480 minute winter	13.940	5.545	100 year +40% CC 360 minute winter	32.092	12.705
30 year 600 minute summer	17.039	4.661	100 year +40% CC 480 minute summer	38.291	10.119
30 year 600 minute winter	11.642	4.661	100 year +40% CC 480 minute winter	25.439	10.119
30 year 720 minute summer	15.093	4.045	100 year +40% CC 600 minute summer	30.992	8.477
30 year 720 minute winter	10.143	4.045	100 year +40% CC 600 minute winter	21.176	8.477
30 year 960 minute summer	12.278	3.233	100 year +40% CC 720 minute summer	27.387	7.340
30 year 960 minute winter	8.133	3.233	100 year +40% CC 720 minute winter	18.406	7.340

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +40% CC 960 minute summer	22.191	5.844	100 year +40% CC 1440 minute summer	15.789	4.232
100 year +40% CC 960 minute winter	14.700	5.844	100 year +40% CC 1440 minute winter	10.611	4.232

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE PP1	10	63.568	0.068	8.2	0.1587	0.0000	OK
15 minute summer	BEND PP2	11	63.463	0.079	10.4	0.0924	0.0000	OK
15 minute summer	BEND PP3	11	63.440	0.089	12.8	0.1983	0.0000	OK
15 minute summer	BEND PP4	11	63.414	0.099	14.3	0.0798	0.0000	OK
15 minute summer	BEND PP5	11	63.401	0.107	19.5	0.1227	0.0000	OK
15 minute summer	BEND PP6	11	63.328	0.112	21.3	0.1386	0.0000	OK
15 minute summer	S13b	11	63.255	0.066	21.3	0.1460	0.0000	OK
15 minute summer	S13a	11	62.904	0.104	21.3	0.0293	0.0000	OK
15 minute summer	OU-11	10	63.516	0.056	12.1	0.1138	0.0000	OK
15 minute summer	S13	11	62.685	0.145	41.8	0.2566	0.0000	OK
15 minute summer	OU-12	10	63.179	0.103	21.2	0.3025	0.0000	OK
15 minute summer	OU-13	10	63.128	0.097	19.0	0.2568	0.0000	OK
15 minute summer	S14	10	62.808	0.148	39.8	0.2624	0.0000	OK
15 minute summer	OU-14	10	63.128	0.045	9.2	0.0607	0.0000	OK
15 minute summer	JUN-02	10	62.743	0.140	48.6	0.0000	0.0000	OK
15 minute summer	OU-15	10	63.310	0.078	13.1	0.1454	0.0000	OK
15 minute summer	S15	10	63.258	0.076	16.0	0.1599	0.0000	OK
15 minute summer	OU-16	10	63.343	0.045	8.2	0.0604	0.0000	OK
15 minute summer	JUN-03	11	62.926	0.096	23.9	0.0000	0.0000	OK
15 minute summer	OU-17	10	63.218	0.082	10.1	0.1197	0.0000	OK
15 minute summer	S16	11	62.656	0.176	82.3	0.3118	0.0000	OK
15 minute summer	OU-18	10	63.634	0.024	3.0	0.0127	0.0000	OK
15 minute summer	JUN-04	11	62.517	0.163	85.8	0.0000	0.0000	OK
15 minute summer	OU-08	11	63.197	0.038	2.6	0.0176	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE PP1	11.000	BEND PP2	8.1	0.719	0.191	0.1958	
15 minute summer	BEND PP2	11.001	BEND PP3	10.3	0.756	0.242	0.0675	
15 minute summer	BEND PP3	11.002	BEND PP4	12.9	0.819	0.304	0.0849	
15 minute summer	BEND PP4	11.003	BEND PP5	14.3	0.808	0.338	0.0564	
15 minute summer	BEND PP5	11.004	BEND PP6	19.6	1.023	0.463	0.2243	
15 minute summer	BEND PP6	11.005	S13b	21.3	1.465	0.504	0.0588	
15 minute summer	S13b	11.006	S13a	21.3	1.559	0.183	0.1072	
15 minute summer	S13a	11.007	JUN S13C	21.4	1.062	0.411	0.3530	
15 minute summer	OU-11	12.000	JUN S13C	12.0	2.009	0.288	0.0837	
15 minute summer	S13	11.009	JUN S17A	41.9	1.368	0.463	0.4756	
15 minute summer	OU-12	17.000	S14	20.9	1.252	0.368	0.1625	
15 minute summer	OU-13	18.000	S14	18.8	1.257	0.303	0.0745	
15 minute summer	S14	17.001	JUN-02	39.5	0.905	0.230	0.8750	
15 minute summer	OU-14	19.000	JUN-02	9.2	1.683	0.079	0.0200	
15 minute summer	JUN-02	17.002	S16	48.7	0.982	0.196	1.0290	
15 minute summer	OU-15	15.000	S15	13.0	0.914	0.117	0.0718	
15 minute summer	S15	15.001	JUN-03	15.8	0.952	0.142	0.5860	
15 minute summer	OU-16	16.000	JUN-03	8.2	1.879	0.181	0.0219	
15 minute summer	JUN-03	15.002	S16	23.8	1.251	0.214	0.3788	
15 minute summer	OU-17	20.000	S16	10.0	0.822	0.237	0.0589	
15 minute summer	S16	15.003	JUN-04	82.9	1.491	0.304	0.8688	
15 minute summer	OU-18	21.000	JUN-04	3.0	1.634	0.055	0.0187	
15 minute summer	JUN-04	15.004	S17	86.0	1.720	0.263	0.9456	
15 minute summer	OU-08	1.000	S09	2.5	0.725	0.139	0.1357	

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-01	10	63.432	0.012	0.5	0.0022	0.0000	OK
15 minute summer	S09	11	62.706	0.106	19.0	0.1869	0.0000	OK
15 minute summer	OU-02	10	63.114	0.051	10.3	0.0754	0.0000	OK
15 minute summer	S01	10	63.041	0.063	10.7	0.0179	0.0000	OK
15 minute summer	OU-07	10	63.045	0.050	6.0	0.0356	0.0000	OK
15 minute summer	OU-04	10	63.163	0.070	19.6	0.1907	0.0000	OK
15 minute summer	OU-03	10	63.292	0.040	8.3	0.0492	0.0000	OK
15 minute summer	S03	10	63.008	0.060	8.3	0.1064	0.0000	OK
15 minute summer	S04	11	62.532	0.160	46.1	0.2834	0.0000	OK
15 minute summer	OU-05	10	63.471	0.054	9.1	0.0713	0.0000	OK
15 minute summer	OU-06	10	63.621	0.029	4.5	0.0210	0.0000	OK
15 minute summer	S05	11	62.327	0.180	61.5	0.3173	0.0000	OK
15 minute summer	S11	10	63.821	0.021	2.0	0.0106	0.0000	OK
15 minute summer	S12	10	63.997	0.021	2.0	0.0110	0.0000	OK
15 minute summer	S17A	11	62.271	0.171	63.6	0.3021	0.0000	OK
15 minute summer	S17	11	62.154	0.404	201.4	0.7137	0.0000	OK
15 minute summer	OU-19	10	63.711	0.071	12.2	0.1242	0.0000	OK
15 minute summer	S18	11	63.382	0.100	12.0	0.1771	0.0000	OK
15 minute summer	OU-20	10	63.580	0.073	11.0	0.1153	0.0000	OK
15 minute summer	OU-21	10	63.613	0.049	9.1	0.0650	0.0000	OK
15 minute summer	S19	11	63.377	0.185	31.4	0.3264	0.0000	OK
15 minute summer	KO-01	10	63.453	0.041	5.0	0.0396	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-01	2.000	S01	0.5	0.583	0.005	0.0105	
15 minute summer	S09	1.001	S04	19.0	0.891	0.245	0.3477	
15 minute summer	OU-02	3.000	S01	10.3	1.102	0.044	0.0183	
15 minute summer	S01	2.001	S09	10.6	1.192	0.162	0.1700	
15 minute summer	OU-07	4.000	S09	6.0	1.207	0.217	0.0509	
15 minute summer	OU-04	5.000	S04	19.3	1.590	0.113	0.2941	
15 minute summer	OU-03	6.000	S03	8.3	1.601	0.144	0.0153	
15 minute summer	S03	6.001	S04	8.2	1.277	0.310	0.0807	
15 minute summer	S04	1.002	S05	46.6	0.972	0.251	1.0839	
15 minute summer	OU-05	7.000	S05	9.0	1.256	0.119	0.1434	
15 minute summer	OU-06	9.000	S05	4.5	1.954	0.073	0.0116	
15 minute summer	S05	1.003	S17A	61.7	0.911	0.168	1.1200	
15 minute summer	S11	1.004	S05	2.0	1.394	0.038	0.0137	
15 minute summer	S12	10.000	S17A	2.0	1.366	0.040	0.0284	
15 minute summer	S17A	1.004_1	S17	62.9	1.006	0.165	2.0304	
15 minute summer	S17	1.005	S26	201.1	1.042	0.623	1.3446	
15 minute summer	OU-19	22.000	S18	12.0	1.145	0.204	0.2327	
15 minute summer	S18	22.001	S19	11.8	0.362	0.169	0.7396	
15 minute summer	OU-20	23.000	S19	11.0	1.314	0.423	0.0841	
15 minute summer	OU-21	24.000	S19	9.1	1.240	0.105	0.0884	
15 minute summer	S19	22.002	S22	31.2	0.959	0.446	0.8422	
15 minute summer	KO-01	25.000	S20	5.0	1.030	0.067	0.0423	

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-22	10	63.655	0.040	7.1	0.0477	0.0000	OK
15 minute summer	S20	10	63.242	0.081	12.0	0.1424	0.0000	OK
15 minute summer	OU-23	10	63.638	0.065	9.1	0.0860	0.0000	OK
15 minute summer	OU-24	10	63.564	0.036	9.1	0.0473	0.0000	OK
15 minute summer	JUN S22A	11	63.056	0.114	20.9	0.0000	0.0000	OK
15 minute summer	OU-26	10	63.511	0.049	11.0	0.0935	0.0000	OK
15 minute summer	OU-25	10	63.560	0.053	11.0	0.1034	0.0000	OK
15 minute summer	S22	11	62.864	0.114	62.5	0.2013	0.0000	OK
15 minute summer	OU-27	10	63.187	0.064	13.6	0.0936	0.0000	OK
15 minute summer	S23	10	62.765	0.109	13.5	0.0309	0.0000	OK
15 minute summer	OU-28	10	63.493	0.036	17.8	0.0892	0.0000	OK
15 minute summer	JUN-05	10	62.759	0.137	31.2	0.0000	0.0000	OK
15 minute summer	OU-29	10	63.589	0.089	9.2	0.1195	0.0000	OK
15 minute summer	S24	10	62.644	0.097	40.1	0.1709	0.0000	OK
15 minute summer	OU-30	10	62.936	0.088	7.9	0.0783	0.0000	OK
15 minute summer	S25	11	62.070	0.163	109.9	0.2874	0.0000	OK
15 minute summer	S26	11	62.108	0.442	310.5	0.7814	0.0000	OK
15 minute summer	PI	11	62.007	0.437	309.6	0.1235	0.0000	OK
120 minute summer	S27	86	61.690	0.435	139.1	1.1072	0.0000	SURCHARGED
120 minute summer	TANK	86	61.690	0.520	134.9	159.4231	0.0000	SURCHARGED
15 minute summer	JUN S17A	11	62.561	0.124	52.5	0.0000	0.0000	OK
120 minute summer	S28	86	61.688	0.536	33.4	0.9467	0.0000	SURCHARGED
30 minute winter	S29	33	60.648	0.098	32.9	0.0000	0.0000	OK
15 minute summer	JUN S13C	11	62.753	0.126	33.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-22	26.000	S20	7.1	1.986	0.131	0.0150	
15 minute summer	S20	25.001	JUN S22A	11.8	0.725	0.279	0.5388	
15 minute summer	OU-23	13.000	S13	8.9	0.964	0.172	0.1881	
15 minute summer	OU-24	27.000	JUN S22A	9.1	1.094	0.055	0.0708	
15 minute summer	JUN S22A	25.002	S22	20.7	1.052	0.490	0.3322	
15 minute summer	OU-26	28.000	S22	10.9	1.922	0.076	0.0140	
15 minute summer	OU-25	14.000	JUN S17A	10.9	1.965	0.262	0.0942	
15 minute summer	S22	22.003	S25	62.6	2.074	0.128	0.7233	
15 minute summer	OU-27	29.000	S23	13.5	1.490	0.164	0.1432	
15 minute summer	S23	29.001	JUN-05	13.4	0.496	0.192	0.2316	
15 minute summer	OU-28	30.000	JUN-05	17.8	3.363	0.055	0.0132	
15 minute summer	JUN-05	29.002	S24	31.0	1.221	0.442	0.4741	
15 minute summer	OU-29	31.000	S24	9.1	0.923	0.514	0.0184	
15 minute summer	S24	29.003	S25	39.8	2.199	0.182	0.1609	
15 minute summer	OU-30	32.000	S25	7.8	0.762	0.589	0.1245	
15 minute summer	S25	22.004	S26	109.4	0.997	0.091	1.1359	
15 minute summer	S26	1.006	PI	309.6	1.539	0.960	1.3700	
15 minute summer	PI	1.009	S27	309.2	1.550	0.831	1.0813	
15 minute summer	S27	1.010	TANK	317.3	2.046	0.837	6.1078	
60 minute summer	TANK	1.011	S28	33.5	0.319	0.278	0.2704	
15 minute summer	JUN S17A	11.010	S17	52.6	1.984	0.329	0.3562	
30 minute winter	S28	1.012	S29	32.9	1.614	0.234	0.7673	166.5
15 minute summer	JUN S13C	11.008	S13	33.0	1.069	0.308	0.2883	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.71%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE PP1	10	63.611	0.111	19.9	0.2611	0.0000	OK
15 minute summer	BEND PP2	11	63.528	0.144	25.2	0.2464	0.0000	OK
15 minute summer	BEND PP3	11	63.518	0.167	30.8	0.3788	0.0000	OK
15 minute summer	BEND PP4	11	63.504	0.189	34.6	0.1572	0.0000	OK
15 minute summer	BEND PP5	11	63.495	0.201	47.4	0.2306	0.0000	OK
15 minute summer	BEND PP6	10	63.408	0.192	51.8	0.2695	0.0000	OK
15 minute summer	S13b	12	63.341	0.152	52.9	0.3369	0.0000	OK
15 minute summer	S13a	12	63.232	0.432	49.8	0.1224	0.0000	SURCHARGED
15 minute summer	OU-11	11	63.554	0.094	29.6	0.1900	0.0000	OK
15 minute summer	S13	12	62.986	0.446	99.1	0.7882	0.0000	SURCHARGED
15 minute summer	OU-12	10	63.270	0.194	51.7	0.5659	0.0000	OK
15 minute summer	OU-13	10	63.206	0.175	46.5	0.4613	0.0000	OK
15 minute summer	S14	10	62.911	0.251	97.1	0.4439	0.0000	OK
15 minute summer	OU-14	10	63.156	0.073	22.5	0.0984	0.0000	OK
15 minute summer	JUN-02	10	62.845	0.242	118.7	0.0000	0.0000	OK
15 minute summer	OU-15	10	63.363	0.131	32.1	0.2438	0.0000	OK
15 minute summer	S15	10	63.304	0.122	39.3	0.2582	0.0000	OK
15 minute summer	OU-16	10	63.373	0.075	19.9	0.1003	0.0000	OK
15 minute summer	JUN-03	10	62.990	0.160	58.8	0.0000	0.0000	OK
15 minute summer	OU-17	10	63.275	0.139	24.8	0.2031	0.0000	OK
15 minute summer	S16	12	62.794	0.314	200.2	0.5540	0.0000	OK
15 minute summer	OU-18	10	63.648	0.038	7.4	0.0200	0.0000	OK
15 minute summer	JUN-04	12	62.705	0.351	204.9	0.0000	0.0000	OK
15 minute summer	OU-08	11	63.220	0.061	6.3	0.0281	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE PP1	11.000	BEND PP2	19.7	0.864	0.466	0.3990	
15 minute summer	BEND PP2	11.001	BEND PP3	24.8	0.864	0.587	0.1454	
15 minute summer	BEND PP3	11.002	BEND PP4	31.1	0.924	0.734	0.1820	
15 minute summer	BEND PP4	11.003	BEND PP5	34.7	0.947	0.819	0.1166	
15 minute summer	BEND PP5	11.004	BEND PP6	47.6	1.296	1.123	0.4294	
15 minute summer	BEND PP6	11.005	S13b	52.9	1.840	1.250	0.1282	
15 minute summer	S13b	11.006	S13a	49.8	1.737	0.426	0.2653	
15 minute summer	S13a	11.007	JUN S13C	49.8	1.253	0.959	0.6899	
15 minute summer	OU-11	12.000	JUN S13C	29.4	2.254	0.708	0.2051	
15 minute summer	S13	11.009	JUN S17A	96.1	1.540	1.061	1.0927	
15 minute summer	OU-12	17.000	S14	51.0	1.507	0.897	0.3275	
15 minute summer	OU-13	18.000	S14	46.1	1.540	0.741	0.1483	
15 minute summer	S14	17.001	JUN-02	96.3	1.082	0.560	1.7789	
15 minute summer	OU-14	19.000	JUN-02	22.4	2.130	0.194	0.0387	
15 minute summer	JUN-02	17.002	S16	118.3	1.170	0.476	2.1185	
15 minute summer	OU-15	15.000	S15	31.9	1.132	0.287	0.1425	
15 minute summer	S15	15.001	JUN-03	39.0	1.197	0.351	1.1477	
15 minute summer	OU-16	16.000	JUN-03	19.8	2.353	0.441	0.0424	
15 minute summer	JUN-03	15.002	S16	58.1	1.564	0.523	0.7623	
15 minute summer	OU-17	20.000	S16	24.6	1.031	0.581	0.1152	
15 minute summer	S16	15.003	JUN-04	197.6	1.806	0.726	1.9141	
15 minute summer	OU-18	21.000	JUN-04	7.4	2.117	0.136	0.0356	
15 minute summer	JUN-04	15.004	S17	202.4	1.922	0.618	2.7541	
15 minute summer	OU-08	1.000	S09	6.1	0.926	0.336	0.2575	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.71%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-01	11	63.438	0.018	1.1	0.0032	0.0000	OK
15 minute summer	S09	10	62.780	0.180	46.7	0.3176	0.0000	OK
15 minute summer	OU-02	10	63.152	0.089	25.1	0.1322	0.0000	OK
15 minute summer	S01	10	63.082	0.104	26.1	0.0293	0.0000	OK
15 minute summer	OU-07	10	63.080	0.085	14.8	0.0607	0.0000	OK
15 minute summer	OU-04	10	63.206	0.113	48.0	0.3065	0.0000	OK
15 minute summer	OU-03	10	63.323	0.071	20.3	0.0862	0.0000	OK
15 minute summer	S03	10	63.055	0.107	20.2	0.1895	0.0000	OK
15 minute summer	S04	12	62.719	0.347	113.8	0.6127	0.0000	OK
15 minute summer	OU-05	10	63.504	0.087	22.2	0.1155	0.0000	OK
15 minute summer	OU-06	10	63.639	0.047	11.1	0.0342	0.0000	OK
15 minute summer	S05	12	62.690	0.543	147.6	0.9599	0.0000	OK
15 minute summer	S11	10	63.832	0.032	4.8	0.0164	0.0000	OK
15 minute summer	S12	10	64.007	0.031	4.8	0.0167	0.0000	OK
15 minute summer	S17A	12	62.679	0.579	138.3	1.0228	0.0000	OK
15 minute summer	S17	12	62.657	0.907	450.1	1.6027	0.0000	SURCHARGED
15 minute summer	OU-19	10	63.758	0.118	29.9	0.2057	0.0000	OK
15 minute summer	S18	11	63.518	0.236	29.7	0.4176	0.0000	OK
15 minute summer	OU-20	11	63.780	0.273	27.0	0.4320	0.0000	SURCHARGED
15 minute summer	OU-21	9	63.642	0.078	22.2	0.1038	0.0000	OK
15 minute summer	S19	11	63.504	0.312	75.5	0.5508	0.0000	OK
15 minute summer	KO-01	10	63.478	0.066	12.2	0.0635	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-01	2.000	S01	1.1	0.717	0.013	0.0283	
15 minute summer	S09	1.001	S04	46.4	1.103	0.597	0.7466	
15 minute summer	OU-02	3.000	S01	25.0	1.283	0.108	0.0383	
15 minute summer	S01	2.001	S09	26.0	1.466	0.397	0.3437	
15 minute summer	OU-07	4.000	S09	14.7	1.506	0.534	0.1005	
15 minute summer	OU-04	5.000	S04	47.9	1.971	0.280	0.8270	
15 minute summer	OU-03	6.000	S03	20.2	1.876	0.352	0.0318	
15 minute summer	S03	6.001	S04	20.0	1.561	0.759	0.1616	
15 minute summer	S04	1.002	S05	109.8	1.168	0.591	3.1434	
15 minute summer	OU-05	7.000	S05	22.0	1.599	0.292	0.2762	
15 minute summer	OU-06	9.000	S05	11.1	2.478	0.180	0.0226	
15 minute summer	S05	1.003	S17A	134.4	1.032	0.367	4.4778	
15 minute summer	S11	1.004	S05	4.8	1.792	0.092	0.0256	
15 minute summer	S12	10.000	S17A	4.8	1.730	0.096	0.1985	
15 minute summer	S17A	1.004_1	S17	152.0	0.983	0.399	9.0482	
15 minute summer	S17	1.005	S26	451.0	1.601	1.398	1.9624	
15 minute summer	OU-19	22.000	S18	29.7	1.378	0.505	0.5629	
15 minute summer	S18	22.001	S19	28.5	0.429	0.407	1.4540	
15 minute summer	OU-20	23.000	S19	25.8	1.466	0.995	0.1722	
15 minute summer	OU-21	24.000	S19	22.1	1.257	0.258	0.2418	
15 minute summer	S19	22.002	S22	74.5	1.217	1.065	1.5645	
15 minute summer	KO-01	25.000	S20	12.1	1.310	0.164	0.0811	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.71%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-22	10	63.683	0.068	17.4	0.0803	0.0000	OK
15 minute summer	S20	10	63.296	0.135	29.5	0.2391	0.0000	OK
15 minute summer	OU-23	10	63.680	0.107	22.2	0.1420	0.0000	OK
15 minute summer	OU-24	10	63.584	0.056	22.2	0.0734	0.0000	OK
15 minute summer	JUN S22A	11	63.194	0.252	51.2	0.0000	0.0000	SURCHARGED
15 minute summer	OU-26	10	63.546	0.084	27.0	0.1605	0.0000	OK
15 minute summer	OU-25	10	63.598	0.091	27.0	0.1754	0.0000	OK
15 minute summer	S22	11	62.929	0.179	150.8	0.3164	0.0000	OK
15 minute summer	OU-27	10	63.226	0.103	33.2	0.1499	0.0000	OK
15 minute summer	S23	10	62.865	0.209	33.0	0.0591	0.0000	OK
15 minute summer	OU-28	10	63.515	0.058	43.6	0.1434	0.0000	OK
15 minute summer	JUN-05	10	62.856	0.234	76.2	0.0000	0.0000	OK
15 minute summer	OU-29	10	63.694	0.194	22.5	0.2612	0.0000	SURCHARGED
15 minute summer	S24	11	62.725	0.178	97.9	0.3152	0.0000	OK
15 minute summer	OU-30	10	63.072	0.224	19.2	0.2000	0.0000	SURCHARGED
15 minute summer	S25	12	62.590	0.683	267.5	1.2073	0.0000	SURCHARGED
15 minute summer	S26	12	62.562	0.896	698.3	1.5825	0.0000	SURCHARGED
120 minute summer	PI	84	62.465	0.895	325.0	0.2532	0.0000	SURCHARGED
120 minute summer	S27	84	62.462	1.207	323.2	3.0721	0.0000	SURCHARGED
120 minute summer	TANK	84	62.458	1.288	319.2	395.1850	0.0000	SURCHARGED
15 minute summer	JUN S17A	12	62.846	0.409	123.0	0.0000	0.0000	SURCHARGED
120 minute summer	S28	84	62.448	1.296	77.0	2.2900	0.0000	SURCHARGED
120 minute summer	S29	84	60.706	0.156	76.9	0.0000	0.0000	OK
15 minute summer	JUN S13C	12	63.044	0.417	77.7	0.0000	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-22	26.000	S20	17.4	2.427	0.323	0.0300	
15 minute summer	S20	25.001	JUN S22A	29.1	0.859	0.686	1.0605	
15 minute summer	OU-23	13.000	S13	21.9	1.217	0.421	0.3654	
15 minute summer	OU-24	27.000	JUN S22A	22.1	1.248	0.134	0.1396	
15 minute summer	JUN S22A	25.002	S22	50.5	1.284	1.193	0.6320	
15 minute summer	OU-26	28.000	S22	26.9	2.338	0.186	0.0284	
15 minute summer	OU-25	14.000	JUN S17A	26.9	2.415	0.645	0.2376	
15 minute summer	S22	22.003	S25	153.7	2.397	0.315	2.4191	
15 minute summer	OU-27	29.000	S23	33.0	1.692	0.403	0.3350	
15 minute summer	S23	29.001	JUN-05	32.7	0.587	0.467	0.4737	
15 minute summer	OU-28	30.000	JUN-05	43.5	3.485	0.136	0.0387	
15 minute summer	JUN-05	29.002	S24	75.6	1.493	1.081	0.9490	
15 minute summer	OU-29	31.000	S24	22.3	1.269	1.257	0.0319	
15 minute summer	S24	29.003	S25	96.1	2.437	0.440	0.5058	
15 minute summer	OU-30	32.000	S25	18.8	1.078	1.426	0.2039	
15 minute summer	S25	22.004	S26	258.9	0.956	0.216	2.2509	
15 minute summer	S26	1.006	PI	699.0	2.482	2.166	1.9233	
15 minute summer	PI	1.009	S27	699.2	2.485	1.880	1.5130	
15 minute summer	S27	1.010	TANK	694.5	2.169	1.832	6.9967	
120 minute summer	TANK	1.011	S28	77.0	0.698	0.638	0.2704	
15 minute summer	JUN S17A	11.010	S17	118.1	2.088	0.738	0.9460	
120 minute summer	S28	1.012	S29	76.9	1.996	0.546	1.4492	641.4
15 minute summer	JUN S13C	11.008	S13	77.2	1.221	0.720	0.6568	

