Mable
Consulting Engineers

Drainage & Water Supply Report

Project:

No. 1 Fonthill Park,
Rathfarnham,
Dublin 14

Architect:

Architects Workshop Ltd.

Date of Report:

04th August 2022

Report Ref. No.:

22736-Drainage & Water Supply Report

Table of Contents

Document Control

Producer:	Date:	Reviewer:	Date:	Revision Status:	Comment
E.Roche	04/08/2022	B.McGinn	04/08/2022	1st	Issued For Planning
E.Roche	09/08/2022	B.McGinn	09/08/2022	2nd	Issued For Planning – IW COF Added to Appendices

1.0 Introduction

Mable Consulting Engineers were appointed by the applicant to prepare a Drainage and Water Supply Design Report with associated drawings as part of a response to a Planning Application Request For Further Information (RFI).

The RFI was issued by South Dublin County Council on 18 May 2022 in response to a planning application for a new house next to No 1 Fonthill Park, Planning Reference Number: SD22A/0088.

This report should be read in conjunction with the following drawings which are to be submitted as part of the RFI response:-

- 22736-001 Existing & Proposed Hard Areas
- 22736-002 Existing Drainage, Water Supply & Site Layout
- 22736-003 Proposed Drainage, Water Supply & Site Layout

1.1 Site Location

The site is located at No. 1 Fonthill Park, Rathfarnham, Dublin 14, D14 E938. The site is outlined in red in figure 1 below:

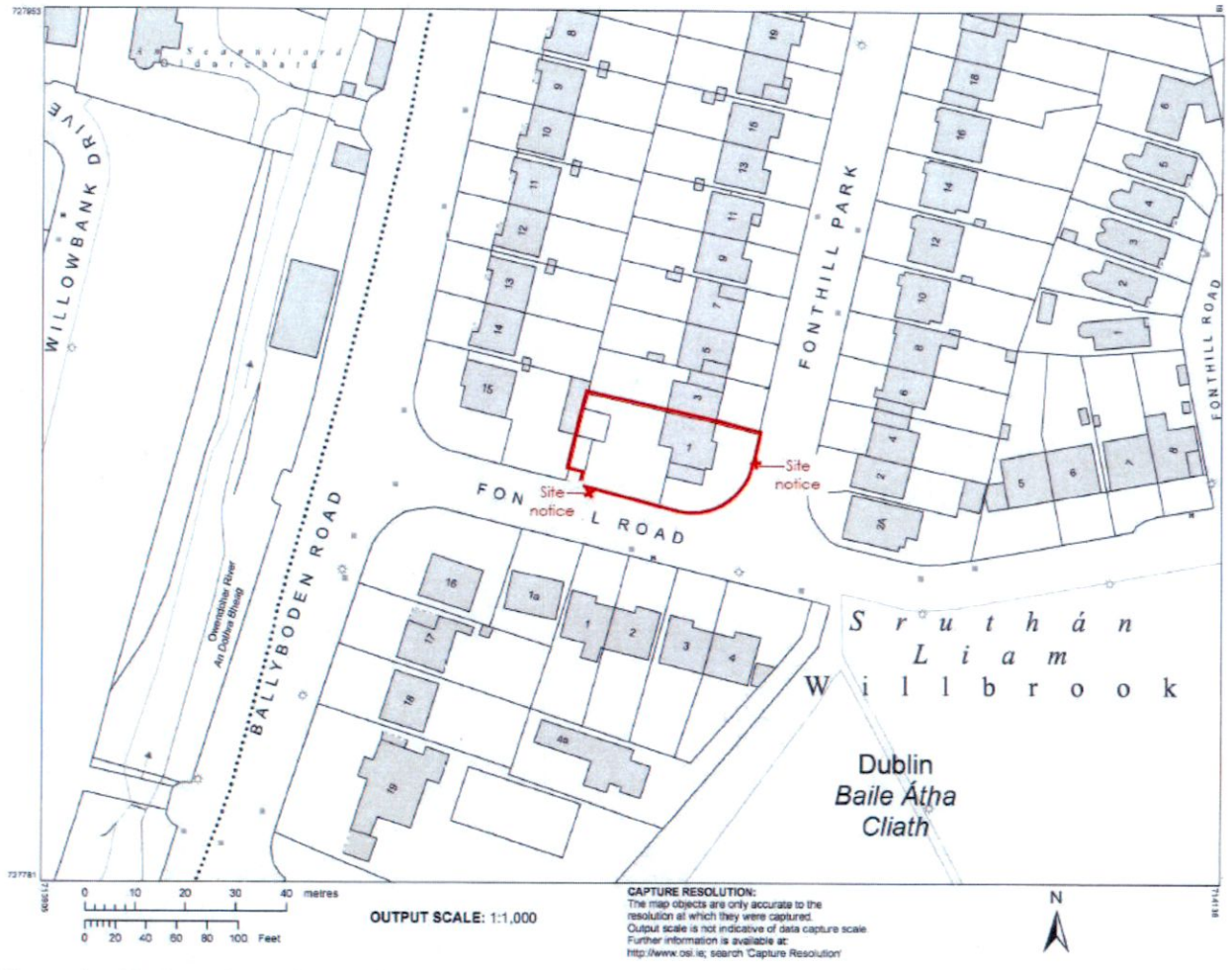


Figure 1 – Site Location – Site outlined in red

2.0 Surface Water Drainage System

2.1 Existing Surface Water Drainage

Existing service drawing records were obtained from South Dublin County Council Drainage Division & Irish Water. See Appendix A for the Existing drainage maps.

A CCTV Survey of the existing drainage was undertaken by Dyno-Rod. See Appendix B for the Existing Drainage CCTV Survey Report.

Mable's Mr. Barry McGinn inspected the existing drainage and carried out a level survey on site. The existing surface water drainage was found to have been reconstructed as part of rear house extension. This drainage is connected to the foul manhole located at the rear of the property just off the southern boundary wall.

The existing service records, the CCTV survey details, and the site observations and levels were compiled onto a drawing of the existing services. See drawing 22736-002 - Existing Drainage, Water Supply & Site Layout.

2.2 Proposed Surface Water Drainage

The surface water drainage design has been carried out in accordance with the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS).

Currently the site is an existing house with garden (brown field site) discharging unrestricted flow directly into the public sewerage system.

The proposed design incorporates a number of Sustainable Urban Drainage Systems (SuDS) measures, these are detailed further below. The extent of impermeable hard area is reduced, and flow control devices restrict peak flows to the public sewer.

The proposed arrangement represents an improvement on the existing arrangement.

The proposed surface water drainage arrangement is detailed on drawing 22736-003 - Proposed Drainage, Water Supply & Site Layout.

2.2.1 Design Considerations

Discharge to Soakpit

The use of a soakaway / soakpit was considered but was found to be unsuitable due to the size of the soakpit required and its proximity to structures and property boundaries.

Green Roofs & Blue Roofs

The use of Green or Blue Roofs was reviewed and the following was noted:-

Existing House

The existing garage structure is to be demolished and the existing side extension is to remain unaltered. It is not proposed to alter the extension flat roof or the main building pitched roof. For this reason, the use of Green or Blue Roofs is not an option.

Proposed House

The roof of the proposed dwelling has a pitched roof in keeping with the other houses in the vicinity of the development. There is a small section of flat roof at a front projection; this is relatively small. The front and rear eaves have standard facia, soffits and gutters to match the other houses in the vicinity. For these reasons the use of Green or Blue Roofs was not considered a viable option.