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE PP1	12	63.764	0.264	25.7	0.6193	0.0000	SURCHARGED
15 minute summer	BEND PP2	13	63.744	0.360	32.2	0.8707	0.0000	SURCHARGED
15 minute summer	BEND PP3	13	63.736	0.385	34.9	1.0613	0.0000	SURCHARGED
15 minute summer	BEND PP4	13	63.722	0.407	37.0	0.4058	0.0000	SURCHARGED
15 minute summer	BEND PP5	13	63.711	0.417	51.3	0.5178	0.0000	SURCHARGED
15 minute summer	BEND PP6	13	63.646	0.430	55.4	0.7870	0.0000	SURCHARGED
15 minute summer	S13b	13	63.603	0.414	56.0	0.9734	0.0000	SURCHARGED
15 minute summer	S13a	12	63.511	0.711	56.7	0.2012	0.0000	SURCHARGED
15 minute summer	OU-11	12	63.887	0.427	38.1	0.8606	0.0000	SURCHARGED
15 minute summer	S13	12	63.335	0.795	105.3	1.4053	0.0000	SURCHARGED
15 minute summer	OU-12	12	63.425	0.349	66.7	1.0196	0.0000	SURCHARGED
15 minute summer	OU-13	12	63.350	0.319	60.0	0.8423	0.0000	SURCHARGED
15 minute summer	S14	12	63.266	0.606	123.8	1.0700	0.0000	SURCHARGED
15 minute summer	OU-14	12	63.244	0.161	29.1	0.2160	0.0000	OK
15 minute summer	JUN-02	12	63.243	0.640	151.4	0.0000	0.0000	SURCHARGED
15 minute summer	OU-15	10	63.386	0.154	41.5	0.2862	0.0000	OK
15 minute summer	S15	10	63.325	0.143	50.8	0.3014	0.0000	OK
15 minute summer	OU-16	12	63.397	0.099	25.7	0.1317	0.0000	OK
15 minute summer	JUN-03	12	63.281	0.451	75.9	0.0000	0.0000	SURCHARGED
15 minute summer	OU-17	10	63.303	0.167	31.9	0.2437	0.0000	OK
15 minute summer	S16	12	63.201	0.721	246.4	1.2738	0.0000	SURCHARGED
15 minute summer	OU-18	10	63.653	0.043	9.5	0.0223	0.0000	OK
15 minute summer	JUN-04	12	63.109	0.755	227.6	0.0000	0.0000	SURCHARGED
15 minute summer	OU-08	10	63.229	0.070	8.1	0.0325	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE PP1	11.000	BEND PP2	25.1	0.891	0.593	0.6921	
15 minute summer	BEND PP2	11.001	BEND PP3	27.3	0.855	0.644	0.1975	
15 minute summer	BEND PP3	11.002	BEND PP4	35.9	0.947	0.848	0.2150	
15 minute summer	BEND PP4	11.003	BEND PP5	39.7	1.016	0.937	0.1267	
30 minute summer	BEND PP5	11.004	BEND PP6	50.7	1.313	1.198	0.4658	
15 minute summer	BEND PP6	11.005	S13b	56.0	1.847	1.321	0.1595	
15 minute summer	S13b	11.006	S13a	56.7	1.719	0.485	0.3093	
15 minute summer	S13a	11.007	JUN S13C	60.5	1.522	1.165	0.6899	
15 minute summer	OU-11	12.000	JUN S13C	35.3	2.193	0.849	0.2468	
15 minute summer	S13	11.009	JUN S17A	100.9	1.557	1.114	1.0927	
15 minute summer	OU-12	17.000	S14	65.1	1.638	1.145	0.3863	
15 minute summer	OU-13	18.000	S14	58.7	1.585	0.944	0.1977	
15 minute summer	S14	17.001	JUN-02	122.4	1.096	0.712	3.1667	
15 minute summer	OU-14	19.000	JUN-02	29.0	2.271	0.251	0.1287	
15 minute summer	JUN-02	17.002	S16	137.1	1.191	0.551	3.2804	
15 minute summer	OU-15	15.000	S15	41.3	1.192	0.372	0.1750	
15 minute summer	S15	15.001	JUN-03	50.3	1.244	0.452	1.8010	
15 minute summer	OU-16	16.000	JUN-03	25.6	2.491	0.569	0.0753	
15 minute summer	JUN-03	15.002	S16	77.7	1.532	0.699	1.4005	
15 minute summer	OU-17	20.000	S16	31.7	1.085	0.747	0.1407	
15 minute winter	S16	15.003	JUN-04	219.3	1.814	0.805	2.4755	
15 minute summer	OU-18	21.000	JUN-04	9.5	2.234	0.175	0.1110	
15 minute summer	JUN-04	15.004	S17	224.0	1.905	0.684	2.9965	
15 minute summer	OU-08	1.000	S09	7.9	0.943	0.435	0.4951	

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-01	11	63.440	0.020	1.4	0.0036	0.0000	OK
15 minute summer	S09	12	63.110	0.510	60.4	0.9012	0.0000	SURCHARGED
15 minute summer	OU-02	10	63.169	0.106	32.4	0.1567	0.0000	OK
15 minute summer	S01	12	63.146	0.168	33.7	0.0475	0.0000	OK
15 minute summer	OU-07	12	63.205	0.210	19.1	0.1505	0.0000	SURCHARGED
15 minute summer	OU-04	9	63.219	0.126	61.9	0.3421	0.0000	OK
15 minute summer	OU-03	12	63.364	0.112	26.2	0.1371	0.0000	OK
15 minute summer	S03	12	63.291	0.343	26.1	0.6055	0.0000	SURCHARGED
15 minute summer	S04	12	63.071	0.699	133.1	1.2346	0.0000	SURCHARGED
15 minute summer	OU-05	10	63.518	0.101	28.6	0.1338	0.0000	OK
15 minute summer	OU-06	10	63.647	0.055	14.3	0.0395	0.0000	OK
15 minute summer	S05	12	63.031	0.884	177.6	1.5629	0.0000	SURCHARGED
15 minute summer	S11	10	63.836	0.036	6.2	0.0188	0.0000	OK
15 minute summer	S12	10	64.012	0.036	6.2	0.0189	0.0000	OK
15 minute summer	S17A	12	63.017	0.917	179.7	1.6206	0.0000	SURCHARGED
15 minute summer	S17	12	62.992	1.242	519.4	2.1953	0.0000	SURCHARGED
15 minute summer	OU-19	9	63.775	0.135	38.6	0.2354	0.0000	OK
15 minute summer	S18	11	63.648	0.366	38.5	0.6472	0.0000	SURCHARGED
15 minute summer	OU-20	11	64.064	0.557	34.8	0.8806	0.0000	SURCHARGED
15 minute summer	OU-21	10	63.653	0.089	28.6	0.1175	0.0000	OK
15 minute summer	S19	11	63.615	0.423	96.9	0.7482	0.0000	SURCHARGED
15 minute summer	KO-01	9	63.486	0.073	15.7	0.0704	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-01	2.000	S01	1.4	0.629	0.016	0.1099	
15 minute winter	S09	1.001	S04	54.9	1.105	0.708	1.1466	
15 minute summer	OU-02	3.000	S01	32.3	1.334	0.139	0.0599	
15 minute summer	S01	2.001	S09	33.5	1.454	0.512	0.6845	
15 minute summer	OU-07	4.000	S09	19.0	1.586	0.690	0.1813	
15 minute summer	OU-04	5.000	S04	61.7	1.959	0.360	1.1806	
15 minute summer	OU-03	6.000	S03	26.1	1.921	0.453	0.0467	
15 minute winter	S03	6.001	S04	24.0	1.593	0.911	0.2222	
15 minute summer	S04	1.002	S05	130.4	1.257	0.702	3.5830	
15 minute summer	OU-05	7.000	S05	28.3	1.704	0.377	0.3342	
15 minute summer	OU-06	9.000	S05	14.3	2.636	0.232	0.0273	
15 minute summer	S05	1.003	S17A	173.7	1.056	0.474	4.6122	
15 minute summer	S11	1.004	S05	6.2	1.923	0.119	0.0307	
15 minute summer	S12	10.000	S17A	6.2	1.737	0.124	0.2043	
15 minute summer	S17A	1.004_1	S17	171.4	0.943	0.449	9.0970	
15 minute summer	S17	1.005	S26	514.2	1.826	1.594	1.9624	
15 minute summer	OU-19	22.000	S18	38.5	1.383	0.655	0.7141	
15 minute summer	S18	22.001	S19	36.7	0.522	0.525	1.5758	
15 minute summer	OU-20	23.000	S19	32.8	1.864	1.266	0.1722	
15 minute summer	OU-21	24.000	S19	28.5	1.230	0.332	0.2650	
15 minute summer	S19	22.002	S22	96.8	1.399	1.384	1.6975	
15 minute summer	KO-01	25.000	S20	15.7	1.285	0.213	0.2218	

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-22	11	63.697	0.082	22.4	0.0974	0.0000	OK
15 minute summer	S20	11	63.488	0.327	37.6	0.5780	0.0000	SURCHARGED
15 minute summer	OU-23	10	63.699	0.126	28.6	0.1662	0.0000	OK
15 minute summer	OU-24	10	63.591	0.063	28.6	0.0834	0.0000	OK
15 minute summer	JUN S22A	11	63.313	0.371	63.3	0.0000	0.0000	SURCHARGED
15 minute summer	OU-26	10	63.561	0.099	34.8	0.1890	0.0000	OK
15 minute summer	OU-25	12	63.678	0.171	34.8	0.3313	0.0000	SURCHARGED
15 minute summer	S22	12	62.991	0.241	193.4	0.4252	0.0000	OK
15 minute summer	OU-27	11	63.267	0.144	42.9	0.2090	0.0000	OK
15 minute summer	S23	12	63.186	0.530	42.4	0.1501	0.0000	SURCHARGED
15 minute summer	OU-28	11	63.534	0.077	56.2	0.1904	0.0000	OK
15 minute summer	JUN-05	12	63.174	0.552	94.0	0.0000	0.0000	SURCHARGED
15 minute summer	OU-29	10	63.747	0.247	29.1	0.3321	0.0000	SURCHARGED
15 minute summer	S24	12	63.058	0.511	118.7	0.9024	0.0000	SURCHARGED
15 minute summer	OU-30	10	63.198	0.350	24.8	0.3127	0.0000	SURCHARGED
30 minute summer	S25	20	62.931	1.024	295.6	1.8095	0.0000	SURCHARGED
30 minute summer	S26	20	62.898	1.232	745.6	2.1762	0.0000	SURCHARGED
120 minute summer	PI	82	62.802	1.232	386.3	0.3488	0.0000	SURCHARGED
120 minute summer	S27	84	62.797	1.542	385.4	3.9251	0.0000	SURCHARGED
120 minute summer	TANK	84	62.790	1.620	382.9	497.1645	0.0000	SURCHARGED
15 minute summer	JUN S17A	12	63.197	0.760	133.3	0.0000	0.0000	SURCHARGED
120 minute summer	S28	84	62.772	1.620	103.5	2.8630	0.0000	SURCHARGED
120 minute summer	S29	84	60.739	0.189	103.6	0.0000	0.0000	OK
15 minute summer	JUN S13C	12	63.388	0.761	82.2	0.0000	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-22	26.000	S20	22.0	2.437	0.409	0.0576	
15 minute summer	S20	25.001	JUN S22A	35.9	0.903	0.848	1.3038	
15 minute summer	OU-23	13.000	S13	28.2	1.293	0.543	0.4439	
15 minute summer	OU-24	27.000	JUN S22A	28.5	1.260	0.173	0.1441	
15 minute summer	JUN S22A	25.002	S22	63.3	1.592	1.494	0.6532	
15 minute summer	OU-26	28.000	S22	34.7	2.458	0.239	0.0348	
15 minute summer	OU-25	14.000	JUN S17A	33.3	2.452	0.801	0.2989	
15 minute summer	S22	22.003	S25	187.6	2.345	0.384	2.9314	
15 minute summer	OU-27	29.000	S23	42.4	1.620	0.517	0.5265	
15 minute summer	S23	29.001	JUN-05	38.9	0.581	0.556	0.5993	
15 minute summer	OU-28	30.000	JUN-05	55.7	3.397	0.174	0.0526	
15 minute summer	JUN-05	29.002	S24	90.7	1.518	1.297	1.3118	
15 minute summer	OU-29	31.000	S24	28.8	1.637	1.623	0.0325	
15 minute summer	S24	29.003	S25	113.9	2.565	0.521	0.6244	
15 minute summer	OU-30	32.000	S25	24.1	1.372	1.830	0.2117	
15 minute summer	S25	22.004	S26	321.3	1.141	0.268	2.2509	
15 minute summer	S26	1.006	PI	829.1	2.944	2.569	1.9233	
15 minute summer	PI	1.009	S27	827.4	2.938	2.224	1.5301	
15 minute summer	S27	1.010	TANK	823.5	2.489	2.173	6.9967	
120 minute summer	TANK	1.011	S28	103.5	0.939	0.858	0.2704	
15 minute summer	JUN S17A	11.010	S17	129.9	2.219	0.812	0.9460	
120 minute summer	S28	1.012	S29	103.6	2.122	0.735	1.8339	845.8
15 minute summer	JUN S13C	11.008	S13	79.4	1.205	0.740	0.6568	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE PP1	12	64.228	0.728	36.0	1.7101	0.3274	FLOOD
15 minute summer	BEND PP2	12	64.190	0.806	37.8	2.4346	0.1298	FLOOD
30 minute summer	BEND PP3	20	64.173	0.822	36.3	2.5435	2.6424	FLOOD
15 minute summer	BEND PP4	12	64.173	0.858	37.0	0.9461	0.0000	FLOOD RISK
15 minute summer	BEND PP5	12	64.172	0.878	57.2	1.1377	0.0000	FLOOD RISK
30 minute summer	BEND PP6	20	64.136	0.920	58.7	1.9362	0.0000	FLOOD RISK
30 minute summer	S13b	20	64.108	0.919	53.6	2.2309	0.0000	FLOOD RISK
30 minute summer	S13a	20	64.056	1.256	49.4	0.3556	0.0000	SURCHARGED
15 minute summer	OU-11	10	64.306	0.846	53.4	1.7038	2.9493	FLOOD
30 minute summer	S13	20	63.938	1.398	103.2	2.4701	0.0000	SURCHARGED
15 minute summer	OU-12	11	64.076	1.000	93.4	2.9230	2.7478	FLOOD
15 minute summer	OU-13	11	64.031	1.000	84.1	2.6420	1.3956	FLOOD
30 minute summer	S14	20	63.951	1.291	133.9	2.2820	0.0000	FLOOD RISK
30 minute summer	OU-14	20	63.946	0.863	36.7	1.1584	0.0000	FLOOD RISK
30 minute summer	JUN-02	20	63.930	1.327	160.2	0.0000	0.0000	FLOOD RISK
15 minute summer	OU-15	12	64.118	0.886	58.0	1.6503	0.0000	FLOOD RISK
15 minute summer	S15	12	64.099	0.917	67.1	1.9376	0.0000	FLOOD RISK
15 minute summer	OU-16	12	64.169	0.871	36.0	1.1629	0.0000	FLOOD RISK
15 minute summer	JUN-03	12	64.001	1.171	100.7	0.0000	0.0000	FLOOD RISK
30 minute summer	OU-17	20	63.924	0.788	40.3	1.1528	0.0000	FLOOD RISK
30 minute summer	S16	20	63.895	1.415	265.1	2.4997	0.0000	SURCHARGED
30 minute summer	OU-18	20	63.821	0.211	12.0	0.1106	0.0000	SURCHARGED
30 minute summer	JUN-04	20	63.795	1.441	253.9	0.0000	0.0000	SURCHARGED
30 minute summer	OU-08	20	63.893	0.734	10.2	0.3392	0.0000	FLOOD RISK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	RE PP1	11.000	BEND PP2	28.0	0.894	0.662	0.6921	
30 minute summer	BEND PP2	11.001	BEND PP3	28.8	0.864	0.680	0.1975	
15 minute winter	BEND PP3	11.002	BEND PP4	35.9	0.972	0.847	0.2150	
15 minute winter	BEND PP4	11.003	BEND PP5	39.5	1.032	0.933	0.1267	
15 minute summer	BEND PP5	11.004	BEND PP6	53.9	1.355	1.272	0.4658	
15 minute winter	BEND PP6	11.005	S13b	56.5	1.845	1.334	0.1595	
15 minute summer	S13b	11.006	S13a	57.7	1.684	0.493	0.3093	
15 minute summer	S13a	11.007	JUN S13C	61.0	1.533	1.173	0.6899	
15 minute summer	OU-11	12.000	JUN S13C	39.0	2.248	0.937	0.2468	
15 minute winter	S13	11.009	JUN S17A	102.0	1.504	1.126	1.0927	
15 minute summer	OU-12	17.000	S14	82.2	2.068	1.446	0.3863	
15 minute summer	OU-13	18.000	S14	76.6	1.926	1.231	0.1977	
15 minute summer	S14	17.001	JUN-02	135.4	1.099	0.788	3.1667	
15 minute winter	OU-14	19.000	JUN-02	34.4	2.268	0.298	0.1460	
15 minute summer	JUN-02	17.002	S16	166.3	1.201	0.669	3.2804	
15 minute summer	OU-15	15.000	S15	54.5	1.261	0.490	0.3555	
15 minute summer	S15	15.001	JUN-03	66.7	1.240	0.601	2.4808	
15 minute summer	OU-16	16.000	JUN-03	33.9	2.509	0.755	0.0887	
15 minute summer	JUN-03	15.002	S16	82.9	1.529	0.746	1.4005	
15 minute summer	OU-17	20.000	S16	41.3	1.153	0.976	0.1921	
15 minute summer	S16	15.003	JUN-04	264.6	1.818	0.972	2.4755	
15 minute summer	OU-18	21.000	JUN-04	13.1	2.308	0.242	0.1800	
15 minute summer	JUN-04	15.004	S17	272.7	1.845	0.833	2.9965	
15 minute summer	OU-08	1.000	S09	10.4	0.942	0.573	0.6856	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	OU-01	20	63.903	0.483	8.2	0.0884	0.0000	SURCHARGED
30 minute summer	S09	20	63.827	1.227	66.9	2.1676	0.0000	SURCHARGED
30 minute summer	OU-02	20	63.909	0.846	40.9	1.2551	0.0000	FLOOD RISK
30 minute summer	S01	20	63.904	0.926	38.3	0.2619	0.0000	FLOOD RISK
30 minute summer	OU-07	20	63.958	0.963	24.1	0.6884	0.0000	SURCHARGED
30 minute summer	OU-04	20	63.852	0.759	78.3	2.0655	0.0000	FLOOD RISK
15 minute summer	OU-03	12	64.141	0.889	36.7	1.0871	0.0000	FLOOD RISK
30 minute summer	S03	20	64.018	1.070	29.4	1.8908	0.0000	FLOOD RISK
30 minute summer	S04	20	63.774	1.402	157.4	2.4773	0.0000	SURCHARGED
30 minute summer	OU-05	20	63.778	0.361	36.1	0.4776	0.0000	SURCHARGED
30 minute summer	OU-06	20	63.761	0.169	18.1	0.1220	0.0000	SURCHARGED
30 minute summer	S05	20	63.720	1.573	174.3	2.7800	0.0000	SURCHARGED
15 minute summer	S11	9	63.842	0.042	8.7	0.0218	0.0000	OK
15 minute summer	S12	10	64.018	0.042	8.7	0.0225	0.0000	OK
30 minute summer	S17A	20	63.701	1.601	178.4	2.8289	0.0000	SURCHARGED
30 minute summer	S17	21	63.673	1.923	527.3	3.3981	0.0000	SURCHARGED
15 minute summer	OU-19	12	64.193	0.553	54.0	0.9638	0.0000	SURCHARGED
15 minute summer	S18	12	64.007	0.725	49.9	1.2817	0.0000	SURCHARGED
15 minute summer	OU-20	10	64.507	1.000	48.7	1.5820	0.9802	FLOOD
15 minute summer	OU-21	12	64.016	0.452	40.0	0.5976	0.0000	SURCHARGED
30 minute summer	S19	20	63.972	0.780	116.2	1.3788	0.0000	SURCHARGED
15 minute summer	KO-01	12	64.187	0.775	22.0	0.7424	0.0000	FLOOD RISK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	OU-01	2.000	S01	-6.4	0.689	-0.073	0.5169	
30 minute summer	S09	1.001	S04	62.4	1.094	0.804	1.1466	
15 minute summer	OU-02	3.000	S01	42.7	1.358	0.184	0.1382	
15 minute summer	S01	2.001	S09	44.9	1.497	0.685	0.7612	
15 minute summer	OU-07	4.000	S09	24.8	1.581	0.900	0.1813	
15 minute summer	OU-04	5.000	S04	76.2	2.040	0.445	1.7020	
15 minute summer	OU-03	6.000	S03	30.5	1.969	0.530	0.0519	
30 minute summer	S03	6.001	S04	24.8	1.570	0.941	0.2222	
15 minute summer	S04	1.002	S05	142.6	1.229	0.768	3.5830	
15 minute summer	OU-05	7.000	S05	40.6	1.805	0.540	0.7996	
15 minute summer	OU-06	9.000	S05	19.8	2.812	0.323	0.0782	
15 minute summer	S05	1.003	S17A	193.2	1.014	0.527	4.6122	
15 minute summer	S11	1.004	S05	8.7	2.072	0.168	0.1034	
15 minute summer	S12	10.000	S17A	8.7	1.909	0.174	0.2129	
15 minute summer	S17A	1.004_1	S17	197.0	0.942	0.516	9.0970	
15 minute summer	S17	1.005	S26	567.4	2.015	1.759	1.9624	
15 minute summer	OU-19	22.000	S18	49.9	1.387	0.848	0.8812	
15 minute summer	S18	22.001	S19	45.7	0.649	0.653	1.5758	
15 minute summer	OU-20	23.000	S19	42.1	2.391	1.623	0.1722	
15 minute summer	OU-21	24.000	S19	37.4	1.255	0.436	0.3880	
15 minute summer	S19	22.002	S22	120.5	1.713	1.722	1.8217	
15 minute summer	KO-01	25.000	S20	18.1	1.261	0.246	0.3487	