Planter Box Surface Water Storage

Planter Box Surface Water Storage was considered as a SuDS measure, however as the topography of the site is relatively flat the planter boxes would only be able to provide SuDS measures for the roofed area and not the filter drains and drainage channels at ground level.

To use planter boxes and provide attenuation storage to the filter drains and drainage channels would involve the use of multiple flow control devices. As a number of flow control devices would be required their outfall flowrate would be relatively low and so there would be an increased risk of regular blockages.

For these reasons, the use of Planter Boxes for Surface Water Storage on this site was not selected.

Permeable Paving

Three basic types of permeable paving systems were reviewed. These are outlined below.

- Type 'A' – Total Infiltration Permeable Pavement
- Type 'B' – Partial Infiltration Permeable Pavement
- Type 'C' – No Infiltration Permeable Paving:

The drainage conditions on site were reviewed, the results of a soakage test carried out on the neighbouring property was also reviewed. The soakage infiltration rate for the neighbouring property was found to be 0.0000175l/s, this rate was found to be suitable for Type 'A' Total Infiltration Permeable Paving.

Attenuated Drainage connected to the Public Surface Water Sewer

The existing public sewers in the vicinity of the site were reviewed. There is separate surface water drain located on Fonthill Road. The invert level of the sewer was reviewed and found to be suitable for connection.

2.2.2 Selected Design

The selected design utilises the following SuDS drainage features; Permeable Paving, Filter Drains, Rainwater Butts, Wavin Aquacells with a Hydrobrake Flow Control set to 0.4l/s.

Design Summary:-

Roofs

Connected to the public surface water drainage, drainage attenuated using a Wavin Aquacell and a Hydrobreak Flow Control (or similar approved). See Appendix C for details on the Wavin Aquacell, Appendix D for details on the Hydrobreak Flow Control and Appendix E for the proposed Silt Separator.

The design of the attenuation storage capacity is based on Rainfall Data Issued by Met Eireann for the site location and for 30 years and 100 years return period, increased by 20% to consider the future variation caused by climate changes.

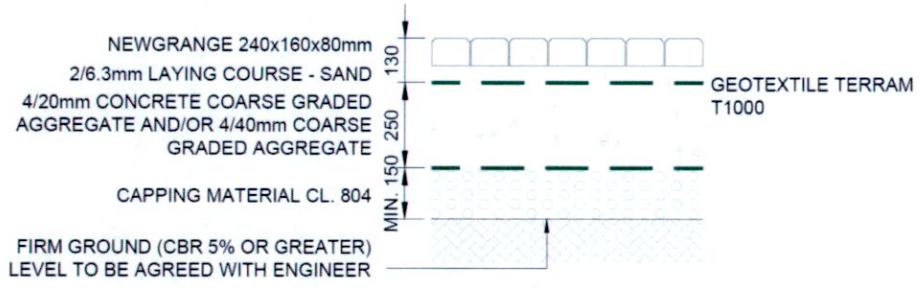
A discharge rate of 0.40l/s was used for both houses. See Appendix F for Surface Water Qbar calculation sheet, Attenuation Storage Design Spreadsheet and Met Eireann Rainfall Data.

Paved Areas

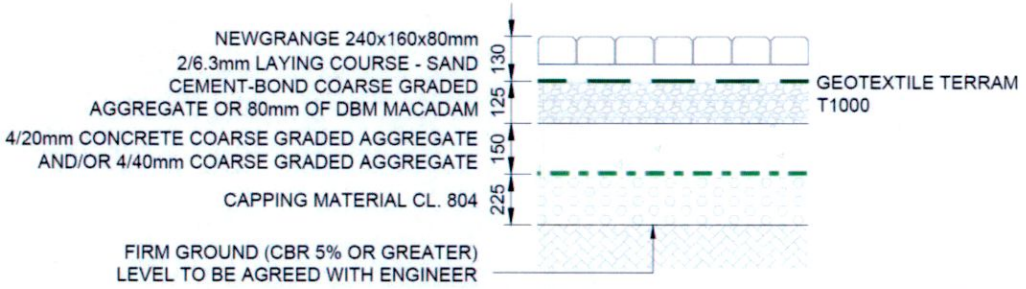
Permeable paving free drainage to subsoil below. Paving to be Kilsaran Clima-Pave (or similar approved). Paving build-up at the rear of the houses is to be Load Category 1 and at the front of the house is to be Load Category 3. See Load Category and Figure 2 below for details.

Load Category:

- Load category No. 1 no large goods vehicles, footway with zero-vehicle overrun
- Load category No. 3 one large goods vehicle per week, parking area to residential development



DETAIL 1: PAVING CROSS SECTION - LOAD CATEGORY 1



DETAIL 2: PAVING CROSS SECTION - LOAD CATEGORY 3

Figure 2 – Cross Section of Kilsaran Clima-Pave Permeable Paving, Load Categories

Grassed Lawns

Free drainage to subsoil below.

2.2.3 Design Notes

The overall site area is 558m^2

The greenfield runoff rates (QBAR) for the site area have been calculated to be 0.53l/s.

The site is not a green field site but a site with an existing house, garage, paved area, and grassed lawn.

The existing arrangement has

- 329m² of impermeable area, 80% of this has been estimated to be draining to the public sewer, the remainder is draining by soakage into the grassed lawn area.
- 229m² green, shed roof & paved area draining by soakage into the subsoil.

The existing arrangement peak surface water flow rate from the site has been calculated to be 21.136l/s
The proposed arrangement will have

- 276m² impermeable area (189m² altered existing house and 87m² proposed house)
- 282m² grassed lawn and permeable paving drained by soakage into the ground (168m² altered existing house and 114m² proposed house)

The proposed peak surface water flow rate for the attenuated areas will be 0.8l/s (0.4l/s for both the existing and the new house). 0.4l/s was selected for each house as lower outflows can cause blockages leading to maintenance issues.

The proposed arrangement represents an improvement on the existing arrangement.

3.0 Foul Drainage System

3.1 Existing Foul Drainage

As per 2.1 above the existing service drawing records were obtained, a CCTV Survey of the existing drainage was carried out and Mable's Mr. Barry McGinn inspected the existing drainage and carried out a level survey on site.

The existing service records, the CCTV survey details, and the site observations and levels were compiled onto a drawing of the existing services. See drawing 22736-002 - Existing Drainage, Water Supply & Site Layout.

3.2 Proposed Foul Drainage

It is proposed to construct new foul manholes and foul lines to divert the existing foul from neighbouring properties around the new dwelling.

The proposed development foul water will discharge into the newly constructed foul line on the west side of the site which will be piped to the existing public 225mm Dia. foul sewer already present on Fonthill Road.

The proposed foul drainage arrangement is detailed on drawing 22736-003 - Proposed Drainage, Water Supply & Site Layout. Appendix F contains foul water drainage design calculations.

A pre-connection enquire was submitted to Irish Water with details on the proposed arrangement, the Irish Water Reference No. is CDS22005488. A confirmation of feasibility was received on 8th August 2022 and is contained in Appendix G.

4.0 Water Supply

A 25mm HDPE Watermain Pipe will be provided to service the dwelling as per Section 3.7.1 of the "Code of Practice for Water Infrastructure" Document Number IW-CDS-5020-03.

The proposed watermain pipe will be connected to the existing 101.6 uPVC watermain on Fonthill Park.

The proposed water supply is detailed on drawing 22736-003 - Proposed Drainage, Water Supply & Site Layout.

End Of Report.