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU-22	12	64.300	0.685	31.4	0.8149	0.0000	FLOOD RISK
15 minute summer	S20	12	64.174	1.013	45.0	1.7906	0.0000	SURCHARGED
30 minute summer	OU-23	20	63.996	0.423	36.1	0.5601	0.0000	SURCHARGED
15 minute summer	OU-24	12	64.007	0.479	40.0	0.6326	0.0000	SURCHARGED
15 minute summer	JUN S22A	12	63.979	1.037	75.3	0.0000	0.0000	SURCHARGED
30 minute summer	OU-26	20	63.740	0.278	44.0	0.5309	0.0000	SURCHARGED
15 minute summer	OU-25	11	64.312	0.805	48.7	1.5585	1.3111	FLOOD
30 minute summer	S22	20	63.715	0.965	220.1	1.7058	0.0000	SURCHARGED
15 minute summer	OU-27	12	64.159	1.036	60.0	1.5083	0.0000	SURCHARGED
15 minute summer	S23	12	63.985	1.329	52.0	0.3761	0.0000	SURCHARGED
15 minute summer	OU-28	12	64.024	0.567	78.7	1.4073	0.0000	SURCHARGED
15 minute summer	JUN-05	12	63.964	1.342	116.7	0.0000	0.0000	SURCHARGED
15 minute summer	OU-29	12	63.895	0.395	40.7	0.5303	0.0000	SURCHARGED
30 minute summer	S24	20	63.785	1.238	136.8	2.1874	0.0000	SURCHARGED
15 minute summer	OU-30	12	63.882	1.034	34.7	0.9235	0.0000	SURCHARGED
30 minute summer	S25	21	63.603	1.696	364.9	2.9969	0.0000	SURCHARGED
180 minute summer	S26	120	63.587	1.921	390.6	3.3951	0.0000	SURCHARGED
180 minute summer	PI	120	63.580	2.010	389.0	0.5688	0.0000	SURCHARGED
180 minute summer	S27	120	63.573	2.318	388.1	5.8992	0.0000	SURCHARGED
180 minute summer	TANK	120	63.560	2.390	385.7	733.4681	0.0000	SURCHARGED
30 minute summer	JUN S17A	21	63.836	1.399	129.3	0.0000	0.0000	SURCHARGED
180 minute summer	S28	120	63.535	2.383	124.1	4.2099	0.0000	SURCHARGED
15 minute summer	S29	1	61.850	1.300	86.9	0.0000	0.0000	OK
30 minute summer	JUN S13C	21	63.974	1.347	80.3	0.0000	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU-22	26.000	S20	28.8	2.362	0.535	0.0739	
15 minute winter	S20	25.001	JUN S22A	38.5	0.968	0.909	1.3038	
15 minute summer	OU-23	13.000	S13	39.5	1.355	0.759	0.8083	
15 minute summer	OU-24	27.000	JUN S22A	37.2	1.257	0.226	0.2345	
15 minute winter	JUN S22A	25.002	S22	70.3	1.769	1.661	0.6700	
15 minute summer	OU-26	28.000	S22	48.5	2.618	0.335	0.0975	
30 minute summer	OU-25	14.000	JUN S17A	36.5	2.511	0.878	0.2989	
15 minute summer	S22	22.003	S25	220.4	2.275	0.451	3.7963	
15 minute summer	OU-27	29.000	S23	52.0	1.649	0.633	0.6297	
15 minute summer	S23	29.001	JUN-05	48.2	0.685	0.689	0.5993	
15 minute summer	OU-28	30.000	JUN-05	72.1	3.429	0.225	0.0810	
15 minute summer	JUN-05	29.002	S24	111.8	1.588	1.598	1.3118	
15 minute summer	OU-29	31.000	S24	40.2	2.282	2.262	0.0328	
15 minute summer	S24	29.003	S25	143.2	2.494	0.655	0.6244	
15 minute summer	OU-30	32.000	S25	30.2	1.718	2.292	0.2149	
15 minute summer	S25	22.004	S26	386.4	1.372	0.322	2.2509	
15 minute summer	S26	1.006	PI	946.1	3.359	2.932	1.9233	
15 minute summer	PI	1.009	S27	942.6	3.347	2.534	1.5301	
15 minute summer	S27	1.010	TANK	934.2	2.824	2.465	6.9967	
180 minute summer	TANK	1.011	S28	124.1	1.126	1.029	0.2704	
15 minute summer	JUN S17A	11.010	S17	130.2	2.159	0.814	0.9460	
180 minute summer	S28	1.012	S29	124.1	1.762	0.881	2.6469	1128.8
15 minute summer	JUN S13C	11.008	S13	82.3	1.211	0.767	0.6568	

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.357	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
OU 2	0.055	5.00	64.450	2100	300	388261.594	396886.854	0.300
W01A			64.510	1200		388257.353	396877.714	0.750
OU 1	0.022	5.00	64.356	300	300	388249.680	396887.411	0.356
W01	0.019	5.00	64.309	1200		388244.433	396873.384	1.139
W02			64.570	1200		388242.105	396865.867	1.534
W03		5.00	64.470	600		388251.697	396874.379	1.830
TANK			64.300			388244.104	396860.613	1.716
W04			64.380	600		388243.401	396859.338	1.804
W05			64.490	1200		388239.060	396855.503	2.040
W06			64.462	1200		388238.179	396852.455	2.132
EX BS4			64.375	1200		388237.159	396848.964	2.245

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	OU 2	W01A	10.076	0.600	64.150	63.762	0.388	26.0	150	5.08	50.0
1.001	W01A	W01	13.626	0.600	63.760	63.170	0.590	23.1	150	5.19	50.0
4.000	OU 1	W01	5.241	0.600	64.000	63.170	0.830	6.3	150	5.02	50.0
4.001	W01	W02	8.438	0.600	63.170	63.036	0.134	63.0	225	5.28	50.0
4.002	W02	W05	12.708	0.600	63.036	62.525	0.511	24.9	225	5.36	50.0
6.000	W03	TANK	14.004	0.600	62.640	62.584	0.056	250.1	300	5.24	50.0
6.001	TANK	W04	2.057	0.600	62.584	62.576	0.008	257.1	300	5.27	50.0
6.002	W04	W05	9.200	0.600	62.576	62.450	0.126	73.0	300	5.35	50.0
4.003	W05	W06	3.172	0.600	62.450	62.330	0.120	26.4	150	5.39	50.0
4.004	W06	EX BS4	3.637	0.600	62.330	62.130	0.200	18.2	150	5.41	50.0

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	18.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.357	Starting Level (m)	
Summer CV	1.000	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0

Node EX BS4 Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to 30yr, 100yr+40% CC 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440 minute storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.145	300	0.145	600	0.145	900	0.145	1200	0.145
60	0.145	360	0.145	660	0.145	960	0.145	1260	0.145
120	0.145	420	0.145	720	0.145	1020	0.145	1320	0.145
180	0.145	480	0.145	780	0.145	1080	0.145	1380	0.145
240	0.145	540	0.145	840	0.145	1140	0.145	1440	0.145

Node W05 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	62.729	Product Number	CTL-SHE-0100-5000-1400-5000
Design Depth (m)	1.400	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	62.780
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	70

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	49.0	0.0	0.800	49.0	0.0	0.801	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	94.544	26.753	1 year 480 minute summer	10.646	2.814
1 year 15 minute winter	66.347	26.753	1 year 480 minute winter	7.073	2.814
1 year 30 minute summer	62.472	17.677	1 year 600 minute summer	8.802	2.408
1 year 30 minute winter	43.840	17.677	1 year 600 minute winter	6.014	2.408
1 year 60 minute summer	43.047	11.376	1 year 720 minute summer	7.910	2.120
1 year 60 minute winter	28.599	11.376	1 year 720 minute winter	5.316	2.120
1 year 120 minute summer	27.254	7.202	1 year 960 minute summer	6.587	1.734
1 year 120 minute winter	18.107	7.202	1 year 960 minute winter	4.363	1.734
1 year 180 minute summer	21.332	5.490	1 year 1440 minute summer	4.881	1.308
1 year 180 minute winter	13.867	5.490	1 year 1440 minute winter	3.280	1.308
1 year 240 minute summer	17.118	4.524	30 year 15 minute summer	231.260	65.439
1 year 240 minute winter	11.373	4.524	30 year 15 minute winter	162.288	65.439
1 year 360 minute summer	13.366	3.440	30 year 30 minute summer	153.527	43.443
1 year 360 minute winter	8.688	3.440	30 year 30 minute winter	107.738	43.443

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 60 minute summer	104.640	27.653
30 year 60 minute winter	69.521	27.653
30 year 120 minute summer	64.756	17.113
30 year 120 minute winter	43.023	17.113
30 year 180 minute summer	49.709	12.792
30 year 180 minute winter	32.312	12.792
30 year 240 minute summer	39.200	10.359
30 year 240 minute winter	26.043	10.359
30 year 360 minute summer	29.730	7.651
30 year 360 minute winter	19.326	7.651
30 year 480 minute summer	23.349	6.171
30 year 480 minute winter	15.513	6.171
30 year 600 minute summer	19.082	5.219
30 year 600 minute winter	13.038	5.219
30 year 720 minute summer	16.978	4.550
30 year 720 minute winter	11.410	4.550
30 year 960 minute summer	13.908	3.662
30 year 960 minute winter	9.213	3.662
30 year 1440 minute summer	10.051	2.694
30 year 1440 minute winter	6.755	2.694
100 year 15 minute summer	298.537	84.476
100 year 15 minute winter	209.500	84.476
100 year 30 minute summer	200.159	56.638
100 year 30 minute winter	140.462	56.638
100 year 60 minute summer	137.337	36.294
100 year 60 minute winter	91.244	36.294
100 year 120 minute summer	85.177	22.510
100 year 120 minute winter	56.589	22.510
100 year 180 minute summer	65.275	16.797
100 year 180 minute winter	42.430	16.797
100 year 240 minute summer	51.323	13.563
100 year 240 minute winter	34.098	13.563
100 year 360 minute summer	38.660	9.949
100 year 360 minute winter	25.130	9.949
100 year 480 minute summer	30.232	7.990
100 year 480 minute winter	20.086	7.990
100 year 600 minute summer	24.620	6.734
100 year 600 minute winter	16.822	6.734
100 year 720 minute summer	21.840	5.853
100 year 720 minute winter	14.678	5.853
100 year 960 minute summer	17.803	4.688
100 year 960 minute winter	11.793	4.688
100 year 1440 minute summer	12.768	3.422
100 year 1440 minute winter	8.581	3.422
100 year +40% CC 15 minute summer	417.952	118.266
100 year +40% CC 15 minute winter	293.299	118.266
100 year +40% CC 30 minute summer	280.222	79.293
100 year +40% CC 30 minute winter	196.647	79.293
100 year +40% CC 60 minute summer	192.272	50.812
100 year +40% CC 60 minute winter	127.741	50.812
100 year +40% CC 120 minute summer	119.247	31.514
100 year +40% CC 120 minute winter	79.225	31.514
100 year +40% CC 180 minute summer	91.385	23.516
100 year +40% CC 180 minute winter	59.403	23.516
100 year +40% CC 240 minute summer	71.853	18.989
100 year +40% CC 240 minute winter	47.737	18.989
100 year +40% CC 360 minute summer	54.124	13.928
100 year +40% CC 360 minute winter	35.182	13.928
100 year +40% CC 480 minute summer	42.325	11.185
100 year +40% CC 480 minute winter	28.120	11.185
100 year +40% CC 600 minute summer	34.468	9.428
100 year +40% CC 600 minute winter	23.551	9.428
100 year +40% CC 720 minute summer	30.577	8.195
100 year +40% CC 720 minute winter	20.549	8.195
100 year +40% CC 960 minute summer	24.924	6.563
100 year +40% CC 960 minute winter	16.510	6.563
100 year +40% CC 1440 minute summer	17.875	4.791
100 year +40% CC 1440 minute winter	12.013	4.791

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Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU 2	10	64.203	0.053	8.5	0.2260	0.0000	OK
15 minute summer	W01A	10	63.808	0.048	8.3	0.0545	0.0000	OK
15 minute summer	OU 1	10	64.022	0.022	3.4	0.0295	0.0000	OK
15 minute summer	W01	10	63.249	0.079	14.6	0.1160	0.0000	OK
15 minute summer	W02	11	63.092	0.056	14.4	0.0637	0.0000	OK
60 minute summer	W03	41	62.853	0.213	0.9	0.0602	0.0000	OK
60 minute summer	TANK	41	62.852	0.268	7.0	3.3540	0.0000	OK
60 minute summer	W04	41	62.851	0.275	7.0	0.0780	0.0000	OK
60 minute summer	W05	41	62.851	0.401	10.3	0.4538	0.0000	SURCHARGED
60 minute summer	W06	41	62.364	0.034	3.9	0.0380	0.0000	OK
60 minute summer	EX BS4	41	62.161	0.031	3.9	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU 2	1.000	W01A	8.3	1.572	0.238	0.0535	
15 minute summer	W01A	1.001	W01	8.3	1.167	0.223	0.0975	
15 minute summer	OU 1	4.000	W01	3.4	0.654	0.047	0.0290	
15 minute summer	W01	4.001	W02	14.4	1.440	0.220	0.0850	
15 minute summer	W02	4.002	W05	14.5	1.015	0.138	0.3019	
15 minute winter	W03	6.000	TANK	-4.0	-0.162	-0.058	0.7231	
15 minute summer	TANK	6.001	W04	-13.3	-0.420	-0.192	0.1291	
15 minute summer	W04	6.002	W05	-13.5	-0.202	-0.103	0.6167	
60 minute summer	W05	4.003	W06	3.9	1.231	0.113	0.0101	
60 minute summer	W06	4.004	EX BS4	3.9	1.412	0.094	0.0101	9.3

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU 2	10	64.241	0.091	20.8	0.3900	0.0000	OK
15 minute summer	W01A	10	63.839	0.079	20.5	0.0897	0.0000	OK
15 minute summer	OU 1	10	64.035	0.035	8.3	0.0458	0.0000	OK
15 minute summer	W01	10	63.305	0.135	35.9	0.1973	0.0000	OK
15 minute summer	W02	10	63.126	0.090	35.6	0.1015	0.0000	OK
60 minute summer	W03	46	63.060	0.420	1.0	0.1188	0.0000	SURCHARGED
60 minute summer	TANK	45	63.059	0.475	19.3	13.0213	0.0000	SURCHARGED
60 minute summer	W04	45	63.059	0.483	19.7	0.1367	0.0000	SURCHARGED
60 minute summer	W05	46	63.059	0.609	25.0	0.6889	0.0000	SURCHARGED
60 minute summer	W06	46	62.365	0.035	5.0	0.0394	0.0000	OK
15 minute summer	EX BS4	1	62.275	0.145	4.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU 2	1.000	W01A	20.5	1.946	0.585	0.1060	
15 minute summer	W01A	1.001	W01	20.4	1.518	0.549	0.1779	
15 minute summer	OU 1	4.000	W01	8.3	0.862	0.116	0.0517	
15 minute summer	W01	4.001	W02	35.6	1.800	0.542	0.1669	
15 minute summer	W02	4.002	W05	35.4	1.215	0.338	0.3465	
15 minute summer	W03	6.000	TANK	-5.3	-0.132	-0.076	0.9862	
15 minute summer	TANK	6.001	W04	-29.9	-0.445	-0.434	0.1449	
15 minute summer	W04	6.002	W05	-30.4	-0.432	-0.234	0.6479	
60 minute summer	W05	4.003	W06	5.0	1.363	0.143	0.0116	
60 minute summer	W06	4.004	EX BS4	5.0	0.449	0.118	0.0373	25.0

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU 2	10	64.260	0.110	26.8	0.4714	0.0000	OK
15 minute summer	W01A	10	63.854	0.094	26.4	0.1068	0.0000	OK
15 minute summer	OU 1	10	64.039	0.039	10.7	0.0520	0.0000	OK
15 minute summer	W01	10	63.330	0.160	46.2	0.2341	0.0000	OK
60 minute summer	W02	48	63.183	0.147	32.8	0.1663	0.0000	OK
60 minute summer	W03	52	63.183	0.543	1.2	0.1536	0.0000	SURCHARGED
60 minute summer	TANK	49	63.183	0.599	26.1	18.7621	0.0000	SURCHARGED
60 minute summer	W04	49	63.183	0.607	26.6	0.1716	0.0000	SURCHARGED
60 minute summer	W05	49	63.183	0.733	32.5	0.8285	0.0000	SURCHARGED
180 minute summer	W06	120	62.368	0.038	5.0	0.0434	0.0000	OK
180 minute summer	EX BS4	120	62.165	0.035	5.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU 2	1.000	W01A	26.4	2.037	0.753	0.1303	
15 minute summer	W01A	1.001	W01	26.2	1.655	0.706	0.1995	
15 minute summer	OU 1	4.000	W01	10.7	0.867	0.150	0.0557	
15 minute summer	W01	4.001	W02	45.9	1.843	0.700	0.2204	
15 minute summer	W02	4.002	W05	45.3	1.306	0.433	0.3952	
15 minute summer	W03	6.000	TANK	-4.2	-0.244	-0.059	0.9862	
15 minute summer	TANK	6.001	W04	-38.4	-0.545	-0.557	0.1449	
15 minute summer	W04	6.002	W05	-39.2	-0.557	-0.301	0.6479	
60 minute summer	W05	4.003	W06	5.0	1.300	0.144	0.0122	
180 minute summer	W06	4.004	EX BS4	5.0	1.502	0.119	0.0121	46.6

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	OU 2	11	64.395	0.245	37.5	1.0543	0.0000	FLOOD RISK
15 minute summer	W01A	12	63.955	0.195	34.1	0.2205	0.0000	SURCHARGED
15 minute summer	OU 1	10	64.047	0.047	15.0	0.0618	0.0000	OK
30 minute summer	W01	20	63.461	0.291	57.7	0.4265	0.0000	SURCHARGED
120 minute summer	W02	92	63.431	0.395	30.1	0.4465	0.0000	SURCHARGED
120 minute summer	W03	92	63.429	0.789	0.8	0.2234	0.0000	SURCHARGED
120 minute summer	TANK	92	63.429	0.845	22.4	30.2549	0.0000	SURCHARGED
120 minute summer	W04	92	63.429	0.853	22.9	0.2415	0.0000	SURCHARGED
120 minute summer	W05	92	63.429	0.979	28.7	1.1077	0.0000	SURCHARGED
30 minute summer	W06	68	62.365	0.035	5.0	0.0396	0.0000	OK
15 minute summer	EX BS4	1	62.275	0.145	5.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	OU 2	1.000	W01A	34.1	2.028	0.973	0.1774	
15 minute summer	W01A	1.001	W01	32.8	1.865	0.883	0.2399	
15 minute summer	OU 1	4.000	W01	15.0	1.126	0.210	0.0583	
15 minute summer	W01	4.001	W02	59.5	1.853	0.906	0.3356	
15 minute summer	W02	4.002	W05	58.4	1.527	0.557	0.5054	
15 minute winter	W03	6.000	TANK	-6.1	-0.216	-0.087	0.9862	
15 minute summer	TANK	6.001	W04	-50.9	-0.723	-0.738	0.1449	
15 minute summer	W04	6.002	W05	-52.0	-0.738	-0.399	0.6479	
180 minute winter	W05	4.003	W06	5.0	1.366	0.144	0.0116	
30 minute summer	W06	4.004	EX BS4	5.0	0.453	0.119	0.0374	36.7

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APPENDIX J3 - DRIANGE MODEL DETAILS & RESULTS
BUILDING DRAINAGE (FLOW CONTROL @ SRH06)

Curtins		Page 1
Merchant Exchange 17-19 Whitworth Street West Manchester, M1 5WG		
Date 01/05/2025 12:51 File Building Drainage 02.02....	Designed by losty_a Checked by	
Innovyze	Network 2018.1.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for siphon and harvesting

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.357	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
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)	1.00
Volumetric Runoff Coeff.	1.000	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for siphon and harvesting

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.200	4-8	0.661	8-12	0.209	12-16	0.008

Total Area Contributing (ha) = 1.079

Total Pipe Volume (m³) = 66.278

Network Design Table for siphon and harvesting

- Indicates pipe length does not match coordinates
« - Indicates pipe capacity < flow

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	45.000#	0.000	0.0	0.247	5.00	0.0	0.600	\/	-4	Pipe/Conduit	
1.001	0.501	1.670	0.3	0.000	0.00	0.0	0.600	o	200	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	44.73	9.34	65.700	0.247	0.0	0.0	0.0	0.17	25.9«	39.9
1.001	44.73	9.34	65.680	0.247	0.0	0.0	0.0	22.35	702.0	39.9

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Network Design Table for siphon and harvesting

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
1.002	5.390	0.054	99.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.003	51.315	0.128	400.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
2.000	15.000#	0.005	3000.0	0.245	5.00	0.0	0.600	\/	-4	Pipe/Conduit	
2.001	0.500#	1.667	0.3	0.000	0.00	0.0	0.600	o	200	Pipe/Conduit	
2.002	5.823	0.058	100.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.004	29.243	0.073	400.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.000	35.000#	0.032	1093.8	0.235	5.00	0.0	0.600	\/	-4	Pipe/Conduit	
3.001	0.500#	1.667	0.3	0.000	0.00	0.0	0.600	o	200	Pipe/Conduit	
3.002	6.390#	0.064	99.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.005	28.825	0.058	497.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
4.000	30.000#	0.007	4285.7	0.235	5.00	0.0	0.600	\/	-4	Pipe/Conduit	
4.001	0.500#	1.667	0.3	0.000	0.00	0.0	0.600	o	200	Pipe/Conduit	
4.002	7.509	0.059	127.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
5.000	20.000#	0.007	2857.1	0.116	5.00	0.0	0.600	\/	-4	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)
1.002	44.56	9.41	63.206	0.247	0.0	0.0	0.0	1.31	52.0	39.9
1.003	42.61	10.26	62.927	0.247	0.0	0.0	0.0	1.01	160.5	39.9
2.000	50.00	5.78	65.600	0.245	0.0	0.0	0.0	0.32	48.2	44.2
2.001	50.00	5.78	65.580	0.245	0.0	0.0	0.0	22.35	702.1	44.2
2.002	50.00	5.85	63.211	0.245	0.0	0.0	0.0	1.30	51.9	44.2
1.004	41.58	10.74	62.799	0.492	0.0	0.0	0.0	1.01	160.6	73.9
3.000	50.00	6.08	65.500	0.235	0.0	0.0	0.0	0.54	80.9	42.4
3.001	50.00	6.08	65.468	0.235	0.0	0.0	0.0	22.35	702.1	42.4
3.002	50.00	6.16	63.214	0.235	0.0	0.0	0.0	1.31	52.0	42.4
1.005	40.69	11.18	62.576	0.727	0.0	0.0	0.0	1.09	306.9	106.9
4.000	50.00	6.87	65.400	0.235	0.0	0.0	0.0	0.27	40.1«	42.5
4.001	50.00	6.87	65.268	0.235	0.0	0.0	0.0	22.35	702.1	42.5
4.002	50.00	6.98	63.211	0.235	0.0	0.0	0.0	1.16	46.0	42.5
5.000	50.00	6.01	65.700	0.116	0.0	0.0	0.0	0.33	49.5	20.9

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Network Design Table for siphon and harvesting

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
5.001	0.500#	1.667	0.3	0.000	0.00	0.0	0.600	o	160	Pipe/Conduit	
5.002	7.784	0.058	134.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.003	18.541	0.054	343.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	31.179	0.052	599.6	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.007	7.723	0.026	297.0	0.000	0.00	0.0	0.600	ooo	-1	Pipe/Conduit	
1.008	17.634	0.059	298.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.009	18.442	1.025	18.0	0.000	0.00	0.0	0.600	o	300	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)
5.001	50.00	6.01	65.680	0.116	0.0	0.0	0.0	19.36	389.2	20.9
5.002	50.00	6.13	63.220	0.116	0.0	0.0	0.0	1.13	44.8	20.9
4.003	50.00	7.26	62.898	0.351	0.0	0.0	0.0	1.09	173.6	63.4
1.006	39.82	11.64	62.368	1.079	0.0	0.0	0.0	1.14	501.7	155.1
1.007	39.60	11.76	62.316	1.079	0.0	0.0	0.0	1.09	410.9	155.1
1.008	39.01	12.08	61.471	1.079	0.0	0.0	0.0	0.90	63.9«	155.1
1.009	38.87	12.17	60.920	1.079	0.0	0.0	0.0	3.72	263.2	155.1

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Merchant Exchange
17-19 Whitworth Street West
Manchester, M1 5WG

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Manhole Schedules for siphon and harvesting

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdro (mm)
Sgutter	66.000	0.300	Junction		1.000	65.700	-4				
Sdp	66.000	0.320	Junction		1.001	65.680	200	1.000	65.700	-4	8
Ssiphon gf	65.000	1.794	Sealed Manhole	225	1.002	63.206	225	1.001	64.010	200	77
SSRH01	64.350	1.423	Open Manhole	1350	1.003	62.927	450	1.002	63.152	225	
Sgutter	66.000	0.400	Junction		2.000	65.600	-4				
Sdp	66.000	0.420	Junction		2.001	65.580	200	2.000	65.595	-4	7
Ssiphon gf	64.313	1.102	Junction		2.002	63.211	225	2.001	63.913	200	67
SSRH02	64.220	1.421	Open Manhole	1350	1.004	62.799	450	1.003	62.799	450	
								2.002	63.153	225	12
Sgutter	66.000	0.500	Junction		3.000	65.500	-4				
Sdp	66.000	0.532	Junction		3.001	65.468	200	3.000	65.468	-4	
Ssiphon gf	64.496	1.282	Junction		3.002	63.214	225	3.001	63.801	200	56
SSRH03	64.260	1.684	Open Manhole	1500	1.005	62.576	600	1.004	62.726	450	
								3.002	63.150	225	19
Sgutter	66.000	0.600	Junction		4.000	65.400	-4				
Sdp	66.000	0.732	Junction		4.001	65.268	200	4.000	65.393	-4	18
Ssiphon gf	64.196	0.985	Junction		4.002	63.211	225	4.001	63.601	200	36
Sgutter	66.000	0.300	Junction		5.000	65.700	-4				
Sdp	66.000	0.320	Junction		5.001	65.680	160	5.000	65.693	-4	11
Ssiphon gf	64.265	1.045	Junction		5.002	63.220	225	5.001	64.013	160	72
SSRH05	64.210	1.312	Open Manhole	1350	4.003	62.898	450	4.002	63.152	225	2
								5.002	63.162	225	3
SSRH04	64.170	1.802	Open Manhole	2100	1.006	62.368	750	1.005	62.518	600	
								4.003	62.844	450	17
SSRH06a	64.500	2.184	Open Manhole	2100	1.007	62.316	-1	1.006	62.316	750	
Stank	64.271	2.800	Open Manhole	100	1.008	61.471	300	1.007	62.290	-1	91
SSRH06	64.630	3.710	Open Manhole	1500	1.009	60.920	300	1.008	61.412	300	49
S	64.301	4.406	Open Manhole	0		OUTFALL		1.009	59.895	300	