Signed: E. Roche **Date:** 04/08/2022

Eoin Roche
Design Engineer

Appendix A – Irish Water Web Map / Existing Drainage Map

Water Distribution Network
- Water Treatment Plant
- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- Irish Water
- Non IW
- Water Casings
- Water Abandoned Lines
- Boundary Meter
- Bulk/Check Meter
- Group Scheme
- Source Meter
- Waste Meter
- Unknown Meter ; Other Meter
- Non-Return
- PRV
- PSV
- Sluice Line Valve Open/Closed
- Butterfly Line Valve Open/Closed
- Sluice Boundary Valve Open/Closed
- Butterfly Boundary Valve Open/Closed
- Scour Valves
- Single Air Control Valve
- Double Air Control Valve
- Water Stop Valves

Sewer
Sewer
Sewer

Appendix B – Existing Drainage CCTV Survey Report

EOIN ROCHE

Job Ref. **169836**
06/07/2022
MSCC5 Drain and Sewer Codes (SRM5 Scoring)

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Project Information

Client - **EOIN ROCHE**

Notes/Purpose of Survey

Client Details

Location	EOIN ROCHE	**Company Address**	
Contact Name			
Contact Tel.			
Contact Email			

Site Details

Company	1 FONTHILL PARK	**Address**	RATHFARNHAM D14
Site Contact Name			
Site Contact Tel.			
Site Contact Email			

Contractor Details

Company	Dyno Rod Dublin	**Office Address**	Unit 49 Boeing Road Airways Industrial Estate Santry Dublin 17, D17 DX34
Office Contact Name	Alistair McMahon		
Office Contact Tel.	00353 01663 0844		
Office Contact Email			

Job Comments

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Contents Table

Client - **EOIN ROCHE**

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Site Images

Client - **EOIN ROCHE**

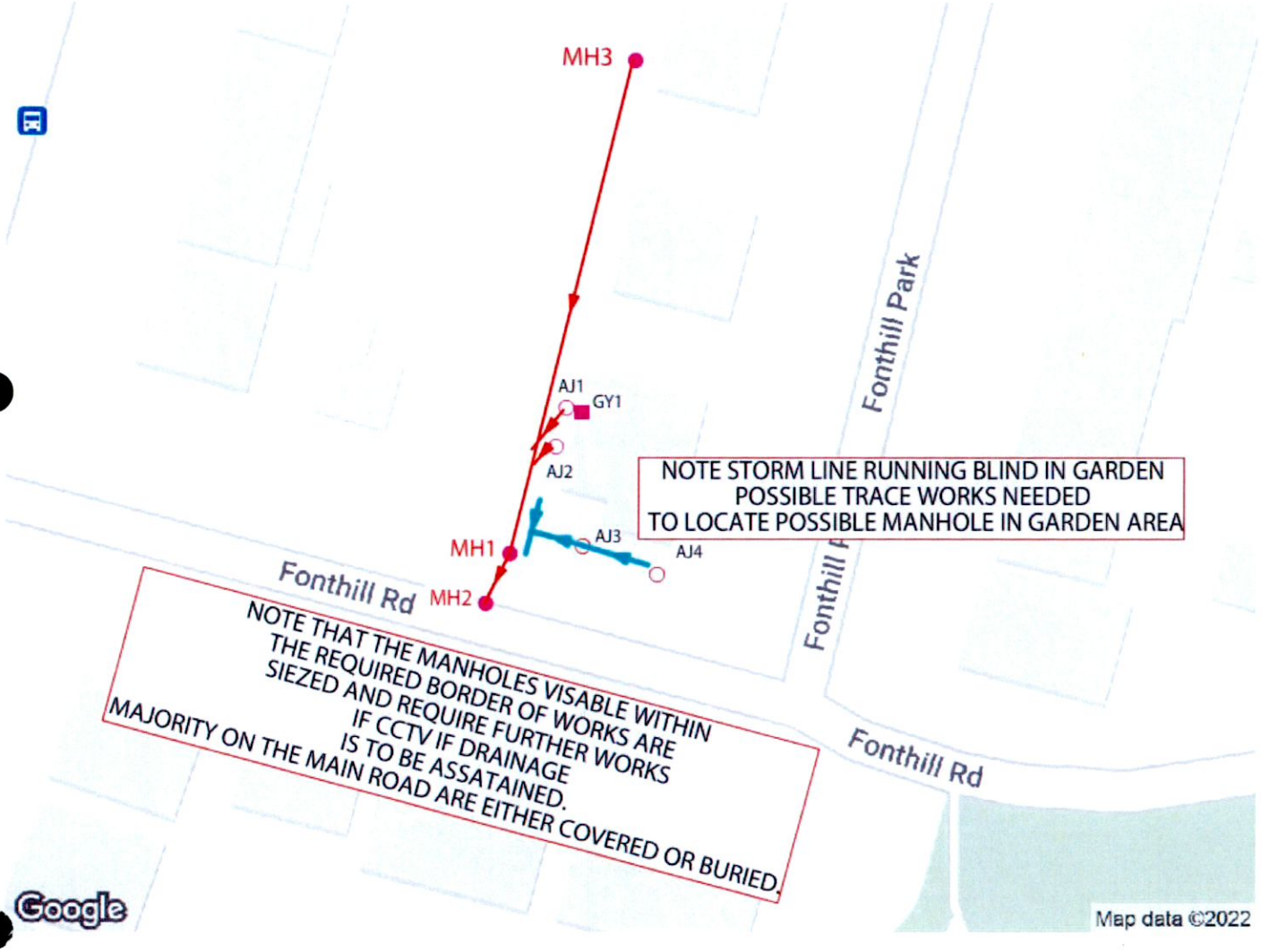
This sketch is not to scale and does not represent the exact routing of the drainage system

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Site Images

Client - **EOIN ROCHE**



This sketch is not to scale and does not represent the exact routing of the drainage system

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Site Photographs

Client - **EOIN ROCHE**

Other Site Photos

NO1

DYNO-ROD
Drain Cleaning, Inspection & Repair

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Tel: 00353 01663 0844

CCTV Inspection - Section No. 1 - AJ1 to CON

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**13:46 - 13:47**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Downstream**	**0.91**	**0.00**

Start Node — Ref: **AJ1** — Depth: - — Invert Level: -

Drain/Sewer — Sewer Use: **Foul** — Material: **Vitrified clay** — Diameter: **100**

End Node — Ref: **CON** — Depth: - — Invert Level: -

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	IC	Start node type, inspection chamber, reference AJ1	00:00:00	S1C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S1C2	0
0.12	JDM	Joint displaced medium - Remark: PATCH ADVISED	00:00:08	S1C3	1 / 2
0.46	OJM	Open joint medium - Remark: PATCH ADVISED	00:00:14	S1C4	1
0.91	BRF	Finish node type, major connection without manhole, reference CON TO COMMON TIE IN POINT	00:00:20	S1C5	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	2	1	2.20	2	1
Operational	1	2	2.20	2	3

Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

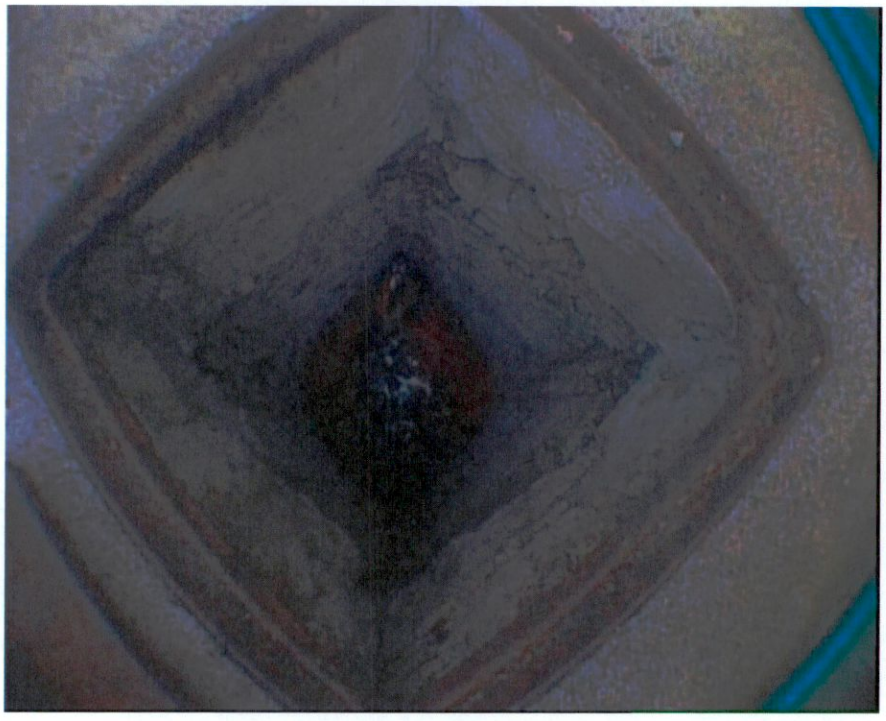
DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 1 - AJ1 to CON

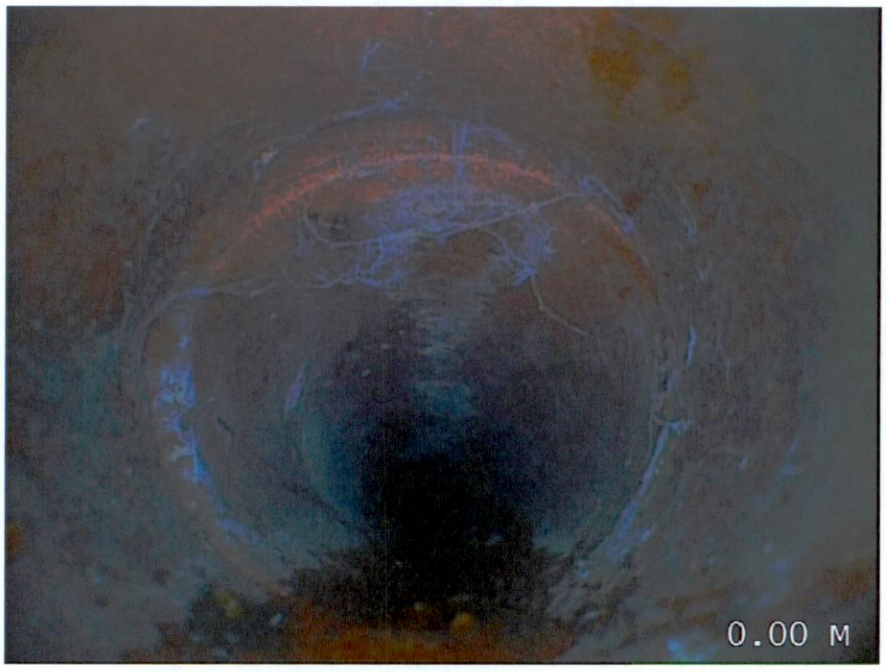
Client - **EOIN ROCHE**

S1 Manhole Internal



AJ1 Internal

S1C1



00:00:00 - 0.00 m
Start node type, inspection chamber, reference AJ1

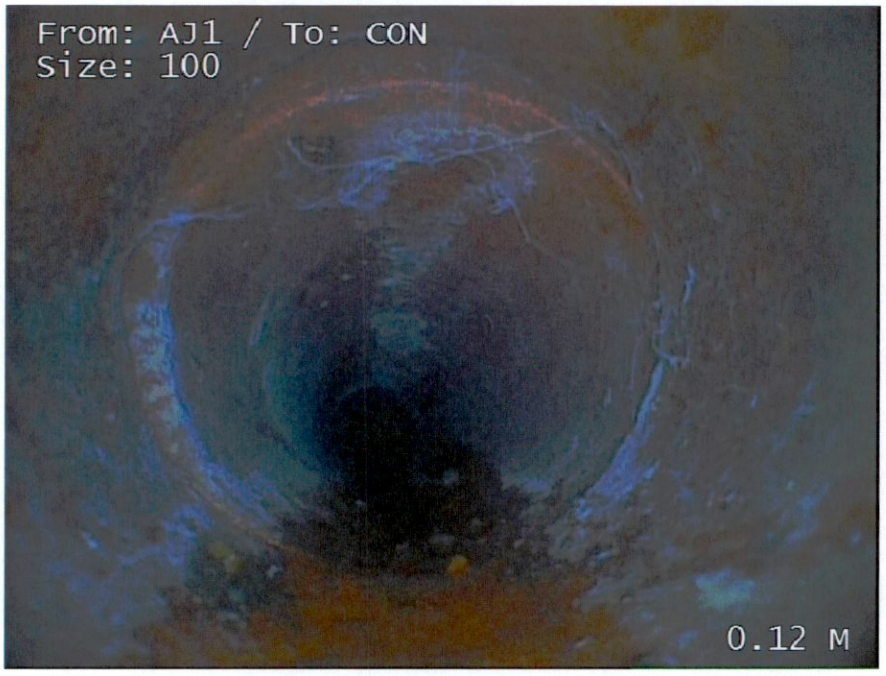
DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 1 - AJ1 to CON

Client - **EOIN ROCHE**

S1C3



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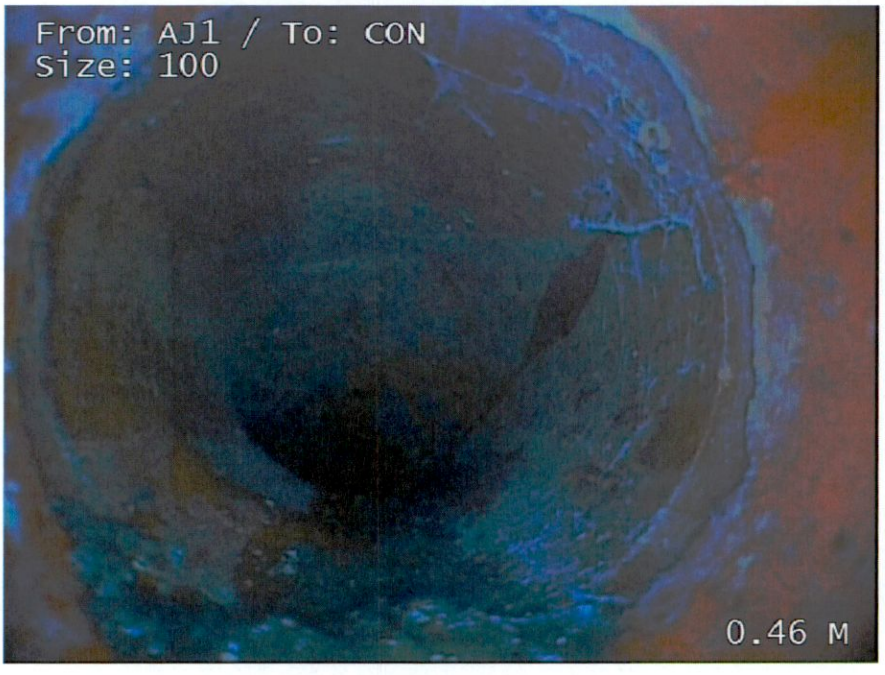
Joint displaced medium - Remark: PATCH ADVISED

S1C4



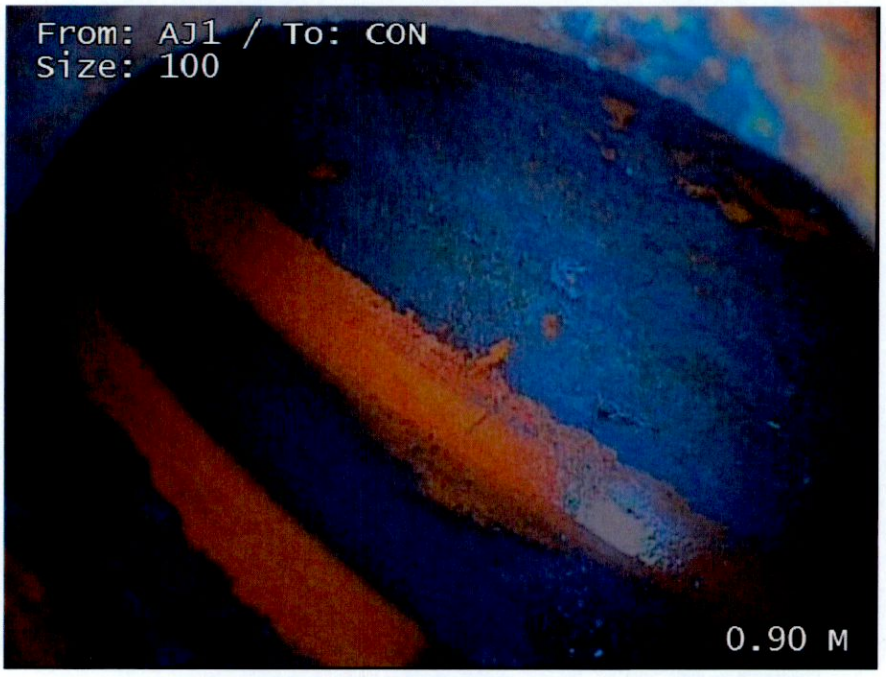
00:00:14 - 0.46 m
Open joint medium - Remark: PATCH ADVISED

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 1 - AJ1 to CON

Client - **EOIN ROCHE**

S1C5



00:00:20 - 0.91 m
Finish node type, major connection without manhole, reference CON TO COMMON TIE IN POINT

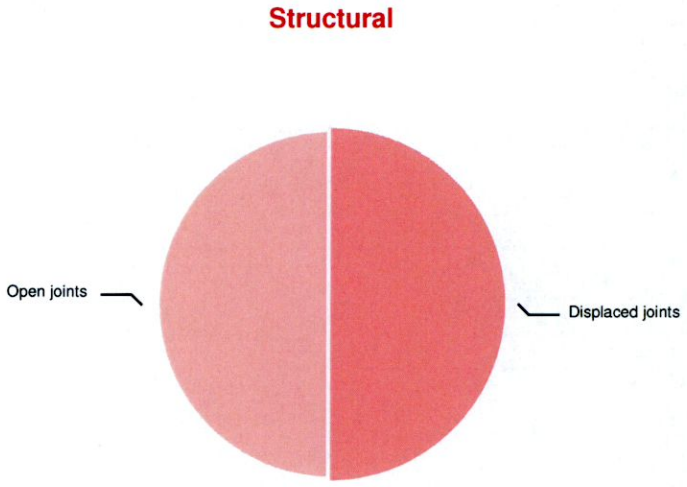
DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

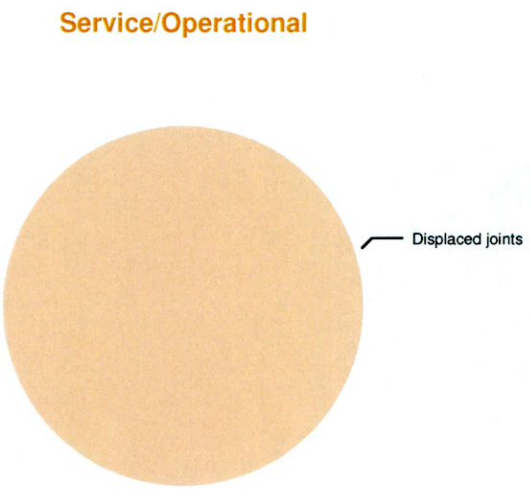
Damage Overview - Section No. 1 - AJ1 to CON

Client - **EOIN ROCHE**

Structural Defect	Quantity
Open joints	1
Displaced joints	1



Service/Operational Defects	Quantity
Displaced joints	1



Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

CCTV Inspection - Section No. 2 - AJ1 to GY1

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**13:56 - 13:57**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Upstream**	**0.08**	**0.00**

Start Node		
Ref	**AJ1**	
Depth	Invert Level	
-	-	

Drain/Sewer	
Sewer Use	**Foul**
Material	**Vitrified clay**
Diameter	**100**

End Node		
Ref	**GY1**	
Depth	Invert Level	
-	-	

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	IC	Start node type, inspection chamber, reference AJ1	00:00:00	S2C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S2C2	0
0.03	GYF	Finish node type, gully, reference GY1	00:00:22	S2C3	0
0.08	OJM	Open joint medium	00:00:17	S2C4	1

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	1	1	12.50	1	1
Operational	0	0	0.00	0	1

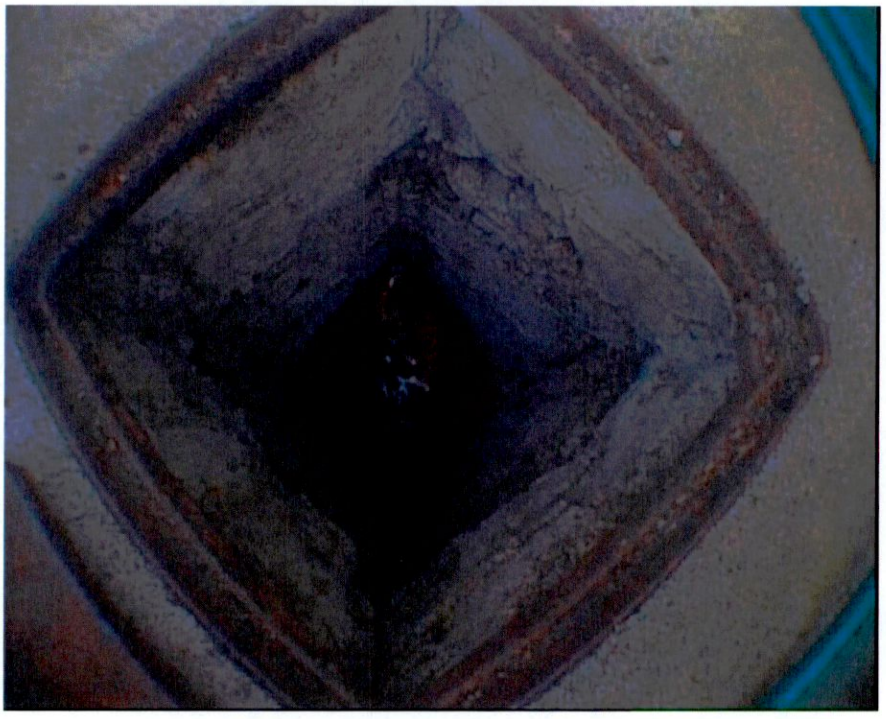
Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 2 - AJ1 to GY1