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Area Summary for siphon and harvesting

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.247	0.247	0.247
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
2.000	User	-	100	0.245	0.245	0.245
2.001	-	-	100	0.000	0.000	0.000
2.002	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.235	0.235	0.235
3.001	-	-	100	0.000	0.000	0.000
3.002	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
4.000	User	-	100	0.235	0.235	0.235
4.001	-	-	100	0.000	0.000	0.000
4.002	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.116	0.116	0.116
5.001	-	-	100	0.000	0.000	0.000
5.002	-	-	100	0.000	0.000	0.000
4.003	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.079	1.079	1.079

Surcharged Outfall Details for siphon and harvesting

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.009	S	64.301	59.895	59.300	0	0

Datum (m) 60.050 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
60	1.000	300	1.000	540	1.000	780	1.000	1020	1.000	1260	1.000
120	1.000	360	1.000	600	1.000	840	1.000	1080	1.000	1320	1.000
180	1.000	420	1.000	660	1.000	900	1.000	1140	1.000	1380	1.000
240	1.000	480	1.000	720	1.000	960	1.000	1200	1.000	1440	1.000

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Simulation Criteria for siphon and harvesting

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

Number of Input Hydrographs 0	Number of Offline Controls 5	Number of Time/Area Diagrams 0
Number of Online Controls 6	Number of Storage Structures 1	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.357		

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Online Controls for siphon and harvesting

Siphon Manhole: Sdp, DS/PN: 1.001, Volume (m³): 6.8

Invert Level (m) 65.680 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	155.5300	0.200	155.5300
0.100	155.5300	0.260	155.5300

Siphon Manhole: Sdp, DS/PN: 2.001, Volume (m³): 2.3

Invert Level (m) 65.580 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	155.5300	0.200	155.5300
0.100	155.5300	0.260	155.5300

Siphon Manhole: Sdp, DS/PN: 3.001, Volume (m³): 5.3

Invert Level (m) 65.468 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	155.5300	0.200	155.5300
0.100	155.5300	0.260	155.5300

Siphon Manhole: Sdp, DS/PN: 4.001, Volume (m³): 4.5

Invert Level (m) 65.268 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	155.5300	0.200	155.5300
0.100	155.5300	0.260	155.5300

Siphon Manhole: Sdp, DS/PN: 5.001, Volume (m³): 3.0

Invert Level (m) 65.680 Cut In Height (m) 0.025 Cut Out Height (m) 0.020

Depth (m)	Outflow (l/s)	Depth (m)	Outflow (l/s)
0.020	77.7300	0.200	77.7300
0.100	77.7300	0.260	77.7300

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Hydro-Brake® Optimum Manhole: SSRH06, DS/PN: 1.009, Volume (m³): 7.7

Unit Reference	MD-SHE-0181-1810-1600-1810
Design Head (m)	1.600
Design Flow (l/s)	18.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	181
Invert Level (m)	61.412
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.600	18.1	Kick-Flo®	1.021	14.6
Flush-Flo™	0.472	18.1	Mean Flow over Head Range	-	15.7

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	6.4	1.200	15.8	3.000	24.4	7.000	36.7
0.200	16.1	1.400	17.0	3.500	26.3	7.500	38.0
0.300	17.5	1.600	18.1	4.000	28.0	8.000	39.2
0.400	18.0	1.800	19.1	4.500	29.7	8.500	40.3
0.500	18.1	2.000	20.1	5.000	31.2	9.000	41.5
0.600	17.9	2.200	21.1	5.500	32.7	9.500	42.6
0.800	17.2	2.400	21.9	6.000	34.1		
1.000	15.0	2.600	22.8	6.500	35.4		

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Offline Controls for siphon and harvesting

Depth/Flow Relationship Manhole: Sdp, DS/PN: 1.001, Loop to PN: 1.002

Invert Level (m) 65.680

Depth (m)	Flow (l/s)
0.020	0.5000

Depth/Flow Relationship Manhole: Sdp, DS/PN: 2.001, Loop to PN: 2.002

Invert Level (m) 65.580

Depth (m)	Flow (l/s)
0.020	0.5000

Depth/Flow Relationship Manhole: Sdp, DS/PN: 3.001, Loop to PN: 3.002

Invert Level (m) 65.468

Depth (m)	Flow (l/s)
0.020	0.5000

Depth/Flow Relationship Manhole: Sdp, DS/PN: 4.001, Loop to PN: 4.002

Invert Level (m) 65.580

Depth (m)	Flow (l/s)
0.020	0.5000

Depth/Flow Relationship Manhole: Sdp, DS/PN: 5.001, Loop to PN: 5.002

Invert Level (m) 65.680

Depth (m)	Flow (l/s)
0.500	0.5000

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Storage Structures for siphon and harvesting

Cellular Storage Manhole: Stank, DS/PN: 1.008

Invert Level (m) 61.471 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	467.0	0.0	1.393	0.0	0.0
1.392	467.0	0.0			

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Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

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	5	Number of Time/Area Diagrams	0
Number of Online Controls	6	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.357
Region	England and Wales	Cv (Summer)	1.000
M5-60 (mm)	18.000	Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
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, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	Sgutter	15 Summer	100	+40%				
1.001	Sdp	15 Summer	100	+40%			1/15 Summer	114
1.002	Ssiphon gf	15 Summer	100	+40%	1/15 Summer			
1.003	SSRH01	15 Summer	100	+40%	100/15 Summer			
2.000	Sgutter	15 Summer	100	+40%	100/15 Summer			
2.001	Sdp	15 Summer	100	+40%			1/15 Summer	114
2.002	Ssiphon gf	15 Summer	100	+40%	1/15 Summer			
1.004	SSRH02	15 Summer	100	+40%	30/15 Summer			
3.000	Sgutter	15 Summer	100	+40%	100/15 Summer			
3.001	Sdp	15 Summer	100	+40%			1/15 Summer	114
3.002	Ssiphon gf	60 Summer	100	+40%	30/15 Summer			
1.005	SSRH03	15 Summer	100	+40%	100/15 Summer			
4.000	Sgutter	15 Summer	100	+40%	100/15 Summer			

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Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	Sgutter	65.910	-0.050	0.000	2.04		164.1	FLOOD RISK*	
1.001	Sdp	65.744	-0.136	0.000	1.08	0.5	155.5	FLOOD RISK*	
1.002	Ssiphon gf	65.000	1.569	0.000	4.76		156.0	FLOOD RISK*	3
1.003	SSRH01	63.918	0.541	0.000	1.05		152.8	SURCHARGED	
2.000	Sgutter	65.941	0.081	0.000	2.64		163.9	FLOOD RISK*	
2.001	Sdp	65.714	-0.066	0.000	1.08	0.5	155.5	FLOOD RISK*	
2.002	Ssiphon gf	64.113	0.677	0.000	4.54		154.1	FLOOD RISK*	
1.004	SSRH02	63.774	0.525	0.000	2.20		302.2	SURCHARGED	
3.000	Sgutter	65.840	0.080	0.000	2.23		157.9	FLOOD RISK*	
3.001	Sdp	65.496	-0.172	0.000	1.08	0.5	155.1	OK*	
3.002	Ssiphon gf	64.001	0.562	0.000	3.16		112.8	SURCHARGED*	
1.005	SSRH03	63.415	0.239	0.000	1.79		446.0	SURCHARGED	
4.000	Sgutter	65.748	0.088	0.000	2.43		159.3	FLOOD RISK*	

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Summary of Critical Results by Maximum Level (Rank 1) for siphon and harvesting

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
4.001	Sdp	15 Summer	100	+40%				0
4.002	Ssiphon gf	15 Summer	100	+40%	30/15 Summer			
5.000	Sgutter	15 Summer	100	+40%				
5.001	Sdp	1440 Summer	30	+0%			1/15 Summer	114
5.002	Ssiphon gf	15 Summer	100	+40%	30/15 Summer			
4.003	SSRH05	15 Summer	100	+40%	100/15 Summer			
1.006	SSRH04	15 Summer	100	+40%	100/15 Summer			
1.007	SSRH06a	15 Summer	100	+40%	100/15 Summer			
1.008	Stank	240 Winter	100	+40%	30/15 Summer			
1.009	SSRH06	180 Winter	100	+40%	1/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
4.001	Sdp	65.392	-0.076	0.000	1.08	0.0	155.4	OK*	
4.002	Ssiphon gf	63.801	0.365	0.000	4.55		155.6	SURCHARGED*	
5.000	Sgutter	65.905	-0.055	0.000	1.45		77.9	FLOOD RISK*	
5.001	Sdp	65.705	-0.135	0.000	0.04	0.0	3.6	FLOOD RISK*	
5.002	Ssiphon gf	63.747	0.302	0.000	2.28		77.2	SURCHARGED*	
4.003	SSRH05	63.443	0.095	0.000	1.68		232.8	SURCHARGED	
1.006	SSRH04	63.212	0.094	0.000	1.66		651.1	SURCHARGED	
1.007	SSRH06a	62.917	0.201	0.000	2.36		655.9	SURCHARGED	
1.008	Stank	62.830	1.059	0.000	0.51		27.9	SURCHARGED	
1.009	SSRH06	63.052	1.832	0.000	0.08		17.8	SURCHARGED	

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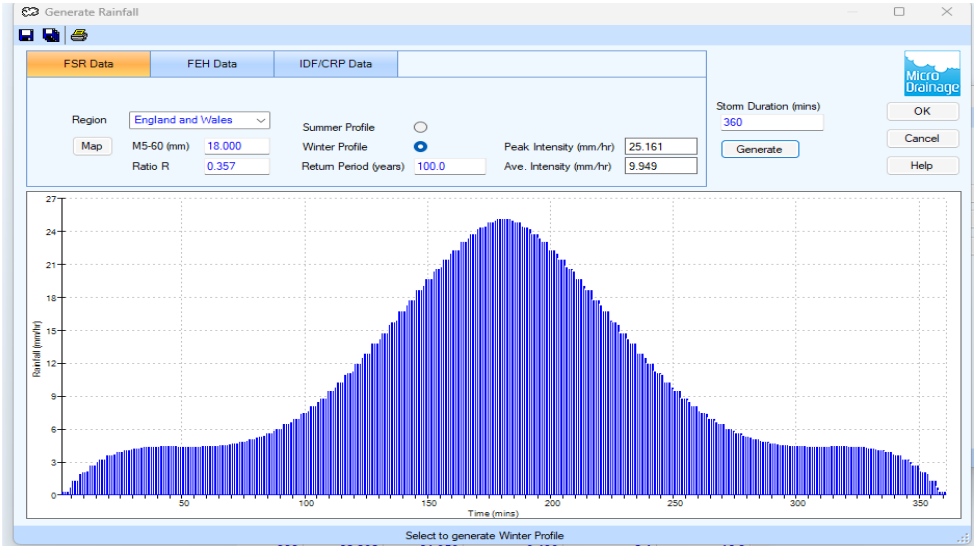
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Curtins

Calculation

Existing Runoff Volumes, 100-Year, 6 Hour Storm Event

Rainfall Data



Total Runoff volume calculated by using average rainfall value over the full site area

		Rainfall (average)		Duration (6 Hour)		Area (m2)		Total Runoff Volume (m3)
Area A1		9.9	x	6	x	2603	=	**154.6**
Area A2		9.9	x	6	x	6420	=	**381.3**
Area A3		9.9	x	6	x	1413	=	**83.9**
Area B1		9.9	x	6	x	12236	=	**726.8**
Area B2		9.9	x	6	x	6889	=	**409.2**
Area B3		9.9	x	6	x	4229	=	**251.2**
Area C		9.9	x	6	x	3749	=	**222.7**
						Total		2229.8

Proposed Drainage
100-Year, 6-Hour Storm Event
Run-off Volumes

Curtins

Main Car Park Drainage – 1132.6m3

100 year | 360 minute winter | Results for 100 year 360 minute winter. 600 minute analysis at 8 minute timestep.

US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
S18	184	63.370	0.055	5.2	0.0966	0.0000	OK	23.001	S19	5.2	0.371	0.074	0.3180	
OU-20	184	63.552	0.045	4.6	0.0707	0.0000	OK	24.000	S19	4.6	1.079	0.177	0.0417	
OU-21	184	63.597	0.033	3.8	0.0440	0.0000	OK	25.000	S19	3.8	1.069	0.044	0.0346	
S19	184	63.322	0.097	13.6	0.1713	0.0000	OK	23.002	S22	13.5	0.764	0.194	0.4583	
KO-01	184	63.439	0.027	2.1	0.0257	0.0000	OK	26.000	S20	2.1	0.806	0.028	0.0228	
OU-22	184	63.640	0.025	3.0	0.0302	0.0000	OK	27.000	S20	3.0	1.581	0.056	0.0080	
S20	184	63.213	0.052	5.1	0.0924	0.0000	OK	26.001	JUN S22A	5.1	0.578	0.120	0.2899	
OU-23	184	63.615	0.042	3.8	0.0553	0.0000	OK	14.000	S13	3.8	0.759	0.073	0.1016	
OU-24	184	63.552	0.024	3.8	0.0312	0.0000	OK	28.000	JUN S22A	3.8	0.628	0.023	0.0381	
JUN S22A	184	63.013	0.071	8.9	0.0000	0.0000	OK	26.002	S22	8.9	0.840	0.209	0.1777	
OU-26	184	63.492	0.030	4.6	0.0579	0.0000	OK	29.000	S22	4.6	1.552	0.032	0.0073	
OU-25	184	63.541	0.034	4.6	0.0660	0.0000	OK	15.000	JUN S17A	4.6	1.544	0.110	0.0505	
S22	184	62.824	0.074	27.0	0.1300	0.0000	OK	23.003	S25	27.0	1.646	0.055	1.7283	
OU-27	184	63.164	0.041	5.7	0.0598	0.0000	OK	30.000	S23	5.7	1.174	0.069	0.0769	
S23	184	62.718	0.062	5.7	0.0175	0.0000	OK	30.001	JUN-05	5.7	0.413	0.081	0.1181	
OU-28	184	63.482	0.025	7.5	0.0625	0.0000	OK	31.000	JUN-05	7.5	3.270	0.023	0.0047	
JUN-05	184	62.710	0.088	13.2	0.0000	0.0000	OK	30.002	S24	13.2	1.002	0.188	0.2550	
OU-29	184	63.554	0.054	3.9	0.0726	0.0000	OK	32.000	S24	3.9	0.744	0.220	0.0098	
S24	184	62.607	0.060	17.1	0.1066	0.0000	OK	30.003	S25	17.1	1.759	0.078	0.3476	
OU-30	184	62.901	0.053	3.3	0.0471	0.0000	OK	33.000	S25	3.3	0.611	0.250	0.0658	
S25	224	62.554	0.647	47.4	1.1429	0.0000	SURCHARGED	23.004	S26	48.8	0.634	0.041	2.2509	
S26	224	62.552	0.886	126.8	1.5664	0.0000	SURCHARGED	1.007	PI	123.7	1.082	0.383	1.9233	
PI	232	62.549	0.979	123.7	0.2771	0.0000	SURCHARGED	1.009	S27	125.3	1.075	0.337	1.5301	
S27	232	62.546	1.291	125.3	3.2865	0.0000	SURCHARGED	1.010	TANK	124.9	0.947	0.330	6.9967	
TANK	232	62.543	1.373	124.9	421.1728	0.0000	SURCHARGED	1.011	S28	84.9	0.770	0.704	0.2704	
JUN S17A	240	62.580	0.143	22.6	0.0000	0.0000	OK	12.010	S17	26.7	1.571	0.167	0.6961	
S28	232	62.531	1.379	84.9	2.4358	0.0000	SURCHARGED	1.012	S29	84.9	2.039	0.603	1.5645	1132.6
S29	232	60.716	0.166	84.9	0.0000	0.0000	OK							

Washdown Drainage – 46.3m3

100 year | 360 minute winter | Results for 100 year 360 minute winter. 600 minute analysis at 8 minute timestep.

US Node ID	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status	Link ID	DS Node ID	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
OU 2	184	64.182	0.032	3.2	0.1356	0.0000	OK	1.000	W01A	3.2	1.213	0.091	0.0265	
W01A	184	63.790	0.030	3.2	0.0337	0.0000	OK	1.001	W01	3.2	0.887	0.086	0.0497	
OU 1	184	64.014	0.014	1.3	0.0187	0.0000	OK	4.000	W01	1.3	0.502	0.018	0.0148	
W01	184	63.218	0.048	5.6	0.0700	0.0000	OK	4.001	W02	5.6	1.114	0.085	0.0426	
W02	184	63.071	0.035	5.6	0.0399	0.0000	OK	4.002	W05	5.6	0.607	0.053	0.2778	
W03	216	62.900	0.260	0.2	0.0736	0.0000	OK	6.000	TANK	-0.2	-0.018	-0.003	0.9471	
TANK	216	62.900	0.316	1.3	5.6073	0.0000	SURCHARGED	6.001	W04	1.7	-0.030	0.025	0.1449	
W04	216	62.900	0.324	1.7	0.0917	0.0000	SURCHARGED	6.002	W05	1.8	-0.035	0.013	0.6479	
W05	216	62.900	0.450	5.6	0.5089	0.0000	SURCHARGED	4.003	W06	4.4	1.263	0.127	0.0111	
W06	216	62.366	0.036	4.4	0.0404	0.0000	OK	4.004	EX BS4	4.4	1.453	0.105	0.0110	46.3
EX BS4	216	62.163	0.033	4.4	0.0000	0.0000	OK							

Lower Ground Car Park Drainage – 407.3m3

360 minute 100 year Winter I+0%
Average Rainfall Intensity 9.949 mm/hr

Time (mins)	US Level (m)	DS Level (m)	Surcharged Depth (m)	Pipe Velocity (m/s)	Pipe Flow (l/s)
1	57.270	57.269	-0.375	0.0	0.0
2	57.270	57.300	-0.375	0.0	0.0
3	57.271	57.332	-0.374	0.0	0.0
4	57.274	57.364	-0.371	0.0	0.0
5	57.278	57.395	-0.367	0.0	0.0
6	57.285	57.427	-0.360	0.0	0.0
7	57.295	57.459	-0.350	0.0	0.0
8	57.310	57.490	-0.335	0.0	0.0
9	57.329	57.522	-0.316	0.0	0.0
10	57.353	57.554	-0.292	0.0	0.0
11	57.377	57.585	-0.268	0.0	0.0
12	57.401	57.617	-0.244	0.0	0.0
13	57.427	57.649	-0.218	0.0	0.0
14	57.455	57.680	-0.190	0.0	0.0
15	57.484	57.712	-0.161	0.0	0.0
16	57.515	57.744	-0.130	0.0	0.0
17	57.548	57.775	-0.097	0.0	0.0
18	57.577	57.807	-0.068	0.0	0.0
19	57.606	57.839	-0.039	0.0	0.0
20	57.637	57.870	-0.008	0.0	0.0
21	57.671	57.902	0.026	0.0	0.0
22	57.711	57.934	0.066	0.0	0.0
23	57.761	57.965	0.116	0.0	0.0
24	57.822	57.997	0.177	0.0	0.0
25	57.886	58.029	0.241	0.0	0.0
26	57.949	58.060	0.304	0.0	0.0
27	58.021	58.092	0.376	0.0	0.0
28	58.098	58.124	0.453	0.0	0.0
29	58.157	58.155	0.512	0.0	0.3
30	58.189	58.187	0.544	0.0	3.0
31	58.221	58.219	0.576	0.0	4.1
32	58.252	58.250	0.607	0.0	4.2
33	58.284	58.282	0.639	0.0	4.3
34	58.316	58.314	0.671	0.0	4.4
35	58.347	58.345	0.702	0.0	4.5
36	58.379	58.377	0.734	0.0	4.5
37	58.411	58.409	0.766	0.0	4.6

Total Volumes: Over Overflow (Spill Flow) 0.000m³ Pipe 407.399m³

Building Drainage – 613m3

360 minute 100 year Winter I+0%
Average Rainfall Intensity 9.949 mm/hr

Time (mins)	US Level (m)	DS Level (m)	Surcharged Depth (m)	Pipe Velocity (m/s)	Pipe Flow (l/s)	Infil. by Cellular Storage (l/s)
1	61.471	60.920	-0.300	0.0	0.0	0.0
2	61.471	60.920	-0.300	0.0	0.0	0.0
3	61.471	60.920	-0.300	0.0	0.0	0.0
4	61.471	60.920	-0.300	0.0	0.0	0.0
5	61.471	60.920	-0.300	0.0	0.0	0.0
6	61.471	60.920	-0.300	0.0	0.0	0.0
7	61.471	60.920	-0.300	0.0	0.0	0.0
8	61.471	60.921	-0.300	0.0	0.0	0.0
9	61.471	60.921	-0.300	0.0	0.0	0.0
10	61.471	60.921	-0.300	0.0	0.0	0.0
11	61.471	60.921	-0.300	0.0	0.0	0.0
12	61.472	60.922	-0.299	0.0	0.0	0.0
13	61.472	60.923	-0.299	0.0	0.0	0.0
14	61.472	60.924	-0.299	0.0	0.0	0.0
15	61.472	60.926	-0.299	0.0	0.0	0.0
16	61.473	60.928	-0.298	0.0	0.1	0.0
17	61.473	60.931	-0.298	0.0	0.1	0.0
18	61.474	60.934	-0.297	0.1	0.1	0.0
19	61.475	60.939	-0.296	0.1	0.1	0.0
20	61.476	60.945	-0.295	0.1	0.2	0.0
21	61.477	60.952	-0.294	0.1	0.2	0.0
22	61.478	60.960	-0.293	0.1	0.2	0.0
23	61.479	60.969	-0.292	0.2	0.3	0.0
24	61.480	60.980	-0.291	0.2	0.3	0.0
25	61.481	60.992	-0.290	0.2	0.4	0.0
26	61.483	61.005	-0.288	0.2	0.4	0.0
27	61.484	61.021	-0.287	0.3	0.5	0.0
28	61.485	61.038	-0.286	0.3	0.5	0.0
29	61.487	61.057	-0.284	0.3	0.6	0.0
30	61.488	61.078	-0.283	0.4	0.6	0.0
31	61.490	61.101	-0.281	0.4	0.7	0.0
32	61.491	61.126	-0.280	0.4	0.7	0.0
33	61.493	61.152	-0.278	0.4	0.8	0.0
34	61.494	61.181	-0.277	0.4	0.8	0.0
35	61.496	61.212	-0.275	0.3	0.9	0.0
36	61.497	61.245	-0.274	0.3	1.0	0.0
37	61.499	61.280	-0.272	0.3	1.0	0.0

Total Volumes: Over Overflow (Spill Flow) 0.000m³ Infiltration 0.000m³ Pipe 613.639m³

Appendix K

Trade Effluent Consent

Water Meter Information

S106 Approval Notice

WATER INDUSTRY ACT 1991

CONSENT TO THE DISCHARGE OF TRADE EFFLUENT

Whereas **Manchester City Council**

(hereinafter called "the Trader") whose Head Office or Registered Office is at

Corporate Estates Team 8th Floor, Town Hall Extension PO Box 532 Manchester M60 2LA

Is the **owner/occupier** of the trade premises at:

Hammerstone Road Depot
Hammerstone Road
Gorton
Manchester
M18 8EQ

and by the Duly made application dated **01 June 2023**

Have applied to UNITED UTILITIES WATER LIMITED (hereinafter called "the Company") for consent to discharge trade effluent from the said trade premises into the sewers.

Under the provisions of the above mentioned Act the discharge of trade effluent in accordance with the said application form would not be lawful without the consent of the Company.

NOW THEREFORE in exercise of the powers conferred upon them by the above Act the Company HEREBY CONSENT to the discharge of trade effluent by the Trader from the said premises into their sewers SUBJECT TO THE FOLLOWING CONDITIONS:

Nature of discharge

1a) Subject to the provisions of conditions 6,7,8 and 9 below the nature or composition of the trade effluent to be discharged under this Consent shall be solely as specified in the said application form and shall consist solely of waste water derived from **commercial and council vehicle washdown facility, for street cleaning vehicles, refuse collection vehicles and normal operational vehicles.**

1b) The trader shall give to the Company prior written notice of any change in the process or the process materials or any other circumstances likely to alter the constituents of the trade effluent as set out in condition 1(a). In such circumstances, no substance of which the Company has not had previous notice, may be discharged unless and until the Company has agreed to accept the substance at a limit imposed by the Company which shall then be deemed to be incorporated in this Consent by agreement and shall not prejudice the right of the Company to serve a Direction earlier than two years from the date of such incorporation.