Client - **EOIN ROCHE**

S2 Manhole Internal



AJ1 Internal

S2C1

00:00:00 - 0.00 m
Start node type, inspection chamber, reference AJ1

DYNO-ROD
Drain Cleaning, Inspection & Repair

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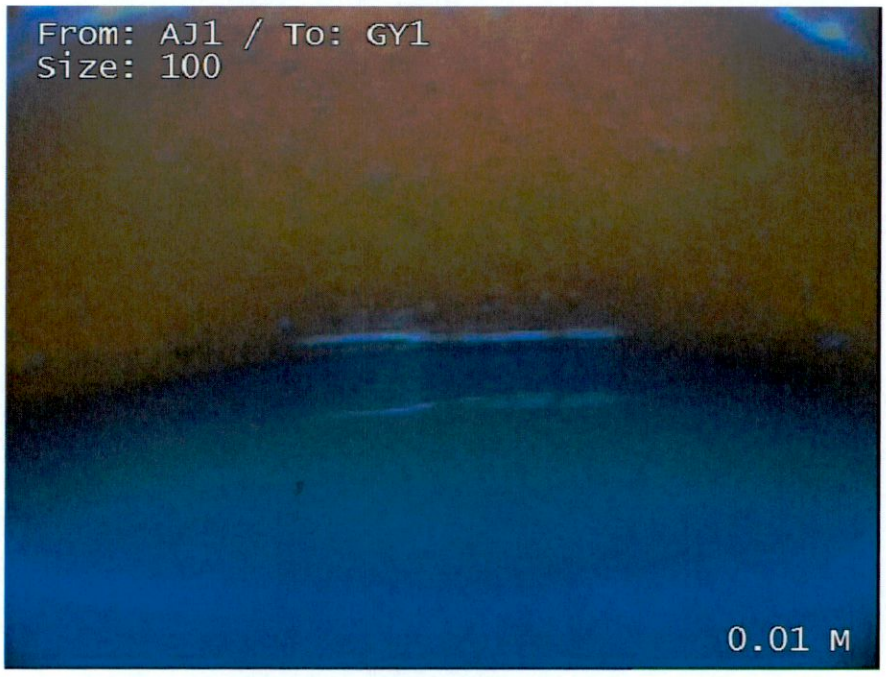
Tel: 00353 01663 0844

Pictures - Section No. 2 - AJ1 to GY1

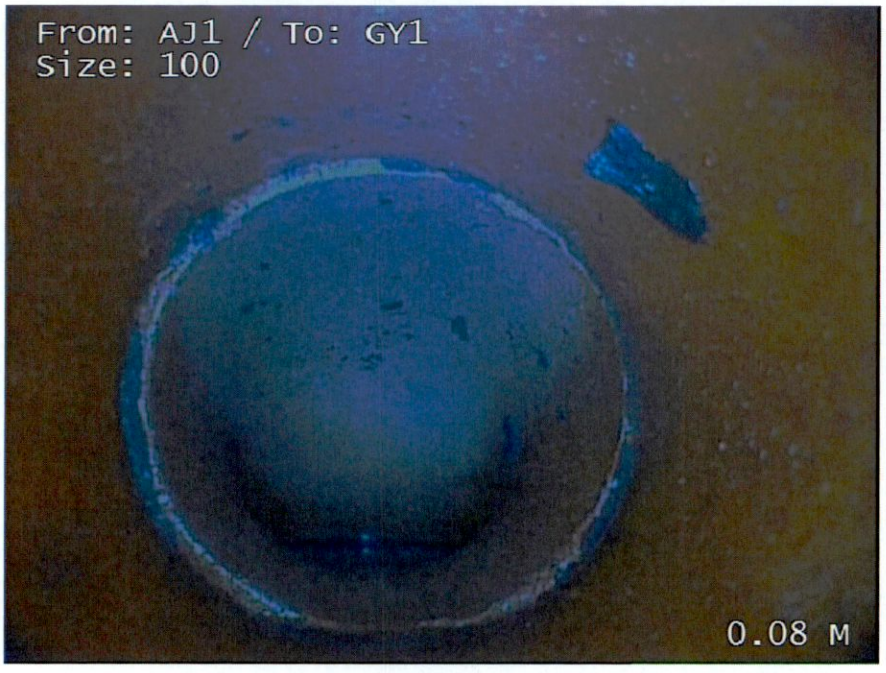
Client - **EOIN ROCHE**

S2C3



00:00:22 - 0.03 m
Finish node type, gully, reference GY1

S2C4



00:00:17 - 0.08 m
Open joint medium

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 2 - AJ1 to GY1

Client - **EOIN ROCHE**

S2 Manhole Location

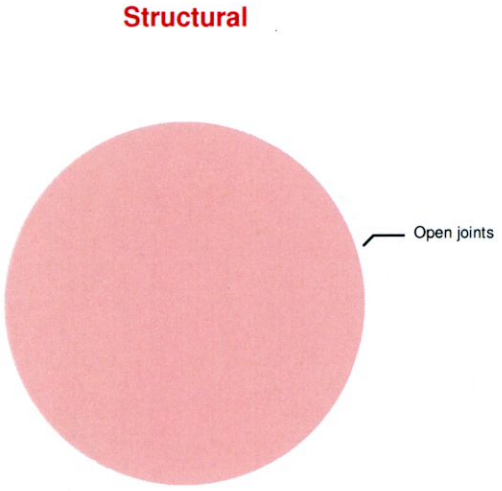
GY1 Location

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Damage Overview - Section No. 2 - AJ1 to GY1

Client - **EOIN ROCHE**

Structural Defect	Quantity
Open joints	1



Service/Operational Defects	Quantity

There were no service/operational defects recorded

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

CCTV Inspection - Section No. 3 - AJ2 to CON

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**14:00 - 14:03**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Downstream**	**7.58**	**0.00**

Start Node — Ref: **AJ2** — Depth: - — Invert Level: -

Drain/Sewer — Sewer Use: **Foul** — Material: **Polyvinyl chloride** — Diameter: **100**

End Node — Ref: **CON** — Depth: - — Invert Level: -

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	IC	Start node type, inspection chamber, reference AJ2	00:00:00	S3C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S3C2	0
1.04	REM	BELLY	00:00:07	S3C3	0
1.67	JN	Junction at 11 o'clock, diameter 100mm	00:00:25	S3C4	0
2.73	REM	BACKFALL	00:00:37	S3C5	0
2.73	D	Deformed drain/sewer 10%	00:00:37	S3C6	80 / 2
4.47	D	Deformed drain/sewer 10% - Remark: @12	00:00:49	S3C7	80 / 2
5.13	REM	BELLY	00:00:53	S3C8	0
5.78	D	Deformed drain/sewer 10% - Remark: @6	00:01:01	S3C9	80 / 2
6.38	JN	Junction at 9 o'clock, diameter 100mm	00:01:06	S3C10	0
7.27	LD	Line of drain/sewer deviates down	00:01:13	S3C11	0
7.58	MHF	Finish node type, manhole, reference CON TO MH1	00:01:20	S3C12	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	3	80	31.66	240	4
Operational	3	2	0.79	6	3

Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

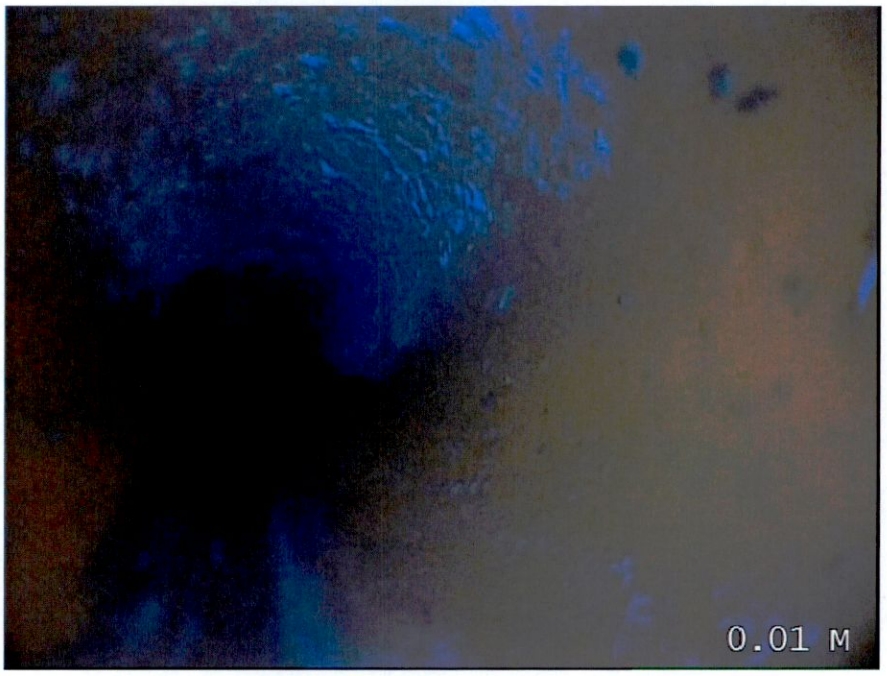
DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 3 - AJ2 to CON

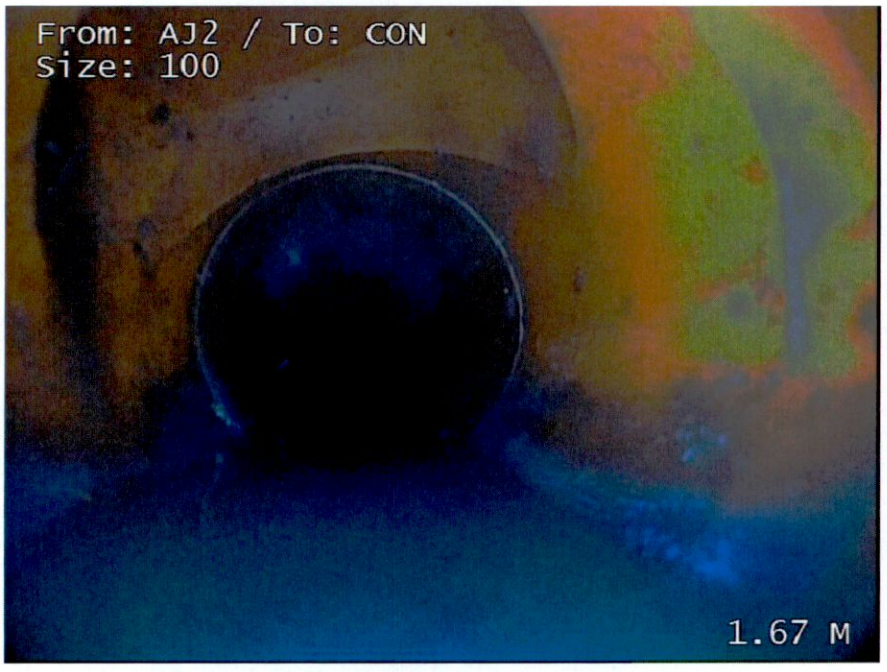
Client - **EOIN ROCHE**

S3C1



00:00:00 - 0.00 m
Start node type, inspection chamber, reference AJ2

S3C4



00:00:25 - 1.67 m
Junction at 11 o'clock, diameter 100mm

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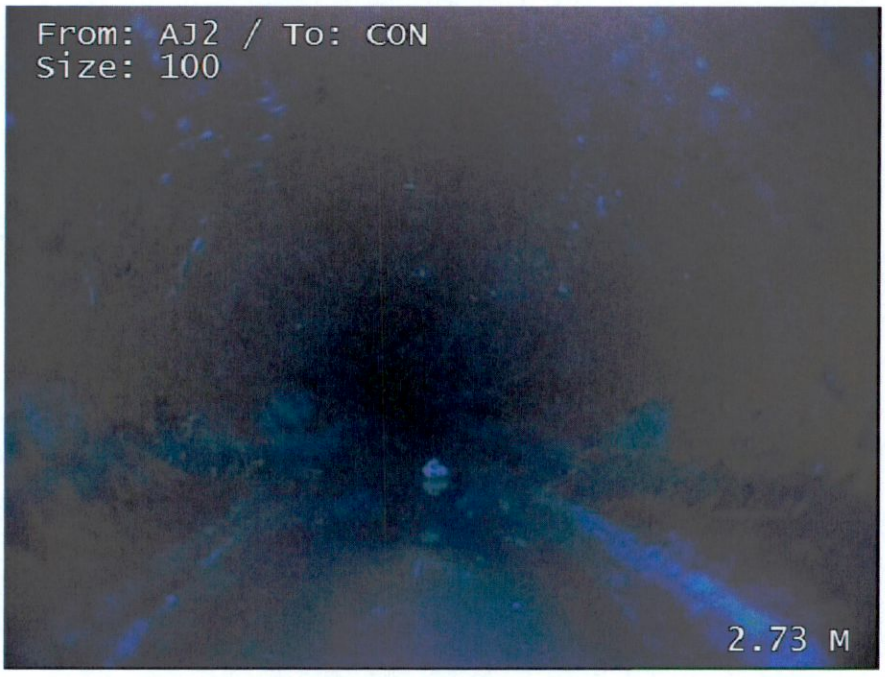
Pictures - Section No. 3 - AJ2 to CON