The Trader shall also give not less than seven days written notice to the Company of any change in the name of the occupier or owner.

Sewer affected

2. The sewer into which the trade effluent may be discharged and the point of discharge is the foul sewer situate at **Hammerstone Road (Manhole Ref: 2801)**.

Connections

3. No connections shall be made to the said sewer without the prior approval of the Company and all such connections shall be constructed and maintained to the satisfaction of the Company at the expense of the Trader.

Maximum volume of discharge

4. The maximum amount of the trade effluent discharged in any one day of twenty four hours shall not exceed **30** m^3 without prior written consent of the Company.

Maximum rate of discharge

5. The highest rate at which the trade effluent may be discharged shall not exceed **4** litre/sec.

Matters to be eliminated prior to discharge to sewers

6. The following matters shall be eliminated from the trade effluent before it is discharged into the sewers of the Company:

a) petroleum spirit;

b) calcium carbide;

c) carbon disulphide;

d) except as provided in paragraph 7 hereof, the prescribed substances listed in Schedule 1 to The Trade Effluents (Prescribed Processes and Substances) Regulations 1989, as amended from time to time, insofar as they are in concentration greater than the background concentration (as defined in the said Regulations);

e) where the trade effluent derives from a prescribed process mentioned in Schedule 2 to the said Regulations, and except as provided in paragraph 7 hereof, asbestos (as defined in the said Regulations) and chloroform in concentration greater than the background concentration (as defined in the said Regulations);

f) organo-halogen compounds including pesticide residues and degreasing agents;

g) any substances which either alone or in combination with each other or with any other matter lawfully present in the said sewers would be likely to;

i) cause a nuisance or produce flammable, harmful or toxic vapours either in the sewers or at the sewage works of the Company;

ii) injure the sewers or interfere with the free flow of their contents or affect prejudicially the treatment and disposal of their contents or have injurious effects on the sewage treatment works to which it is conveyed or upon any treatment plant there;

iii) be dangerous to or cause injury to any person working in the sewers or at the sewage treatment works;

iv) affect prejudicially any watercourse, estuary or coastal water into which the treated effluent will eventually be discharged.

Matters to be limited prior to discharge to sewer

7. The trade effluent shall not contain

a) Arsenic as As in excess of **50** ug/l

b) Chloroform in excess of **100** ug/l

c) Cyanides and cyanogen compounds which produce hydrogen cyanide on acidification in excess of **1** mg/l

d) Separable grease and oil in excess of **100**mg/l

e) Sulphates as SO_4 in excess of **1,000** mg/l

f) Sulphides, hydrosulphides, polysulphides and substances producing hydrogen sulphide on acidification in excess of **1** mg/l

g) Total suspended solids at pH 7.0 and dried at 110º C in excess of **1,000** mg/l

h) Toxic metals in excess of **10,000** ug/l either individually or in total ie Antimony, Beryllium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Tin, Vanadium, Zinc;

Temperature

8. No trade effluent shall be discharged which has a temperature higher than 43.3°C (110°F).

pH value

9. No trade effluent shall be discharged having a pH of less than **6** or greater than **10**

Inspection Chamber

10. a) An inspection chamber or manhole shall be provided and maintained by the Trader in a suitable position in connection with each pipe through which the trade effluent is discharged and shall be so constructed and maintained as to enable a person readily to obtain at any time samples of the trade effluent so discharged, to the approval of the Company.

b) Suitable apparatus for measuring and automatically recording the volume and composition of trade effluent discharged shall be provided and maintained in working order by the Trader in connection with every such pipe, unless otherwise exempted in writing by the Company.

c) If the measuring and recording apparatus as aforesaid ceases to function satisfactorily, then the Company shall have the right to make estimates of the volume and composition of the trade effluent until such time as the said apparatus is again operating to the satisfaction of the Company.

d) Records shall be kept by the Trader of the volume, rate of discharge, nature and composition of the trade effluent discharged to the sewer, together with any records required to be kept by the Trader under the provisions of any Notice of Determination issued by the Secretary of State under Sections 120 and 132 of the Water Industry Act 1991. Such records shall be kept available for inspection at all reasonable times by an authorised officer of the Company and copies shall be sent to the Company on demand.

e) The foregoing provision of this condition shall be deemed to be complied with if other methods of sampling the trade effluent, determining its nature and composition, and measuring and recording the discharge are agreed and confirmed in writing by the Company.

Dated 01 August 2023

Issuing Office Wastewater Services
Lingley Mere Business Park
Lingley Green Avenue
Great Sankey
Warrington
WA5 3LP

Signed [redacted]

WASTEWATER ASSET MANAGER
for and on behalf of United Utilities Water Limited

Your attention is drawn to Section 122 of the Water Industry Act 1991 which provides that any person aggrieved by any conditions attached to this Consent may appeal to the Director General of Water Services.

Outlook

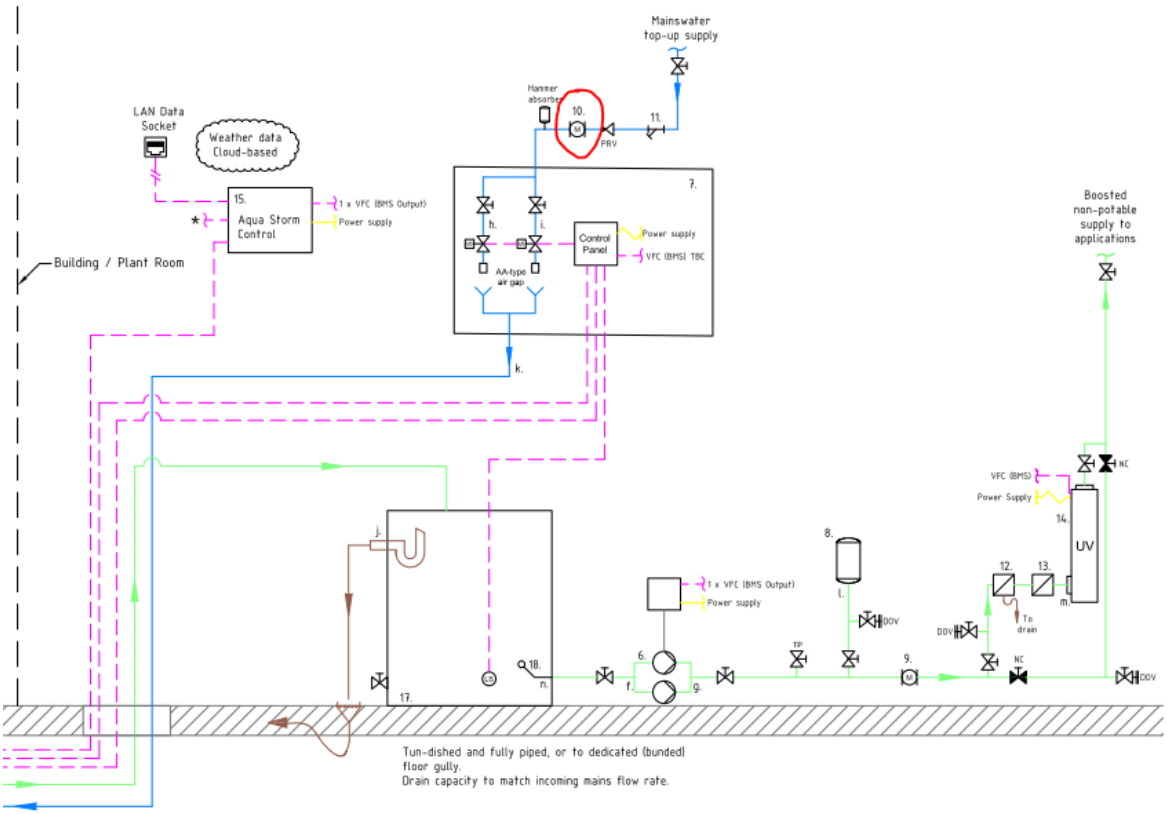
RE: Hammerstone Road - Secondary Water Meter



Hi Dave.

Picking up on some old emails, water to the RW is already dub metered, so no need for an extra one.

For the BMS connection, I will look into this as I don't know how or if this is being connected to the BMS. I need to discuss with Craig what we agreed on for our costs. @Craig Sanders one to discuss.



Cheers

Philip Godfrey

Technical Director

[redacted]

Click here to watch our company video

www.abeng.co.uk

Certificate No:448762024

Certificate No:450752024

[redacted]

Cc: Boardman, John (MSC) <John.Boardman@morgansindall.com>; Ryan, James (MS) <James.Ryan@morgansindall.com>
Subject: RE: Hammerstone Road - Secondary Water Meter

Hi Anna,

The below is clear as day now. We will not approach UU with regards to installing a pulsed meter. Instead, we will install a secondary pulsed water meter within our site boundary that monitors the washdown area and is linked to site BMS.

Hi Phil,

I know we have discussed this topic, can you please ensure that we show/install a secondary pulsed water meter on the water supply to the washdown area and monitored by the BMS?

Cheers.

Dave Webb
Building Services Manager
[redacted]
MORGAN SINDALL CONSTRUCTION
morgansindallconstruction.com



[redacted]

Hi Dave

Please see below response from our energy officer regarding the LOA. Are you happy to proceed with the amended wording in blue?

Kind regards
Anna

[redacted]

RE: Hammerstone Road - Secondary Water Meter

Hi Anna

I am happy to sign a LOA for **your** description of works, which is correct, i.e. to install a secondary pulsed meter downstream of the existing water meter (within the site's boundary). However, Morgan Sindall's letter says the existing water meter is to be replaced with a pulsed meter to link to the BMS (copied and pasted in blue below)

As previously explained and verified by the retailer, UU will only permit their own certified data loggers to be installed on their meters, by their contractors and to date, have not been willing to allow a connection to a site BMS system. The content of Mogan Sindall's draft LOA does not seem to reflect this fundamental condition.

Ameon Utilities need to install a secondary pulsed meter, downstream of the UU revenue meter. That meter should be in its own chamber or cabinet, on customer's side and as it is effectively a sub-meter, there should be no requirement for UU permissions.

Dear Sir / Madam,
I hereby authorise Ameon Utilities to work on the behalf of Manchester City Council (MCC) to apply to UU and request for the existing water meter SPID 3002532363W15 to be exchanged for a new BMS compatible water meter.

Your comments please.

Kind regards Lindsay

Lindsay Oldham
Senior Technical Officer (Water)
Energy Management Unit
Corporate Procurement
Corporate Services Department
Manchester City Council
Town Hall Extension
Level 5
Manchester
M60 2LA

[redacted]

[redacted]

Hi Linsday

Hope you're good.

I'm getting in touch regarding the proposed pulsed water meter at Hammerstone – we were emailing about this a little while ago. The Contractor, Morgan Sindall, would like to install a secondary pulsed meter downstream of the existing water meter (within the site's boundary). This is so that the amount of water used for the vehicle washdown area can be monitored on the building's BMS system. They are not doing any work to the existing water meter.

To progress this, Morgan Sindall need a Letter of Authority from the Council, so that their subcontractor, Ameon, can get the appropriate permissions from UU to progress the works. Is this something you can provide?

If so, MS has prepared the letter for the Council to sign – please see attached.

Please let me know if you have any questions.

Kind regards
Anna

Anna Lucas

Senior Project Manager
Major Projects, Capital Programmes, Corporate Core Directive

[redacted]

Working week: Monday - Thursday

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The following notice applies to emails originating in the UK.

Emails are sent on behalf of the relevant Morgan Sindall company below. Each company is registered in England and Wales each with its registered office at Kent House, 14-17 Market Place, London W1W 8AJ and number as shown: Morgan Sindall Group plc (0521970), Morgan Sindall Construction & Infrastructure Ltd. (04273754), Morgan Sindall Engineering Solutions Limited (04969901), Morgan Sindall Property Services Limited (4515196).

For further information on Morgan Sindall Group plc and its subsidiaries visit our website at www.morgansindall.com

++

S106 Part 1 'Application to connect to a public sewer' Approval Notice

United Utilities Reference Number:	**02926533**
Applicant details	
Applicant name	**Andy Losty**
Applicant address *(including postcode)*	**Curtins Consulting** **Merchant Exchange** **17-19 Whitworth Street West** **Manchester** **M1 5WG**
Applicant email	[redacted]
Site details: The site / property which is proposed for connection to the public sewer	
Site address *(including postcode)*	**Hammerstone Road Depot** **Manchester** **M18 8EQ**

APPROVED

Your application for connection to the public sewer has been approved, to be made via a new connection:

To a private drain	☒	You may appoint your contractor and advise your appointed building control body (who should inspect the work). United Utilities should be advised when this work is complete.
Direct to the public sewer	☐	**Further action required** You may now appoint an appropriately qualified contractor. Your appointed contractor is responsible for obtaining authorisation to work on a public sewer. (The S106 Part 2 application form **'Request for permission to work on a public sewer'** is available on our website; unitedutilities.com).

Mode of connection approved	**Other - please see comments box**					
Sewer connection type	Foul	☒	Surface water	☐	Combined	☐

This approval is valid for 12 months from the date below.
This approval does not grant access to third party land, permission should be sought if required between applicant and land owner
If the new connection renders access unsafe or is otherwise detrimental to the manhole or sewer, a new/upgraded manhole will be requested.

Comments

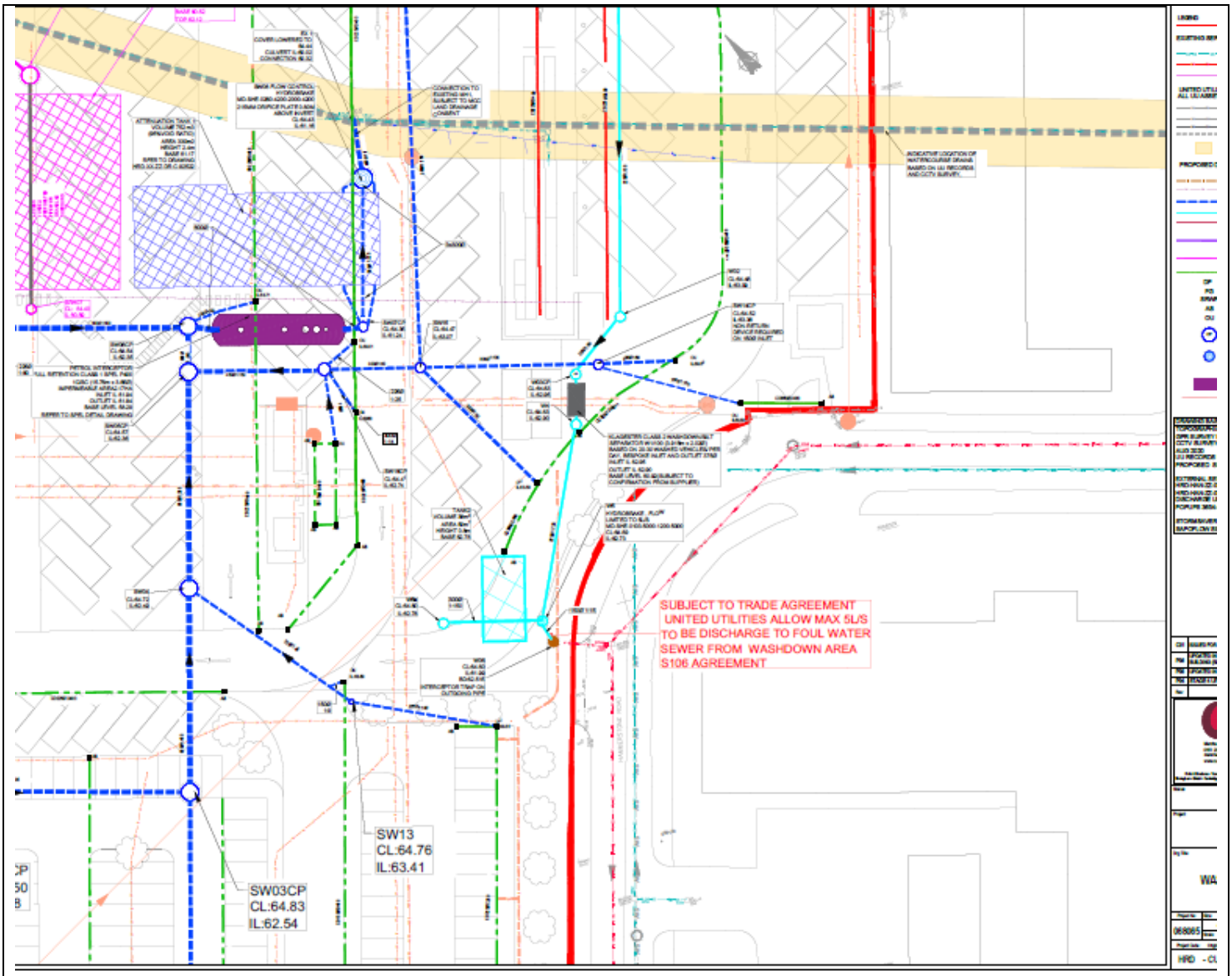
Consent To Discharge of Trade Effluent form received with the application - which indicates The sewer in which the trade effluent may be discharged and the point of discharge is the foul sewer situated at Hammerstone Road (Manhole Ref 2801)

Appproval is for the Washdown area – which has been granted consent from Trade Effluent Team.

Approval granted for the foul connection utilising the existing private drainage which outalls to the 375mm foul sewer in Hammerstone Road. (MH 2801)

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist it could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Please note, if you are proposing to connect to an existing, unchartered drain or sewer then it is the developer's responsibility to confirm that it communicates with the Public Sewer.
Connections may be made to private lateral drains or to existing neighbouring drain. A part 1 approval does not give permission to access third party land. The applicant must seek permission from the relevant land owner.



Developer Services Inspector	**Lynne Berry**
[redacted]	

Appendix L

Construction Record Drawings - Lower Ground Drainage

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TABLE 1: PROPOSED CATCHMENTS MAXIMUM FLOW RATES					
CATCHMENT REF	AREA (Ha)	CALCULATION METHOD	FLOW RATE - 1:1 YEAR STORM EVENT	FLOW RATE - 1:30 YEAR STORM EVENT	FLOW RATE - 1:100 YEAR + 40% CC STORM EVENT
CATCHMENT PC (LOWER GROUND CP)	0.332	50% BROWNFIELD OF THE EXISTING 1-YEAR STORM EVENT AREA EC (25%)	7.0	7.0	7.0
REFER TO DRAWINGS HRD-CUR-XX-00-DR-C-92-621 & 622 FOR DETAILS OF EXISTING AND PROPOSED CATCHMENTS					

INFORMATION PROVIDED BY THE CCTV SURVEY DID NOT PROVIDE CONFIRMATION WHERE SOUTH WATERCOURSE IS LOCATED

FOR EXISTING DRAINAGE REFER TO DRAWING NUMBER: HRD-CUR-XX-00-DR-C-92-510

PROPOSED SERVICES SHOULD BE LOCATED OUTSIDE PROPOSED DRAINAGE

CONSTRUCTION RECORD - FINAL CONSTRUCTION

THE INFORMATION IS BASED ON CONFIRMATION FROM THE CONTRACTOR OF THE INSTALLED WORKS. THERE MAY BE VARIATIONS ON SITE WHICH ARE NOT REFLECTED ON THIS DRAWING AND HAS NOT BEEN VERIFIED BY CURTINS.

LEGEND

- SITE BOUNDARY

PROPOSED DRAINAGE

- PROPOSED SURFACE WATER DRAIN
- PRIVATE SURFACE WATER DIVERSION
- Ø225 GATIC CHANNEL C250 (UNLESS NOTED D400)
- CP CATCHPIT
- HB HYDROBRAKE
- BD BACKDROP
- AB ACCESS BOX
- OU OUTLET BOX

UNITED UTILITIES RECORDS UUPS-ORD-76950 ALL UU ASSETS ARE SHOWN INDICATIVELY

- CW UU FOUL WATER SEWER
- SW UU SURFACE WATER
- SEWER WATERCOURSE
- SW-B2 PRIVATE SURFACE WATER
- FW-B2 PRIVATE FOUL
- CW-B2 PRIVATE COMBINED
- 8M EASEMENT BASED ON SEWER FOR ADOPTION 6TH EDITION
- OIL INTERCEPTOR
- ATTENUATION TANK
- SW PROPOSED SERVICES

GENERAL NOTES:

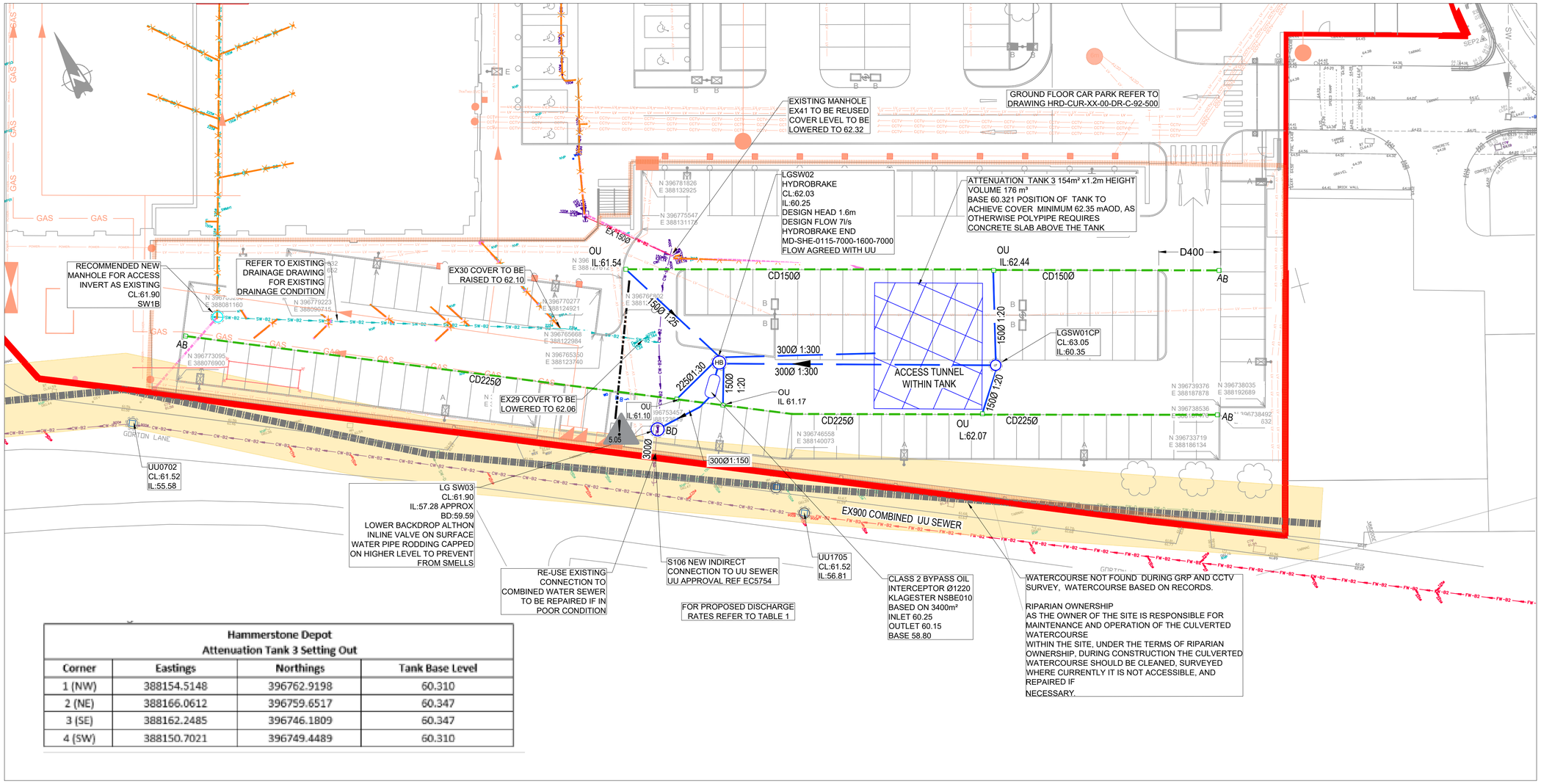
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN. ALL EXISTING SEWERS, CONNECTIONS, PIPE SIZES AND INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS TO ENSURE CONNECTIVITY. ANY VARIANCE FROM THE INFORMATION SHOWN SHOULD BE REPORTED TO THE ENGINEER FOR REVIEW.
3. DO NOT SCALE THIS DRAWING. ALL DETAILS AND DIMENSIONS ARE TO BE CHECKED BY THE CONTRACTOR. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
5. WHERE EXISTING DRAINAGE IS BEING USED, ALLOWANCES SHOULD BE MADE TO REMEDIATE THIS DRAINAGE IN LINE WITH AVAILABLE CCTV SURVEY INFORMATION. IF NO SURVEY IS AVAILABLE, IT IS ADVISED TO OBTAIN ONE PRIOR TO COMMENCEMENT OF WORKS.
6. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS, AND WHERE NECESSARY PROTECTION OR DIVERSIONS TO BE UNDERTAKEN TO AVOID CONFLICT WITH THE PROPOSED WORK.
7. ALL PIPE DIAMETERS GIVEN ARE NOMINAL INTERNAL PIPE DIAMETERS. THESE ARE TO BE CONFIRMED ONCE A DETAILED CAPACITY CHECK HAS BEEN UNDERTAKEN AT A LATER DESIGN STAGE.
8. OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.
9. FOR FULL DRAINAGE NOTES REFER TO HRD-CUR-XX-ZZ-DR-C-92-502

DRAWING BASED ON:
TOPOGRAPHICAL SURVEY BY SEP S15724-T
GPR SURVEY BY SEP S17480-U DEC 2018 JUNE 2018
CCTV SURVEY BY SEP DRAINAGE SURVEYS LTD DEC 2018 AND AUG 2020
UU RECORDS UUPS-ORD-76950

PROPOSED SITE PLAN GA
HRD-FRA-00-XX-SK-A-90-9006 REV C02

SIPHONIC DRAINAGE
STORMSAVER 05.07.22
SAPOFLOW SIPHON SYSTEM 29.06.22

Lower Ground Surface Water																	
MH REF	CL (mAOD)	IL (mAOD)	DEPTH TO SOFFIT (m)	DS PIPE DIA (mm)	MH DIA (mm)	MH TYPE	CATCHPIT	COVER SIZE (mm)	COVER CLASS	COVER TYPE	RECESSED	RESTRICTED ACCESS	BACK DROP	Back drop IL (mAOD)	COMMENTS	EASTING	NORTHING
Lower Ground Surface Water																	
LGSW01	63.05	60.35	2.55	150	1200	TYPE B	Y	600X600	D400	SINGLE SEALED	N	N	N	N/A	CATCHPIT MIN SUMP DEPTH 300mm	388165.024	396750.481
LGSW02	62.03	60.25	1.48	300	1500	HYDROBRAKE CHAMBER	N	1200X675	D400			N	N	N/A	FLOW CONTROL CHAMBER REFER TO HYDROBRAKE DETAILS FOR SUMP DEPTH	388135.490	396758.968
LGSW03	61.90	57.28	4.32	300	1500	TYPE A2	N	600X600	C250			N	Y	59.59		388126.901	396753.635
SW1B	61.90	60.30	1.38*	225	1500*	TYPE C*	N	1200X675*	D400			N	N		MANHOLE TO BE CONSTRUCTED ON EXISTING DRAIN. *INVERT LEVEL INTERPOLATED FROM CCTV SURVEY - TBC ON SITE	388083.112	396778.715
EX29	62.06	EXISTING MANHOLE COVER ADJUSTED TO SUIT PROPOSED LEVELS						600X600	C250			N	N	N/A		388127.742	396763.677
EX30	62.10							600X600	C250			N	N	N/A		388119.157	396767.106
EX41	62.32							600X600	C250			N	N	N/A		388133.251	396771.833



Hammerstone Depot Attenuation Tank 3 Setting Out			
Corner	Eastings	Northings	Tank Base Level
1 (NW)	388154.5148	396762.9198	60.310
2 (NE)	388166.0612	396759.6517	60.347
3 (SE)	388162.2485	396746.1809	60.347
4 (SW)	388150.7021	396749.4489	60.310

Rev:	Description:	Date:	By:	Chkd:
C07	CONSTRUCTION RECORD ISSUE	28.05.24	ATL	ATL
C06	LG SW03 AMENDED IN LINE WITH ON SITE INFORMATION	14.07.23	ATL	ATL
C05	LG SW03 MOVED FOLLOWING ADDITIONAL SURVEY	3.07.23	MW	MW
C04	ATTENUATION TANK AMENDED TO SUIT REVISED REQUIREMENTS	27.06.23	ATL	MW
C03	TANK RELOCATED TO ACHIEVE COVER RECOMMENDED BY POLYPIPE	24.10.22	MW	MW
C02	OIL INTERCEPTOR BASED ADDED	19.08.22	MW	MW
C01	CONSTRUCTION ISSUE	22.07.22	ATL	MW
P08	DRAINAGE NOTE ADDED	25.04.22	ATL	MW
P07	MAIN BUILDING DRAINAGE AMENDED	25.03.22	ATL	MW
P06	STAGE 4 UPDATED	05/08/21	MW	MW
P05	ISSUED FOR STAGE 4	09/04/21	MW	MW
P04	UPDATED TO COMMENTS FOR COSTING	23/03/21	MW	MW
P03	ISSUED FO STAGE 3- UPDATED SITE PLAN	02/12/20	MW	MW
P02	ISSUED FOR STAGE 3	18/11/20	MW	MW
P01	ISSUED FOR STAGE 3	29.01.19	MW	CG

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Status: CR - CONSTRUCTION RECORD

Project: HAMMERSTONE ROAD

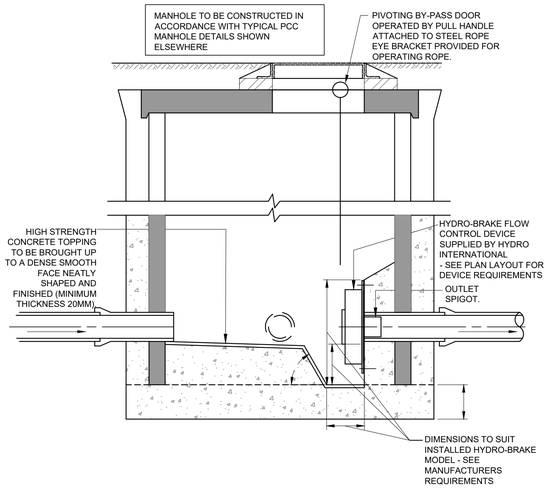
Drg Title: PROPOSED LOWER FLOOR DRAINAGE

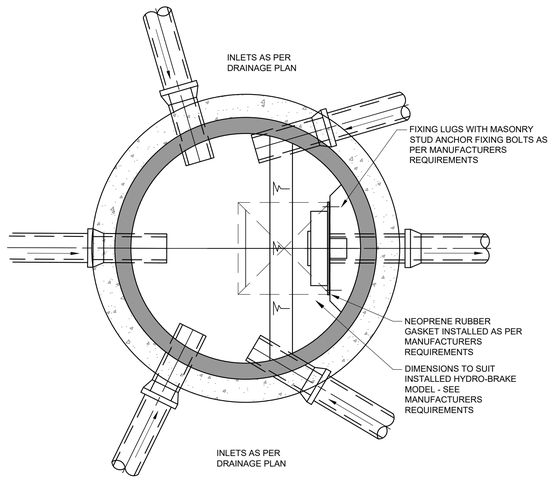
Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29.01.19	MW	MW	CG
	Scale: 1:250				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

HRD - CUR - XX - 00 - DR - C - 92-501 - C07

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TYPICAL FLOW CONTROL MANHOLE
(HYDRO-BRAKE)

LOWER CAR PARK MANHOLE LGSW03 MD-SHE-0115-7000-1600-7000

LOWER GROUND FLOOR LGSW03 MD-SHE-0115-7000-1600-7000

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.600	7.000
Flush-Flo™	0.476	6.980
Kick-Flo®	0.977	5.558
Mean Flow		6.128

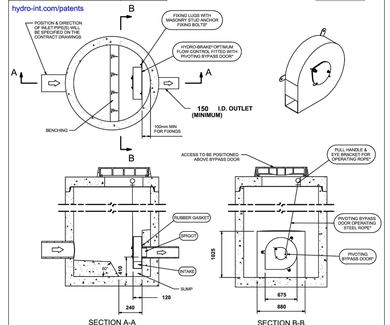
Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to invert, stainless steel operating rope
- Bead blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet

BBA APPROVED CERTIFICATE No 092/4295

WRc Approved PT329/0412

hydro-int.com/patents



IMPORTANT: LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
* FOR DETAILS OF THE CONTROL DEVICE APPROPRIATE TO YOUR RUBBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE	The head/flow characteristics of this SHE-0115-7000-1600-7000 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve. **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**
DATE	8/5/2021 2:39 PM
SITE	Hammerstone depot
DESIGNER	Marta Jarzembowska
REF	068065

Hydro International

SHE-0115-7000-1600-7000

Hydro-Brake® Optimum

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marta.jarzembowska@curtins.com

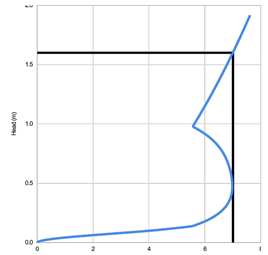
Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.600	7.000
Flush-Flo	0.476	6.980
Kick-Flo®	0.977	5.558
Mean Flow		6.128

BBA APPROVED INSPECTION TESTING CERTIFICATION CERTIFICATE No 092/4295

WRc APPROVED PT329/0412

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Head (m)	Flow (l/s)
0.000	0.000
0.055	1.591
0.110	4.484
0.166	5.861
0.221	6.332
0.276	6.635
0.331	6.821
0.386	6.926
0.441	6.972
0.497	6.977
0.552	6.953
0.607	6.904
0.662	6.833
0.717	6.736
0.772	6.605
0.828	6.425
0.883	6.183
0.938	5.859
0.993	5.600
1.048	5.742
1.103	5.881
1.159	6.016
1.214	6.147
1.269	6.276
1.324	6.402
1.379	6.525
1.434	6.646
1.490	6.764
1.545	6.880
1.600	6.994

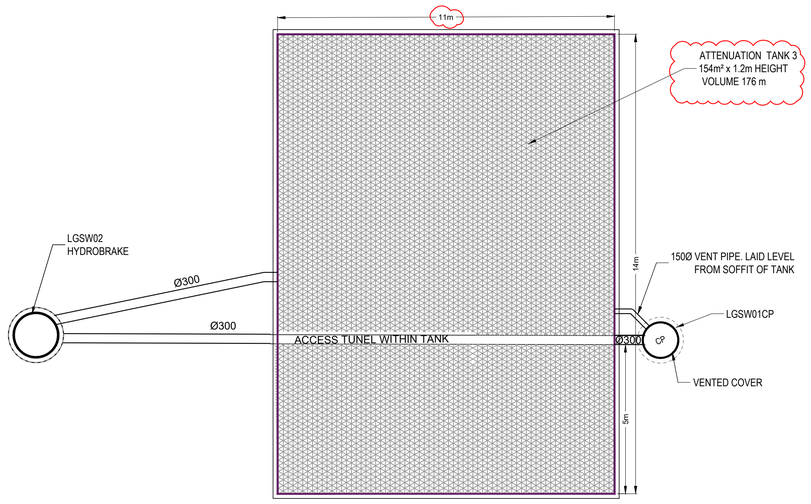
DESIGN ADVICE	The head/flow characteristics of this SHE-0115-7000-1600-7000 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve. **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**
DATE	05/08/2021 14:39
Site	Hammerstone depot
DESIGNER	Marta Jarzembowska
Ref	068065

Hydro International

SHE-0115-7000-1600-7000

Hydro-Brake Optimum®

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ATTENUATION TANK 3
PLAN

ATTENUATION TANK 3
3 x 400mm LAYERS OF POLYSTORM PSM1/ POLYSTORM INSPECT PSM4 (400mm DEEP)
BASED ON APPROXIMATE MINIMUM BURIAL DERTH OF 2.81m.

TANK IS LOCATED IN AN AREA SUBJECT TO LIGHT VEHICULAR LOADING (MAX 7T)

THE MANUFACTURER WILL NEED TO CONFIRM THAT THE TANK HAS SUFFICIENT STRENGTH FOR THIS LOCATION IN ACCORDANCE WITH CIRIA C680.

MINIMUM GROUND LEVEL IS APPROX. 62.447 (MIN 0.937m COVER).
MAXIMUM GROUND LEVEL IS APPROX. 63.152 (MIN 1.605M COVER).

INVERT LEVEL OF INLET PIPE 60.347
INVERT LEVEL OF OUTLET PIPE 60.310
BASE OF TANK TO BE LAID AT 1:300 FALL.

DIMENSIONS OF TOTAL UNIT ARE 14m X 11m.
TOTAL DEPTH OF TANK IS 1200mm.
ATTENUATION VOLUME, BASED ON 95% VOID RATIO IS 176m³

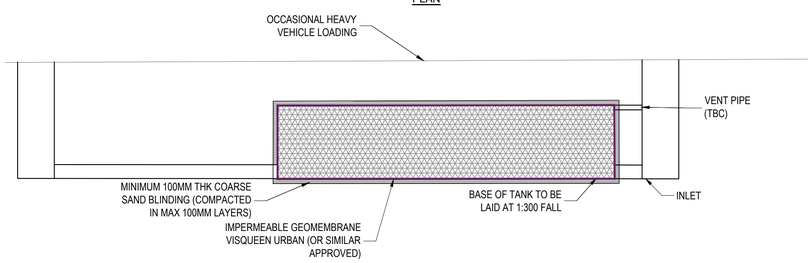
TANK TO BE WRAPPED IN IMPERMEABLE MEMBRANE AND THE MEMBRANE SHOULD BE LAPPED BY A MINIMUM OF 300mm.

TANK TO BE BED AND SURROUND IN MINIMUM OF 100mm LAYER OF COMPACTED COARSE SAND OR CLASS 6H SELECTED GRANULAR MATERIAL. REQUIREMENT FOR CONCRETE SURROUND OR PROTECTION TO BE CONFIRMED WITH THE MANUFACTURER.

HIGH GROUNDWATER LEVEL ESTIMATED AT 60.44 BASED ON SITE INVESTIGATION (CP01). INITIAL FLOATTATION CALCULATIONS INDICATE THAT THE TANK IS NOT AT RISK OF FLOATATION. HOWEVER, THE MAUFACTURER SHOULD PROVIDE CALCULATIONS TO CONFIRM THIS.

(IF AN ALTERNATIVE MANUFACTURER IS USED, THESE REQUIREMENTS SHOULD BE IN LINE WITH THEIR REQUIREMENTS)

REFER TO DRAINAGE LAYOUT HRD-CUR-XX-00-DR-C-92501



SECTION THROUGH
ATTENUATION TANK

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEER,S ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
9. REFER TO DRAINAGE LAYOUT HRD-CUR-XX-00-DR-C-92-501 FOR THE LOCATION OF THE ATTENUATION TANK.
10. ATTENUATION TANK TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
11. WHERE AN ALTERNATIVE ATTENUATION TANK DEVICE IS PREFERRED, IT WILL BE SUBJECT TO REDESIGN TO CONFIRM WHETHER THE SYSTEM HAS CAPACITY.
12. THE DESIGN OF THE TANK SHOULD BE PROVIDED BY THE MANUFACTURER OR SUPPLIER TO ENSURE THE TANK IS SUFFICIENT FOR THE SITE SPECIFIC CRITERIA.
13. THE TANK DESIGN SHOULD INCORPORATE:
    - CRATES SUBJECT TO OCCASIONAL HEAVY VEHICLE LOADING
    - SUITABLE MAINTENANCE ACCESS; AND
    - VENTING TO PREVENT TRAPPED AIR POCKETS.
12. THE STRENGTH OF THE TANK SHOULD COMPLY WITH CIRIA C680 STRUCTURAL DESIGN OF MODULAR GEOCELLULAR DRAINAGE TANKS.
13. ACCESS FOR MAINTENANCE SHOULD BE IN ACCORDANCE WITH CIRIA GUIDANCE.
14. VENTING TO THE TANK SHOULD BE CONFIRMED BY THE TANK MANUFACTURER. VENTING SHOULD BE LOCATED WITHIN LANDSCAPED AREAS, OR ROUTED BACK TO THE NEAREST MANHOLE ABOVE THE DESIGN WATER LEVEL.
15. CONSTRUCTION AND INSTALLATION OF THE TANK SHOULD BE STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
16. THE CURRENT DESIGN OF THE TANK IS BASED ON USE OF POLYPIPE POLYSTORM MODULES, TO ALLOW AN ASSUMPTION OF UNIT SIZES WITHIN THE OVERALL DESIGN. HOWEVER, WHERE AN ALTERNATIVE SYSTEM IS PROPOSED, THE DIMENSIONS OF THE UNITS WILL NEED TO BE CHECKED WITHIN THE DESIGN AND MAY RESULT IN A REDESIGN.
17. THE CONTRACTOR SHALL PROHIBIT THE MOVEMENT OF CONSTRUCTION PLANT ACROSS THE STORAGE TANK AND WHERE NECESSARY PROVIDE ADDITIONAL SUPPORT AND PROTECTION TO THE STRUCTURE. PARTICULARLY POST CONSTRUCTION. TEMPORARY FENCING CAN BE USED TO PROHIBIT TRADE STOCKS, PILLING MATERIALS, HEAVY PLANTS ETC.
18. FLOW CONTROL TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS, INSTRUCTIONS AND RECOMMENDATIONS.
19. WHERE AN ALTERNATIVE FLOW CONTROL DEVICE IS PREFERRED, IT WILL BE SUBJECT TO REDESIGN TO CONFIRM WHETHER THE SYSTEM HAS CAPACITY.

Rev:	Description:	Date:	By:	Chkd:
C03	TANK SIZE UPDATED	27.06.23	ATL	MW
C02	TANK ROTATED AND INVERT UPDATED	24.10.22	MW	MW
C01	CONSTRUCTION ISSUE	20/07/22	ATL	MW

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Status: STAGE 5

Project: HAMMERSTONE ROAD DEPOT

Drg Title: DRAINAGE DETAILS
SHEET 5

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	20/07/22	MW	MW	MW
	Scale: 1:20				

Project Code:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
HRD	- CUR	- XX	- ZZ	- DR	- C	- 92-524	-C03

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Appendix M

LLFA Comments Received 3rd April 2025

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Application details:	**Application number**: CDN/25/0113 **Proposal**: Discharge of condition 11 (drainage) attached to planning permission referenced 137572/JO/2023 **Location**: Hammerstone Road Depot, Hammerstone Road, Manchester, M18 8EQ

LLFA Comments 02/04/2025

The following Information has been considered:

Planning Portal uploads:	10/02/2025
Further submission emails:	-
Previous CDN attempts to discharge the Condition:	CDN/24/0138

Any LLFA Comments to LPA
Decision Notice did not publish the LLFA Condition clauses. We do not recommend this is done, as it can prolong the CDN discharge process or risk a refusal. The queries raised during the previous attempt to discharge this condition (CDN/24/0138) have been listed below the condition clauses table, marked in green where the query has been addressed and red where further information is required.

Condition number	11
Decision Notice	137572/JO/2023

Decision Notice Clause	**Contained in submission**	**Approvable standard**	**Further information required:**
A finalised drainage layout showing all components, outfalls, levels and connectivity;	Y	N	The following is required: - Please clearly mark all limited discharge rates on the drainage layout within the details for each flow control chamber. <standard comment: The applicant must present a consistent package to discharge this condition (Including all layouts and calculations). The layout and calculations must be jointly updated to account for any edits required. When preparing a resubmission, the applicant must ensure that the drainage layout and hydraulic calculations correspond, and that they can be cross-referenced for checks. This includes layout annotations and schedule printouts. >
Provide Existing and finalised Proposed GA Plan.	Y	Y	
Details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates, as the site is located within Conurbation Core Critical Drainage Area;	Y	Y	The lower ground car park surface water discharge rate is limited to 7l/s, as agreed with UU, providing >50% betterment. For the existing building, a discharge rate limited to 18.1l/s has been proposed. This amounts to a 50% reduction. For the ground floor yard, a combination of brownfield 50% reduction and greenfield rate has been proposed, with a final proposed limited discharge rate of 33l/s at MH S28. The LLFA email (dated 17 August 2022) accepted total proposed flow rates to the ordinary watercourse whereby "*new areas*

			discharging to the culvert at Qbar and existing areas being reduced by 50% and restricted to the 1 in 30 year event."
An existing and proposed impermeable areas drawing to accompany all discharge rate calculations.	Y	Y	
Demolition Plan to be provided.	Y	Y	
Roof access stairs construction details and foundation plans to be provided.	Y	Y	
Runoff volume in the 1 in 100 year, 6 hours rainfall shall be constrained to a value as close as is reasonable practicable to the greenfield runoff volume for the same event, but never to exceed the runoff volume from the development site prior to redevelopment;	N	N	Please provide.
Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during a 1 in 100 year rainfall event with allowance for 40% climate change in any part of a building;	Y	N	Flooding is predicted in the M100 + 40%CC events. An overland flow routes and above ground attenuation plan (HRD-CRU-XX-00-DR-C-92-512-C04) has been provided. However the manhole/outlet references have not been included on the plan, so it is difficult to cross-reference these with the hydraulic calculations of predicted flood volumes. The following is required: - Please indicate the manhole references on the overland flow plan so that these can be cross-referenced with the manhole schedule/hydraulic calculations.
Culvert feasibility study and survey findings to be provided.	N	N	Please provide.

Where surface water is connected to the public sewer, agreement in principle from United Utilities is required that there is adequate spare capacity in the existing system taking future development requirements into account. An email of acceptance of proposed flows and/or new connection will suffice.	Y	Y	A S106 approval cover letter for the application to make a connection to the public sewerage system (UU Ref: 4200049101, dated 09/05/2022) has been provided. The corresponding approval notice states "*Approval for the 150mm foul connection and the 300mm surface water connection via the utilisation of an existing private drain which communicates to the 900mm combined sewer in Gorton Lane attenuation indicated with a flow control on the surface water restricted to 7l/s.*"
Where surface water is connected to the ordinary watercourse, agreement in principle from Manchester City Council as Lead Local Flood Authority is required. Please note that all new connections to the watercourses shall comply with reduction of flows to Greenfield runoff rates. An email of acceptance of proposed flows and/or new connection will suffice.	Y	Y	The LLFA email (dated 17 August 2022) accepted total proposed flow rates to the ordinary watercourse whereby "*new areas discharging to the culvert at Qbar and existing areas being reduced by 50% and restricted to the 1 in 30 year event*."
Where surface water is connected to ordinary watercourse, any works within or adjacent to the watercourse that would affect it would require consent from Manchester City Council as Lead Local Flood Authority. Consent applications can be made at the following link: https://manchester.civicapayforms.co.uk/Sales/LaunchInternet.aspx?saleform=drainage	N	N	Applications for Land Drainage Consent are required for the new connections into the northern culverted watercourse.
For sites where proposed development would cause unusual pollution risk to surface water (large car park areas (>50 parking	Y	Y	

spaces) or industrial estates), evidence of pollution control measures (preferably through SuDS) is required.			
Hydraulic calculation of the proposed drainage system.(Hydraulic calcs should coincide with finalised drainage plans.	Y	N	The following is required: - Please provide hydraulic calculations which correspond with the surface water network draining to manhole SRH06 (Flow Control Manhole).
Construction details of flow control and SuDS elements.	Y	N	Construction details have been provided for Attenuation Tank 1 & 2. Flow control device/chamber construction details have been provided for the Washdown Area, SRH06, and S28. Drawing HRD CUR XX ZZ DR C 92522-C03 states that "*manufacturer will need to confirm that the tank has sufficient strength for this location in accordance with CIRIA C680*." The following is required: - Please confirm that the proposed attenuation tanks are in accordance with CIRIA C680. - Please provide construction details for Tank 3 & Tank 4.
Please see below for details of the queries previously raised under application CDN/24/0138.	Y	N	Responses provided below.

% Complete submission:	80%
% At approvable standard:	50%
Refusal trigger points: Submission 1 = less than 20% complete. Submission 2 = not 100% approvable standard.	

LLFA Recommendation:	**Further information required (as detailed above).**

Queries raised under CDN/24/0138

General comments:

- *Please can the applicant provide a proposed levels plan. (Navigating the site without levels is difficult to follow.)*

  A Levels Plan (HRD-CUR-XX-00-DR-C-91-602 C05) has been provided within Appendix A of document HRD-CUR-00-XX-T-RE-006.

- *Area 5, MCC Bin store, north of the site. Clarity on Roof Access Stairs construction. Provide Foundation plans. (A potential clash between stair structure and culvert structure).*

  The roof access stairs requirements were satisfied under the discharge of Condition 33, application CDN/24/0436.

- *Please note the LLFA do not approve any build overs on culverted watercourses and applicants must maintain appropriate easements.*

No new buildings are proposed over the culverted watercourses. The roof access stairs requirements were satisfied under the discharge of Condition 33, application CDN/24/0436. The vehicle cleaning ramp is demountable and therefore does not restrict access to the culvert.

- *Demolition Plan to be provided.*

has been provided within Appendix C of document HRD-CUR-00-XX-T-RE-006.

- *Kindly supply the CCTV documentation, as it has not been included in this application.*

has been provided within Appendix D of document HRD-CUR-00-XX-T-RE-006.

Reference: Proposed Ground Floor Drainage.

- *MCC LLFA previously advised against siphonic drainage. "We would not permit the use of siphonic in this instance, as this would likely increase the outfall discharge rate from the existing building to the watercourse." Please refer to LLFA response from Oliver Timmins 05 Aug 2021. Please clarify why this option as has been progressed?*

"*The existing building drainage is served by an extremely large number of rainwater pipes. These rainwater pipes discharge to several different sewers, both inside and outside of the site. It would have not been feasible to provide new gravity drainage for the building and route the surface water drainage to the watercourse. The use of siphonic drainage allows for a new connection into the watercourse. As shown on the drainage information, the flow into the watercourse is restricted*." The siphonic drainage is shown to discharge into Tank 4, so the proposed drainage from the existing building is therefore restricted.

- *Catchment plans - Errors have been identified regarding hatches and labelling in relation to the provided legend. Please review and update.*

Updated Catchment Plans have been provided within Appendix A of document HRD-CUR-00-XX-T-RE-006.

- *Could you please elaborate on the methodology of 33 l/s discharge rate for MH S28?*

The following explanation has been provided:

"The overall discharge for the external works for the site was calculated as the following:

- *1 in 1 year storm: 45 l/s*
- *1:30-year storm: 107 l/s*
- *1:100-year (+40%CC): 140 l/s*

These discharge rates have been calculated using a combination of brownfield and greenfield runoff rates.

The lower ground car park drainage is limited to a discharge of 7 l/s (across all storm events, as agreed with UU) The washdown drainage is limited to a discharge of 5 l/s (across all storm events, as agreed with UU).

The discharge rates for the main ground floor external drainage have been calculated by subtracting the discharge rates for the lower ground/ washdown areas from the overall drainage allowance:

- *1 in 1 year storm: 45 l/s (48% reduction from existing discharge)*
- *1:30-year storm: 107 l/s (48% reduction from existing discharge)*
- *1:100-year (+40%CC): 140 l/s (49% reduction from existing discharge)"*

- *We require a sectional view from SRH04 to Tank 4. The LLFA must ensure that there are no clashes or conflicts.*

Drawing HRD-CUR-XX-00-DR-C-92-540 has been provided, showing a sectional view from SRH04 to Tank 4. This shows that there are no conflicts with the 300mm or 225mm surface water pipes crossing this sectional.

- *The drawing mentions 'rising main by others' and 'RWH by others.' Where can we find this information? Without it, we lack a complete understanding of the system.*

It has been stated that the RWH tank is used to provide water for the vehicle washdown area. Details of the Rainwater harvesting tanks have been provided in Appendix E, the rainwater harvesting tanks are included within the cellular storage.

- *Once again, "Siphons Break at chambers. Refer to Sapoflow Details" Where might we access this information?*

Sapoflow details are enclosed in Appendix F.

- *Please provide tank 4 construction details.*

It has been stated that construction details for tank 4 have been provided within Appendix E and on drawing HRD CUR XX ZZ DR C 92522-C03. However, these construction details are for Attenuation Tank 1, which discharges to MH S28. Please provide construction details for Tank 4 (which discharges to SRH06).

- *Please provide Vented cover construction details.*

A Vented Manhole detail has been enclosed in Appendix F – drawing HRD-CUR-XX-ZZ-DR-C-92-520.

- *Connection north of MH S16 is not hydraulically efficient, please review and update.*

The following statement has been provided: "The connection into MH S16 has been detailed in order to bring the pipework into the manhole square to the outlet pipe."

- *What is the purpose of having three pipes at SRH06a? Is this configuration the most efficient? Please provide construction details of this MH. Additionally, please provide confirmed 150 dia vent pipe level.*

"The triple pipe connection has been used in order to allow the connection into the attenuation tank – the maximum direct connection to the tank is 375mm diameter. Therefore, three pipes have been used in order to provide sufficient capacity from SRH06 into the tank. The triple pipe configuration has been incorporated in the drainage model."

- *Once more, why are there three pipes at S27 and S28? Is this arrangement the most efficient? Please provide construction details of this MH.*

As above. "This also allows for the connection into the Tank access unit channel, which allows inspection and cleaning through the tank".

- *Please provide manufacturer data sheets for proposed petrol interceptor and "SPEL Detail drawing"*

Spel Interceptor Details are enclosed in Appendix H

- *Please provide Gatic channel construction details and manufacturer specification / data sheets.*

Gatic channel construction details drawing HRD-CUR-XX-ZZ-DR-C-92-521 and performance information are shown on drawing in Appendix I.

- *The construction specifications for "Connections to culvert" lack clarity. The instruction, "Manholes to be constructed in accordance with typical PCC manhole details shown elsewhere," is insufficient. Please provide comprehensive details, including adherence to BS codes, mortar haunching specifications, kite marking, concrete grade, minimum clear access requirements, and site-specific, special manhole details for the two connections into the watercourse: MH S29 and MH SRH08. Ensure that the provided details are scaled correctly and tailored to the site's requirements.*

Drawing HRD-CUR-XX-ZZ-DR-C-92-528 in Appendix G includes manhole details for MH S29 and MH SRH08.

- *A correspondence from Oliver Timmins 09/03/2021 mentions: "If retaining wall structures are to remain on site and if the culverted watercourse is found to be directly beneath this, then it is the landowners responsibility as a riparian owner to ensure that the structural integrity of the culverted watercourse is not compromised by the proposed on site works." No details regarding retaining wall have been provided. Clarity required on any structural implications to the culvert. What happened to the retaining wall?*

The following statement has been provided: "*This referenced the retaining wall along the southern boundary of the lower ground car park. This work has been completed without causing damage to the culvert. As there are no further works to be undertaken in this area, this is not now considered an issue*."

- *Kindly supply the CCTV documentation, as it has not been included in this application.*

The CCTV survey information has been provided within Appendix D.

- *Method statement for connection to watercourse not provided.*

A method statement has been provided in Appendix G. However, it is not clear which section specifically refers to the construction of manholes on the culverted watercourse, and it is unclear what temporary works (e.g. dry working area, over-pumping) or mitigation (e.g. silt mitigation) works are proposed. Please provide a clear step-by-step method statement, detailing how the connections will be made into the culverted watercourse.

- *Hydraulic calcs. Pending review due to clarification on the above points.*

See above condition clauses table.

Reference – Washdown Drainage

- *Please kindly confirm if you've addressed the requirement for sufficient sediment control in the design to prevent silt from entering the public sewer?*

Details of 4 sediment control elements have been provided: silt traps on the in-situ concrete channels, a catchpit chamber on connections from the channels, a Washdown separator, and a further catchpit before the hydrobrake manhole.

- *Supply information of enquiry to UU trade effluent team regarding any potential chemical discharge into the public sewer and determining the necessary treatment and licensing procedures.*

A trade effluent consent from United Utilities has been provided (dated 01 August 2023).This states that up to 30m^3 trade effluent may be discharged per 24 hours.

- *Provide Sub-meter details*

Provided within the e-mail enclosed in Appendix K.

- *Please provide manufacturer data sheets / details for proposed silt-separator.*

Interceptor Details are enclosed in Appendix H

- *Evidence of Klargester confirmation.*

An e-mail from the manufacturer (Spel), confirming the sizing of the separator has been included within Appendix H.

- *Please provide S106 approval in principle.*

A S106 approval in principle has been provided in Appendix K, for the foul/trade effluent for the Washdown area, dated 13/03/2024.

- *Regarding the correspondence from Oliver Timmins dated 17/08/2022, could you kindly confirm whether the ramp's impact or abnormal loading on the culvert has been thoroughly assessed and addressed? We seek clarity on whether this matter has been checked and resolved.*

It has been stated that *"The vehicles ramp will carry one vehicles at a time, and contains a number of supporting columns. As such, the loading on any individual column will be lower than the equivalent loading created by a single wheel load from the vehicle."*

- *Please confirm S106 south-east of the site is only for foul?*

The S106 agreement in principle (in Appendix K) confirms that the agreement is for trade effluent from the washdown area only, and that the point of discharge is the foul sewer situated at Hammerstone Road (Manhole Ref 2801).

- *Hydraulic calcs. Pending review due to clarification on the above points.*

See above condition clauses table.

Reference - Proposed Lower Floor Drainage

- *No objections in principle, however S106 was issued 06/05/2022 and is only valid for 12 months. Has UU been re-consulted or has this been built out already?*

It has been stated that The Lower Ground Floor Drainage was completed in May 2024.

- *Please provide tank 3 construction details.*

Construction details for Tank 3 have been provided within Appendix L.

Appendix N

Proposed Drainage Drawings

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CONSTRUCTION RECORD - FINAL CONSTRUCTION

THE INFORMATION IS BASED ON CONFIRMATION FROM THE CONTRACTOR OF THE INSTALLED WORKS. THERE MAY BE VARIATIONS ON SITE WHICH ARE NOT REFLECTED ON THIS DRAWING AND HAS NOT BEEN VERIFIED BY CURTINS.

RESIDUAL HAZARD REGISTER

HAZARDS THAT SHOULD BE OBVIOUS TO A COMPETENT CONTRACTOR HAVE NOT BEEN INDICATED ON THIS DRAWING. SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED, THE CONTRACTOR SHOULD NOTIFY ALL RELEVANT PROJECT TEAM MEMBERS.

HAZARD REF No.	ITEM (FEATURE, ELEMENT OR ACTIVITY)	RESIDUAL HAZARD
3.01	UNDERGROUND SERVICES	EXISTING LIVE SERVICES (SITEWIDE)
5.05	DEEP EXCAVATIONS	DEEP EXCAVATION MORE THEN 3M NEAR EXISTING CULVERT/ NEAR EXISTING FOUNDATION WALL/ ATTENUATION TANK

DESIGN PHILOSOPHY SURFACE WATER

EXISTING BUILDING
SIPHON ROOF SYSTEM WITH RAINWATER HARVESTING TANK AND FLOW RESTRICTION BY STORMSAVER
FLOW LIMITED TO 18.1L/S 1 IN 30 YEAR STORM EVENT FOR ALL STORM EVENTS
TABLE 3 EXISTING AND PROPOSED CALCULATIONS

GROUND FLOOR YARD/CAR PARK
TO DISCHARGE TO WATERCOURSE,RESTRICTED RATE
COMBINATION OF BROWNFIELD RUNOFF (50% REDUCTION) & GREENFIELD RUNOFF.

SURCHARGE LEVEL FOR 1 IN 100+40 CC ON CULVERTED WATERCOURSE: 61.85 (1m ABOVE SOFFIT LEVEL)

LOWER GROUND CAR PARK
REUSING EXISTING CONNECTION TO COMBINED SEWER
GREATER REDUCTION THAN 50%, 7L/S FOR ALL STORM EVENTS

SURCHARGE LEVEL FOR 1 IN 100+40 CC ON PUBLIC SEWER: 59.14 (AS AGREED WITH UU)

WASHDOWN AREA
TO DISCHARGE TO FOUL WATER SEWER FLOW LIMITED TO 5L/S AS REQUESTED BY UU

FOUL WATER
4.9L/S

DRAWING BASED ON:
TOPOGRAPHICAL SURVEY BY SEP S15724-T

GPR SURVEY BY SEP S17480-U DEC 2018 JUNE 2018

CCTV SURVEYS BY SEP/ NRC:
- DEC 2018
- AUG 2020
- MAY, AUG 2021
- JAN 2022
- SEP, NOV 2023

UU RECORDS UUPS-ORD-76950

PROPOSED SITE PLAN
HRD-FRA-00-XX-DR-A-90-0200 REV C12 SITE PLAN
HRD-FRA-00-XX-DR-A-90-0207 REV C09 EXTERNAL WORKS SETTING OUT SHEET 1
HRD-FRA-00-XX-DR-A-90-0208 REV C11 EXTERNAL WORKS SETTING OUT SHEET 2

EXTERNAL SERVICES
HRD-HAN-ZZ-00-DR-M-50-03 C01 External Gas & Water Layout
DISCHARGE UNITS PROVIDED 26.03.21
POPUPS 3654-HRD-HAN-ZZ-00-DR-M-0610

RAINWATER HARVESTING/ STORAGE
HRD-ABE-ZZ-ZZ-DR-M-5032 REV P03 TANK LAYOUT

SIPHONIC DRAINAGE DETAILS
HRD-SAP-01-RL-DR-X-0001 REV C04 SIPHONIC ROOF PLAN
HRD-SAP-01-RL-DR-X-0002 REV C05 SHED E SIPHONIC ROOF PLAN
HRD-SAP-01-RL-DR-X-0003 REV C04 SIPHONIC UGD DETAILS

WASHDOWN FOUNDATIONS PLAN
HRD-CUR-00-XX-DR-S-16-0001 REV C03

SITE INVESTIGATIONS
HDR-CUR-00-XX-RP-GE-002-P01 HAMMERSTONE ROAD PHASE 2 SITE INVESTIGATION
HRD-CUR-00-XX-RP-G-004-C01_HAMMERSTONE ROAD DEPOT TRIAL PITS

AS-BUILT INFORMATION
SKETCH MARK-UPS RECEIVED 04.09.25 FROM MORGAN SINDALL.

GULLY TO BIN WASH AREA CONNECTS TO CESSPOOL BY SPEL: ASSUMED 2,400 l CAPACITY, BASED ON AN ASSUMED USE OF 100 L/DAY & A MONTHLY EMPTYING SCHEDULE.
FINAL REQUIREMENTS TBC WITH SPEL.

MH S29/ EX MH06 2400Ø
CL 64.55
IL 59.30
300Ø CONNECTION 60.55
NEW MANHOLE TO BE CONSTRUCTED ON EXISTING CULVERT.
CONNECTION SUBJECT TO LLFA LAND DRAIN CONSENT

1m SURCHARGE LEVEL ABOVE WATERCOURSE SOFFIT LEVEL HAVE BEEN CONSIDERED IN NETWORK CALCULATIONS AS PER ADVISE FROM LLFA FROM 20.07.22

SRH08 2400Ø
CL:64.57
IL:59.74
300Ø CONNECTION 60.19
NEW MANHOLE TO BE CONSTRUCTED ON EXISTING CULVERT.
CONNECTION SUBJECT TO LLFA LAND DRAIN CONSENT

SRH06
FLOW CONTROL MANHOLE
SHE-0181-1800-1600-1800
FLOW LIMITED TO 18.1 L/S
CL:64.63
IL:60.92
RWH VALVE BY OTHERS

RAINWATER HARVESTING TANK INCLUDED WITHIN CELLULAR STORAGE. DETAILS OF TANK TO BE PROVIDED BY OTHERS FOR REVIEW.

ATTENUATION TANK 4
643m³ VOLUME
(95%VOID RATIO)
1.392m HEIGHT
484 m² AREA
BASE 61.471
TOP 62.863

MH S18 1500Ø
CL 64.56
IL 63.32

MH S19 1500Ø
CL 64.48
IL 63.23

MEADRAIN LINEAR DRAINAGE CHANNEL HAS BEEN SPECIFIED ON THE BASIS THAT IT WILL NOT BE SUBJECT TO VEHICULAR LOADING. TO BE CLEANED/ EMPTIED USING VACUUM METHODS AND NOT VIA EXCAVATOR BUCKET.

INDICATIVE LOCATION OF WATERCOURSE DRAINS BASED ON UU RECORDS AND CCTV SURVEY.

SIPHONS BREAK AT CHAMBERS. REFER TO SAPOFLOW DETAILS

SRH05
CL:64.21
IL:62.90
VENTED COVER

EX IL 61.72 (INTERPOLATED)
PROP IL 62.36

SRH04
CATCHPIT
CL64.17
IL:62.37

EX IL 63.32 (INTERPOLATED)
PROP IL 62.31

SRH06a
CATCHPIT
CL64.49
IL:62.32

MH S28 FLOW CONTROL HYDROBRAKE
MD-SHE-0252-3300-0600-3300
FLOW LIMITED TO 33 l/s
190mm ORIFICE PLATE
1.02m ABOVE INVERT
CL 64.54
IL 61.15

MH S23 600Ø
CL 64.50
IL 62.66

IL:62.29

RISING MAIN BY OTHERS

MH S14 1500Ø
CL 64.11
IL 62.66

TANK 1
VOLUME 737 m3
AREA 323m2
HEIGHT 2.4m
BASE 61.17
RFER TO DRAWING
HRD-XX-ZZ-DR-C-92522

MH S24 1500Ø
CL 64.53
IL 62.55

MH S25 1500Ø
CL 64.64
IL 61.91

ACO DRAIN KERB INSTALLED AROUND EXISTING FUEL STORAGE TANK

MH S22 1500Ø
CL 64.33
IL 62.75

MH S20 15000Ø
CL 64.63
IL 63.16

MEADRAIN GULLY UNIT USED AS SUMP. OUTLET TO BE BLANKED OFF

MEADRAIN END PLATE OUTLET CONNECTION

MEADRAIN 6m 300DRAINAGE CHANNEL - D400

SILT TRAP OUTLET IL's 64.15

W01A CP
CL:64.51
IL:63.76

W03
CL:64.47
IL:62.85

W01 CP
CL:64.37
IL:63.17

W02
CL:64.57
IL:63.04

W05 CP HYDROBRAKE MANHOLE, FLOW LIMITED TO 5L/S
MD-SHE-0100-5000-1400-5000
FLOW LIMITED TO 5l/s
CL:64.49
IL:62.45

W04
CL64.38
IL:62.58

W06
CL:64.46
IL:62.33
SUB-METER TO BE INSTALLED IN CHAMBER. (BY OTHERS)

KLARGESTER CLASS 2 WASHDOWN/SILT SEPARATOR W1/150 (5.435m x 2.075Ø)
BASED ON 50-55 WASHED VEHICLES/ PER DAY.
INLET IL 63.12
OUTLET IL 63.07
BASE LEVEL 61.44 (SUBJECT TO CONFIRMATION FROM SUPPLIER)

TANK 2
VOLUME 40m³
14x43.5m
HEIGHT 0.80m
BASE 62.59

3m PUBLIC SURFACE WATER EASEMENT

PETROL INTERCEPTOR
FULL RETENTION CLASS 1 SPEL P400 1C/SC (15.76m x 3.65Ø)
IMPERMEABLE AREA 2.17 Ha
INLET IL 61.65
OUTLET IL 61.55
BASE LEVEL 58.63
REFER TO SPEL DETAIL DRAWING

MH S26 1500Ø
CL 64.66
IL 61.67

MH S17 1500Ø
CL 64.68
IL 61.75

MH S27 1800Ø
CL 64.75
IL 61.26

MH S13 1500Ø
CL 64.74
IL 62.54

LEGEND

- SITE BOUNDARY BASED ON HRD-FRA-00-XX-DR-A-90-0200

EXISTING SERVICES BASED ON CCTV SURVEY AUG 2020

- EXISTING SURFACE WATER PIPE
- EXISTING COMBINED WATER PIPE
- EXISTING UNSURVEYED BUILDING DRAINAGE (ASSUMED ROUTE SHOWN)

UNITED UTILITIES RECORDS UUPS-ORD-76950
ALL UU ASSETS ARE SHOWN INDICATIVELY

- UU FOUL WATER SEWER
- UU SURFACE WATER SEWER
- UU COMBINED WATER SEWER
- WATERCOURSE
- 8M EASEMENT BASED ON SEWER FOR ADOPTION 6TH EDITION

PROPOSED DRAINAGE

- PROPOSED FOUL WATER DRAIN
- PROPOSED RISING MAIN FROM RH TANK
- PROPOSED SURFACE WATER DRAIN
- PROPOSED SURFACE WATER FOR WASHDOWN
- PROPOSED SURFACE WATER FROM SIPHON BY SAPOFLOW
- PROPOSED SURFACE WATER GRAVITY DRAINAGE FROM SIPHON
- PROPOSED SURFACE WATER BY STORMSAVER
- LINEAR DRAINAGE CHANNEL GATIC CASTSLOT TREADSAFE D400
- LINEAR DRAINAGE CHANNEL MEADRAIN ENS 3000 D400

DP FOUL WATER DOWN PIPE
FG FLOOR GULLY
SRWP SIPHON RAIN WATER PIPE
AB ACCESS BOX
OU OUTLET BOX
CP CATCHPIT
FLOW CONTROL CHAMBER
PROPOSED ATTENUATION TANK
PETROL INTERCEPTOR OR SIMILAR
PROPOSED SERVICES
EXISTING BUILDING FOOTPRINT

Rev:	Description:	Date:	By:	Chkd:
FC01	FINAL CONSTRUCTION ISSUE	08.09.25	JC	ATL
C09	UPDATED IN LINE WITH DISCUSSIONS/ AS CONSTRUCTED TANK INFO	03.03.25	JC	ATL
C08	WASHDOWN DRAINAGE AMENDED	10.02.25	JC	ATL
C07	LINEAR DRAINAGE CHANNEL AMENDED	22.10.24	JC	ATL
C06	UPDATED IN LINE WITH DISCUSSIONS	21.10.24	JC	ATL
C05	STAGE 5 ISSUE	23.09.24	JC	ATL
P08	UPDATED IN LINE WITH COMMENTS	13.02.24	ATL	MW
P07	UPDATED FOR NEW TENDER	02.02.24	ATL	MW
C04	CAR PARK DRAINAGE REMOVED	20.04.23	ATL	MW
C03	DRAINAGE FLOWS, COVER LEVELS AND, WASHDOWN OUTFALL ARRANGEMENT AMENDED	25.11.22	ATL	MW
C02	EX1 TO BE REBUILT, LANDSCAPE PLAN AND SERVICES UPDATED	24.10.22	MW	MW
C01	ISSUED FOR CONSTRUCTION	21.09.22	ATL	MW

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Status: FINAL CONSTRUCTION

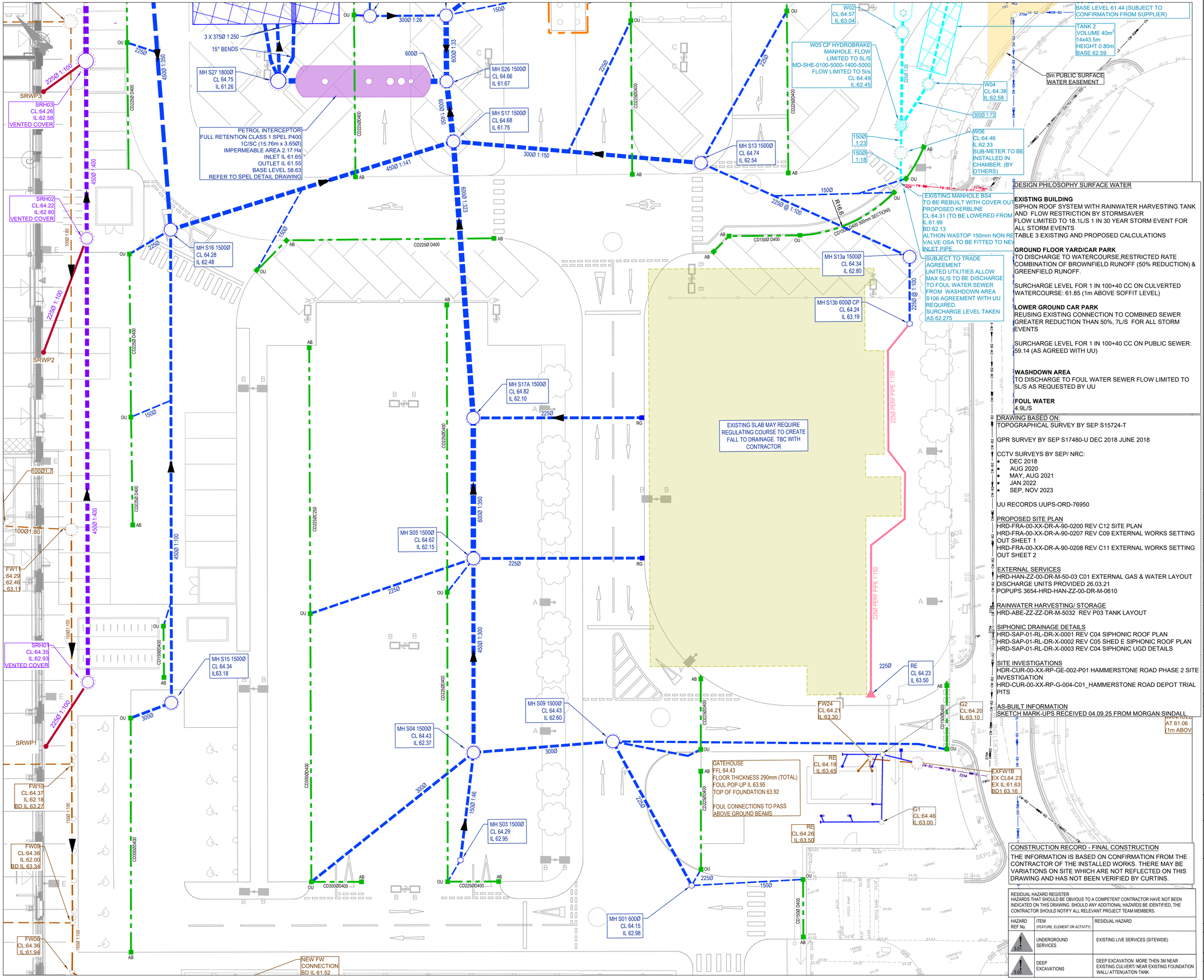
Project: HAMMERSTONE ROAD

Drg Title: PROPOSED DRAINAGE 1:200 LAYOUT SHEET 1

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	14.04.21	ATL	ATL	MW
	Scale: 1:200				

Project Code:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
HRD	CUR	XX	00	DR	C	92-504	FC01

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LEGEND

- SITE BOUNDARY BASED ON HRD-FRA-00-XX-DR-A-90-0200

EXISTING SERVICES BASED ON CCTV SURVEY AUG 2020

- EXISTING SURFACE WATER PIPE
- EXISTING COMBINED WATER PIPE
- EXISTING UNSURVEYED BUILDING DRAINAGE (ASSUMED ROUTE SHOWN)

UNITED UTILITIES RECORDS UUPS-ORD-76950
ALL UU ASSETS ARE SHOWN INDICATIVELY

- UU FOUL WATER SEWER
- UU SURFACE WATER SEWER
- UU COMBINED WATER SEWER
- WATERCOURSE
- 8M EASEMENT BASED ON SEWER FOR ADOPTION 6TH EDITION

PROPOSED DRAINAGE

- PROPOSED FOUL WATER DRAIN
- PROPOSED RISING MAIN FROM RH TANK
- PROPOSED SURFACE WATER DRAIN
- PROPOSED SURFACE WATER FROM WASHDOWN
- PROPOSED SURFACE WATER FROM SIPHON BY SAPOFLOW
- PROPOSED SURFACE WATER GRAVITY DRAINAGE FROM SIPHON
- PROPOSED SURFACE WATER BY STORMSAVER
- GATIC CHANNEL
- DP FOUL WATER DOWN PIPE
- FG FLOOR GULLY
- SRWP SIPHON RAIN WATER PIPE
- AB ACCESS BOX
- OU OUTLET BOX
- CP CATCHPIT
- FLOW CONTROL CHAMBER
- PROPOSED ATTENUATION TANK
- PETROL INTERCEPTOR OR SIMILAR
- PROPOSED SERVICES
- EXISTING BUILDING FOOTPRINT

Rev:	Description:	Date:	By:	Chkd:
FC01	FINAL CONSTRUCTION ISSUE	08.09.25	JC	ATL
C05	UPDATED IN LINE WITH DISCUSSIONS/ AS CONSTRUCTED TANK INFO	03.03.25	JC	ATL
C04	WASHDOWN DRAINAGE AMENDED	10.02.25	JC	ATL
C03	LINEAR DRAINAGE CHANNEL AMENDED	22.10.24	JC	ATL
C02	UPDATED IN LINE WITH DISCUSSIONS	21.10.24	ATL	ATL
C01	STAGE 5 ISSUE	23.09.24	JC	ATL
P03	UPDATED IN LINE WITH UPDATED SITE LAYOUT	03.04.24	KS	ATL
P02	UPDATED IN LINE WITH COMMENTS	13.02.24	ATL	MW
P01	ISSUED FOR NEW TENDER	29.01.24	ATL	MW

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Status: FINAL CONSTRUCTION

Project: HAMMERSTONE ROAD

Drg Title: PROPOSED DRAINAGE 1:200 LAYOUT SHEET 2

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29.01.24	ATL	ATL	MW
	Scale: 1:200				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

HRD - CUR - XX - 00 - DR - C - 92-508 FC01

\\ma-fs-1\Projects\068065 - 695000\068065 - Hammerstone Road Depot\CMS 4 Production\4B Models & Drawings_Civil-CC\4D\92\

TABLE 1: PROPOSED CATCHMENTS MAXIMUM FLOW RATES					
CATCHMENT REF	AREA (Ha)	CALCULATION METHOD	FLOW RATE - 1:1 YEAR STORM EVENT	FLOW RATE - 1:30 YEAR STORM EVENT	FLOW RATE - 1:100 YEAR + 40% CC STORM EVENT
CATCHMENT PC (LOWER GROUND CP)	0.332	50% BROWNFIELD OF THE EXISTING 1-YEAR STORM EVENT AREA EC (25%)	7.0	7.0	7.0
REFER TO DRAWINGS HRD-CUR-XX-00-DR-C-92-621 & 622 FOR DETAILS OF EXISTING AND PROPOSED CATCHMENTS					

INFORMATION PROVIDED BY THE CCTV SURVEY DID NOT PROVIDE CONFIRMATION WHERE SOUTH WATERCOURSE IS LOCATED

FOR EXISTING DRAINAGE REFER TO DRAWING NUMBER: HRD-CUR-XX-00-DR-C-92-510

PROPOSED SERVICES SHOULD BE LOCATED OUTSIDE PROPOSED DRAINAGE

CONSTRUCTION RECORD - FINAL CONSTRUCTION

THE INFORMATION IS BASED ON CONFIRMATION FROM THE CONTRACTOR OF THE INSTALLED WORKS. THERE MAY BE VARIATIONS ON SITE WHICH ARE NOT REFLECTED ON THIS DRAWING AND HAS NOT BEEN VERIFIED BY CURTINS.

LEGEND

- SITE BOUNDARY

PROPOSED DRAINAGE

- PROPOSED SURFACE WATER DRAIN
- PRIVATE SURFACE WATER DIVERSION
- Ø225 GATIC CHANNEL C250 (UNLESS NOTED D400)
- CP CATCHPIT
- HB HYDROBRAKE
- BD BACKDROP
- AB ACCESS BOX
- OU OUTLET BOX

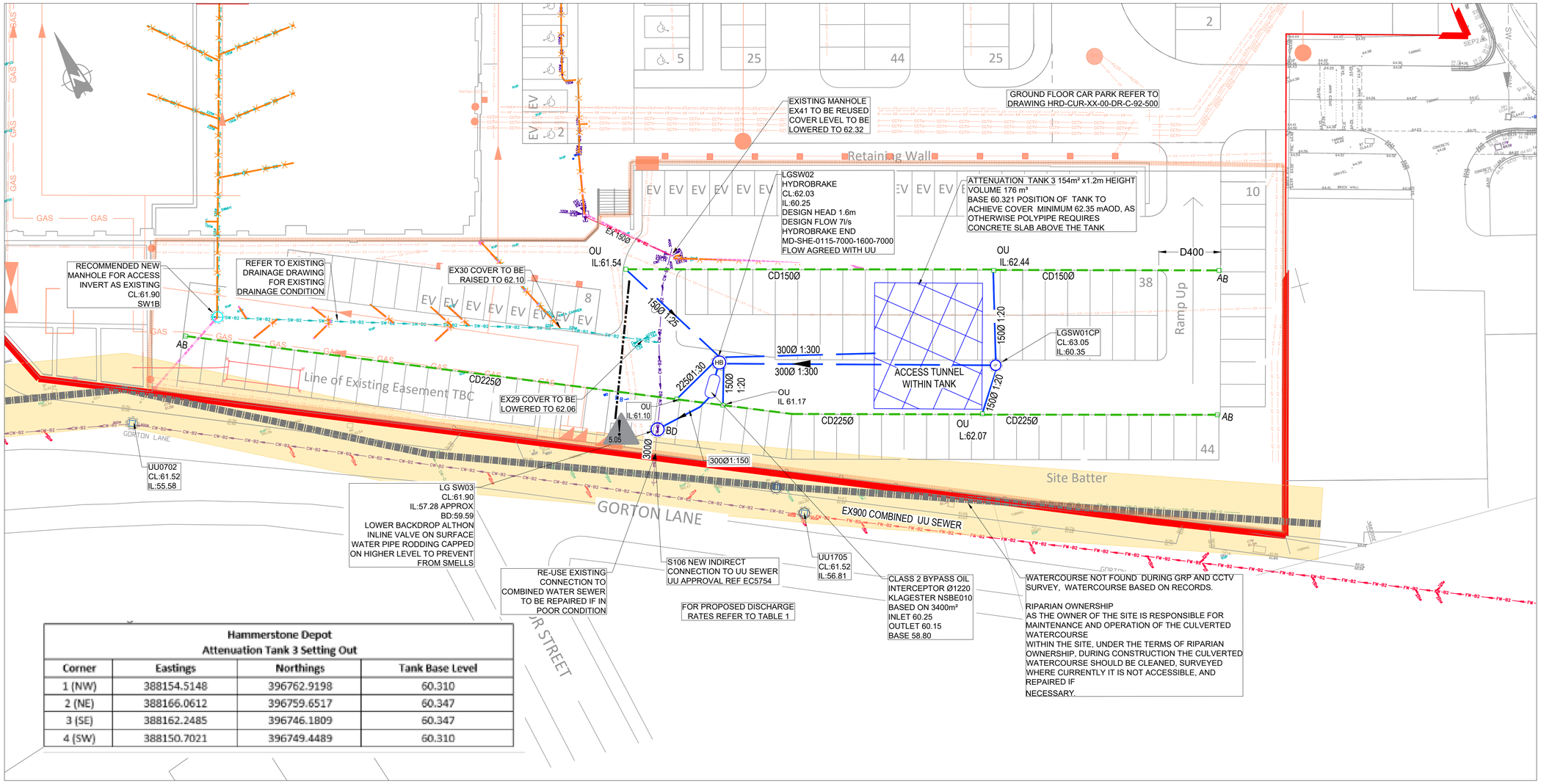
UNITED UTILITIES RECORDS UUPS-ORD-76950 ALL UU ASSETS ARE SHOWN INDICATIVELY

- CW UU FOUL WATER SEWER
- SW UU SURFACE WATER
- SEWER WATERCOURSE
- SW-B2 PRIVATE SURFACE WATER
- FW-B2 PRIVATE FOUL
- CW-B2 PRIVATE COMBINED
- 8M EASEMENT BASED ON SEWER FOR ADOPTION 6TH EDITION
- OIL INTERCEPTOR
- ATTENUATION TANK
- SW PROPOSED SERVICES

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN. ALL EXISTING SEWERS, CONNECTIONS, PIPE SIZES AND INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS TO ENSURE CONNECTIVITY. ANY VARIANCE FROM THE INFORMATION SHOWN SHOULD BE REPORTED TO THE ENGINEER FOR REVIEW.
3. DO NOT SCALE THIS DRAWING. ALL DETAILS AND DIMENSIONS ARE TO BE CHECKED BY THE CONTRACTOR. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
5. WHERE EXISTING DRAINAGE IS BEING USED, ALLOWANCES SHOULD BE MADE TO REMEDIATE THIS DRAINAGE IN LINE WITH AVAILABLE CCTV SURVEY INFORMATION. IF NO SURVEY IS AVAILABLE, IT IS ADVISED TO OBTAIN ONE PRIOR TO COMMENCEMENT OF WORKS.
6. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS, AND WHERE NECESSARY PROTECTION OR DIVERSIONS TO BE UNDERTAKEN TO AVOID CONFLICT WITH THE PROPOSED WORK.
7. ALL PIPE DIAMETERS GIVEN ARE NOMINAL INTERNAL PIPE DIAMETERS. THESE ARE TO BE CONFIRMED ONCE A DETAILED CAPACITY CHECK HAS BEEN UNDERTAKEN AT A LATER DESIGN STAGE.
8. OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.
9. FOR FULL DRAINAGE NOTES REFER TO HRD-CUR-XX-ZZ-DR-C-92-502

Lower Ground Surface Water																	
MH REF	CL (mAOD)	IL (mAOD)	DEPTH TO SOFFIT (m)	DS PIPE DIA (mm)	MH DIA (mm)	MH TYPE	CATCHPIT	COVER SIZE (mm)	COVER CLASS	COVER TYPE	RECESSED	RESTRICTED ACCESS	BACK DROP	Back drop IL (mAOD)	COMMENTS	EASTING	NORTHING
Lower Ground Surface Water																	
LGSW01	63.05	60.35	2.55	150	1200	TYPE B	Y	600X600	D400	SINGLE SEALED	N	N	N	N/A	CATCHPIT MIN SUMP DEPTH 300mm	388165.024	396750.481
LGSW02	62.03	60.25	1.48	300	1500	HYDROBRAKE CHAMBER	N	1200X675	D400			N	N	N/A	FLOW CONTROL CHAMBER REFER TO HYDROBRAKE DETAILS FOR SUMP DEPTH	388135.490	396758.968
LGSW03	61.90	57.28	4.32	300	1500	TYPE A2	N	600X600	C250			N	Y	59.59		388126.901	396753.635
SW1B	61.90	60.30	1.38*	225	1500*	TYPE C*	N	1200X675*	D400			N	N		MANHOLE TO BE CONSTRUCTED ON EXISTING DRAIN. *INVERT LEVEL INTERPOLATED FROM CCTV SURVEY - TBC ON SITE	388083.112	396778.715
EX29	62.06	EXISTING MANHOLE COVER ADJUSTED TO SUIT PROPOSED LEVELS						600X600	C250			N	N	N/A		388127.742	396763.677
EX30	62.10							600X600	C250			N	N	N/A		388119.157	396767.106
EX41	62.32							600X600	C250			N	N	N/A		388133.251	396771.833



Hammerstone Depot Attenuation Tank 3 Setting Out			
Corner	Eastings	Northings	Tank Base Level
1 (NW)	388154.5148	396762.9198	60.310
2 (NE)	388166.0612	396759.6517	60.347
3 (SE)	388162.2485	396746.1809	60.347
4 (SW)	388150.7021	396749.4489	60.310

DRAWING BASED ON:
TOPOGRAPHICAL SURVEY BY SEP S15724-T
GPR SURVEY BY SEP S17480-U DEC 2018 JUNE 2018
CCTV SURVEY BY SEP DRAINAGE SURVEYS LTD DEC 2018 AND AUG 2020
UU RECORDS UUPS-ORD-76950

PROPOSED SITE PLAN GA
HRD-FRA-00-XX-SK-A-90-9006 REV C02

SIPHONIC DRAINAGE
STORMSAVER 05.07.22
SAPOFLOW SIPHON SYSTEM 29.06.22

Rev:	Description:	Date:	By:	Chkd:
CR	CONSTRUCTION RECORD ISSUE	28.05.24	ATL	ATL
C06	LG SW03 AMENDED IN LINE WITH ON SITE INFORMATION	14.07.23	ATL	ATL
C05	LG SW03 MOVED FOLLOWING ADDITIONAL SURVEY	3.07.23	MW	MW
C04	ATTENUATION TANK AMENDED TO SUIT REVISED REQUIREMENTS	27.06.23	ATL	MW
C03	TANK RELOCATED TO ACHIEVE COVER RECOMMENDED BY POLYPIPE	24.10.22	MW	MW
C02	OIL INTERCEPTOR BASED ADDED	19.08.22	MW	MW
C01	CONSTRUCTION ISSUE	22.07.22	ATL	MW
P08	DRAINAGE NOTE ADDED	25.04.22	ATL	MW
P07	MAIN BUILDING DRAINAGE AMENDED	25.03.22	ATL	MW
P06	STAGE 4 UPDATED	05/08/21	MW	MW
P05	ISSUED FOR STAGE 4	09/04/21	MW	MW
P04	UPDATED TO COMMENTS FOR COSTING	23/03/21	MW	MW
P03	ISSUED FO STAGE 3- UPDATED SITE PLAN	02/12/20	MW	MW
P02	ISSUED FOR STAGE 3	18/11/20	MW	MW
P01	ISSUED FOR STAGE 3	29.01.19	MW	CG

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Status: STAGE 5

Project: HAMMERSTONE ROAD

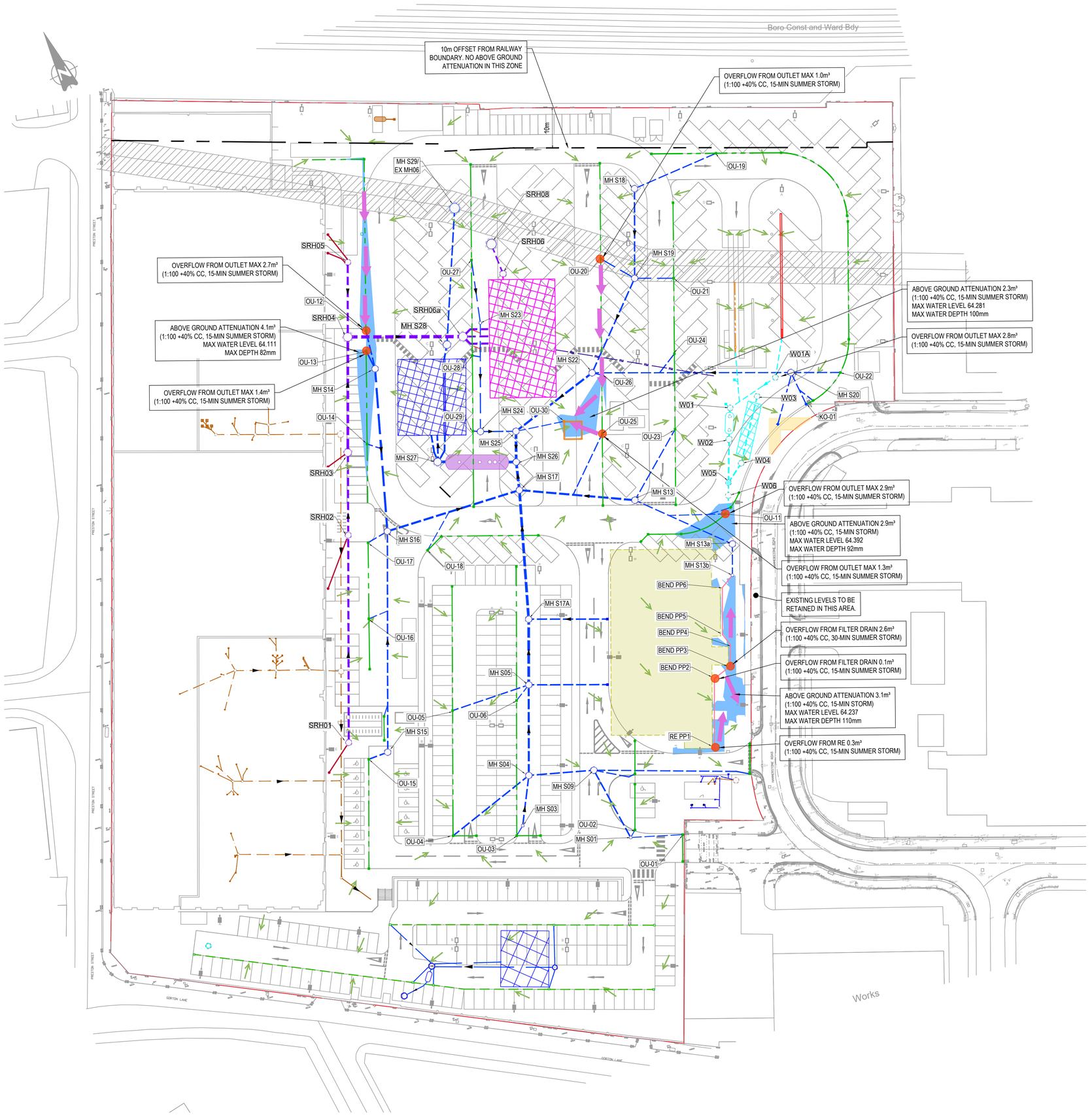
Drg Title: PROPOSED LOWER FLOOR DRAINAGE

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
068065	A1	29.01.19	MW	MW	CG
	Scale: 1:250				

Project Code: Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

HRD - CUR - XX - 00 - DR - C - 92-501 - CR

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KEY

- SITE BOUNDARY TAKEN FROM DRAWING HRD-FRA-00-XX-DR-A-0200 REV C2
- 64.00 — MAJOR CONTOUR
- MINOR CONTOUR
- PROPOSED SURFACE WATER DRAINAGE (MAIN NETWORK)
- PROPOSED SURFACE WATER DRAINAGE (MAIN BUILDING ROOF)
- PROPOSED SURFACE WATER DRAINAGE (WASHDOWN AREA)
- PROPOSED LINEAR DRAINAGE CHANNEL LOCATION
- LOCATION OF FLOODING WITHIN DRAINAGE NETWORK
- ROUTE OF OVERLAND FLOW FROM FLOOD POINT
- AREA OF ABOVE GROUND ATTENUATION
- GENERAL FALLS

DRAWING BASED ON:
TOPOGRAPHICAL SURVEY BY SEP S15724-T

GPR SURVEY BY SEP S17480-U DEC 2018 JUNE 2018

CCTV SURVEYS BY SEP/ NRC:
- DEC 2018
- AUG 2020
- MAY, AUG 2021
- JAN 2022
- SEP, NOV 2023

UU RECORDS UUPS-ORD-76950

PROPOSED SITE PLAN
HRD-FRA-00-XX-DR-A-90-0200-C12

EXTERNAL SERVICES
HRD-HAN-ZZ-00-DR-M-50-03 C01 External Gas & Water Layout
DISCHARGE UNITS PROVIDED 26.03.21
POPUPS 3654-HRD-HAN-ZZ-00-DR-M-0610

RAINWATER HARVESTING/ STORAGE
HRD-ABE-ZZ-ZZ-DR-M-5032 REV P03 TANK LAYOUT

SIPHONIC DRAINAGE DETAILS
HRD-SAP-01-RL-DR-X-0001 REV C04 SIPHONIC ROOF PLAN
HRD-SAP-01-RL-DR-X-0002 REV C05 SHED E SIPHONIC ROOF PLAN
HRD-SAP-01-RL-DR-X-0003 REV C04 SIPHONIC UGD DETAILS

WASHDOWN FOUNDATIONS PLAN
HRD-CUR-04-FN-DR-S-16-0001 REV C03

SITE INVESTIGATIONS
HDR-CUR-00-XX-RP-GE-002-P01 HAMMERSTONE ROAD PHASE 2 SITE INVESTIGATION
HRD-CUR-00-XX-RP-G-004-C01_HAMMERSTONE ROAD DEPOT TRIAL PITS

CONSTRUCTION RECORD - FINAL CONSTRUCTION
THE INFORMATION IS BASED ON CONFIRMATION FROM THE CONTRACTOR OF THE INSTALLED WORKS. THERE MAY BE VARIATIONS ON SITE WHICH ARE NOT REFLECTED ON THIS DRAWING AND HAS NOT BEEN VERIFIED BY CURTINS.

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN. ALL EXISTING SEWERS, CONNECTIONS, PIPE SIZES AND INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS TO ENSURE CONNECTIVITY. ANY VARIANCE FROM THE INFORMATION SHOWN SHOULD BE REPORTED TO THE ENGINEER FOR REVIEW.
3. DO NOT SCALE THIS DRAWING. ALL DETAILS AND DIMENSIONS ARE TO BE CHECKED BY THE CONTRACTOR. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
5. WHERE EXISTING DRAINAGE IS BEING USED, ALLOWANCES SHOULD BE MADE TO REMEDIATE THIS DRAINAGE IN LINE WITH AVAILABLE CCTV SURVEY INFORMATION. IF NO SURVEY IS AVAILABLE, IT IS ADVISED TO OBTAIN ONE PRIOR TO COMMENCEMENT OF WORKS.
6. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS, AND WHERE NECESSARY PROTECTION OR DIVERSIONS TO BE UNDERTAKEN TO AVOID CONFLICT WITH THE PROPOSED WORK.
7. ALL PIPE DIAMETERS GIVEN ARE NOMINAL INTERNAL PIPE DIAMETERS. THESE ARE TO BE CONFIRMED ONCE A DETAILED CAPACITY CHECK HAS BEEN UNDERTAKEN AT A LATER DESIGN STAGE.
8. OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.

Rev:	Description:	Date:	By:	Chkd:
FC01	UPDATED IN LINE WITH FINAL CONSTRUCTION LAYOUT	06.02.26	ATL	MW
C06	ABOVE GROUND STORAGE VOLUMES AMENDED	10.11.25	ATL	MW
C05	MANHOLE/ OUTLET LABELS ADDED	01.05.25	JC	ATL
C04	ISSUED FOR CONSTRUCTION	25.11.24	JC	ATL
P08	UPDATED FOR NEW TENDER	02.02.24	ATL	MW
C03	FLOOD VOLUMES AMENDED	23.11.22	ATL	MW
C02	SWITCH ROOM LEVELS AMENDED	27/10/22	EBR	MW
C01	ISSUED FOR CONSTRUCTION	23.09.22	ATL	MW
P07	DRAINAGE LAYOUT UPDATED	22.08.22	ATL	MW
P06	UPDATED IN LINE WITH REVISED LEVELS & DRAINAGE	04.08.22	ATL	ATL
P05	UPDATES	21.07.22	MW	MW
P04	UPDATED IN LINE WITH REVISED DRAINAGE	07.04.22	ATL	MW
P03	UPDATED IN LINE WITH REVISED LEVELS	02.12.21	TH	ATL
P02	STAGE 4 UPDATED	05.08.21	ATL	MW
P01	STAGE 4 ISSUE	14.04.21	ATL	MW

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Status:
FINAL CONSTRUCTION

Project:
HAMMERSTONE ROAD

Drg Title:
OVERLAND FLOW ROUTES AND ABOVE GROUND ATTENUATION

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	14.04.21	ATL	ATL	MW
Scale: 1:500				

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
HRD	- CUR -	XX -	00 -	DR -	C -	92-512	FC01

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