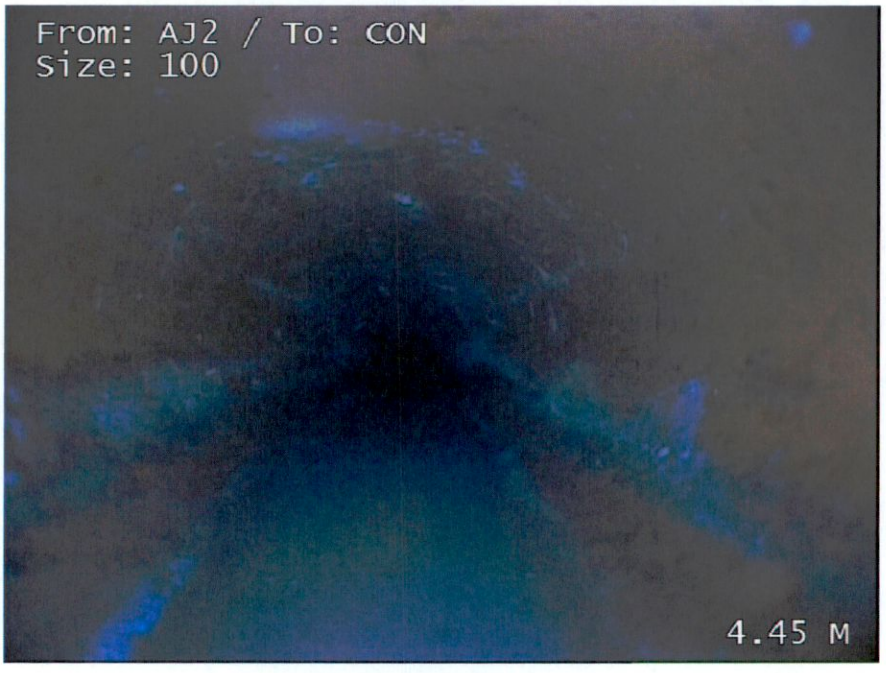
Client - **EOIN ROCHE**

S3C6



00:00:37 - 2.73 m
Deformed drain/sewer 10%

S3C7



00:00:49 - 4.47 m
Deformed drain/sewer 10% - Remark: @12

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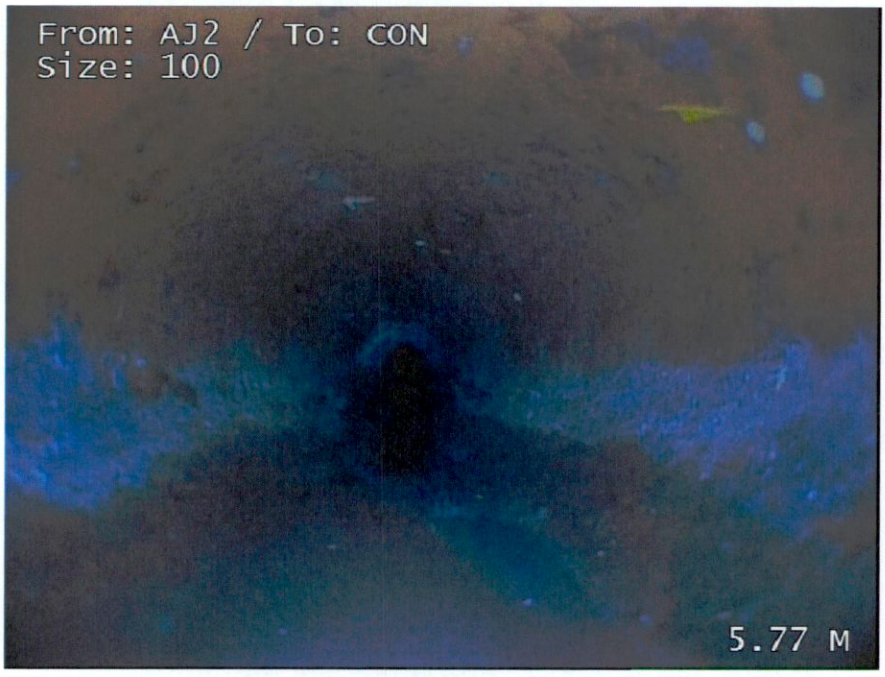
Pictures - Section No. 3 - AJ2 to CON

Client - **EOIN ROCHE**

S3C9



00:01:01 - 5.78 m
Deformed drain/sewer 10% - Remark: @6

S3C10

00:01:06 - 6.38 m
Junction at 9 o'clock, diameter 100mm

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Tel: 00353 01663 0844

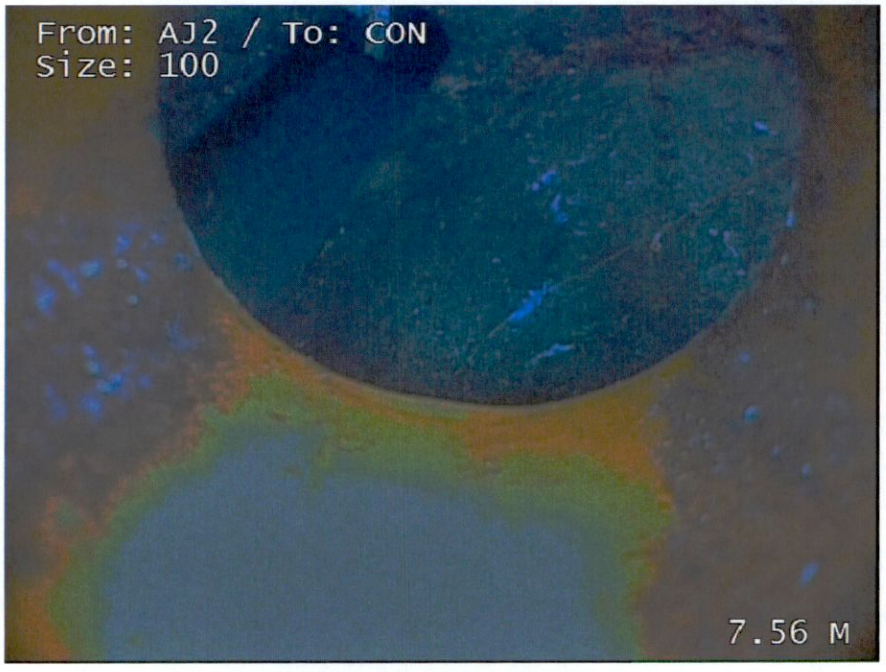
Pictures - Section No. 3 - AJ2 to CON

Client - **EOIN ROCHE**

S3C11

00:01:13 - 7.27 m
Line of drain/sewer deviates down

S3C12



00:01:20 - 7.58 m
Finish node type, manhole, reference CON TO MH1

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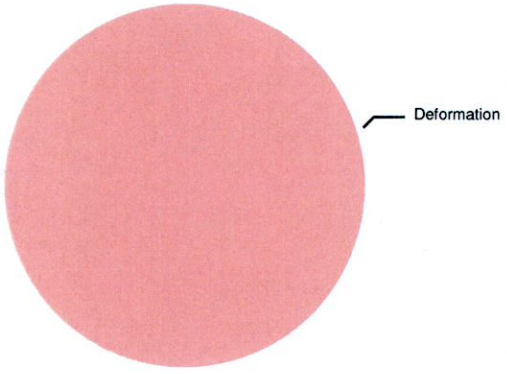
Damage Overview - Section No. 3 - AJ2 to CON

Client - **EOIN ROCHE**

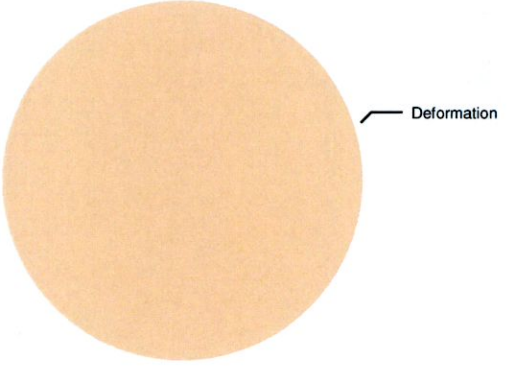
Structural Defect	Quantity
Deformation	3

Structural



Service/Operational Defects	Quantity
Deformation	3

Service/Operational



Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

CCTV Inspection - Section No. 4 - AJ2 to CON

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**14:04 - 14:05**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Upstream**	**2.92**	**0.00**

Start Node — Ref: **AJ2** — Depth: - — Invert Level: -

Drain/Sewer — Sewer Use: **Foul** — Material: **Polyvinyl chloride** — Diameter: **100**

End Node — Ref: **CON** — Depth: - — Invert Level: -

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	IC	Start node type, inspection chamber, reference AJ2	00:00:00	S4C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S4C2	0
0.92	LR	Line of drain/sewer deviates right	00:00:06	S4C3	0
2.92	BRF	Finish node type, major connection without manhole, reference CON FRM STACK	00:00:28	S4C4	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	0	0	0.00	0	1
Operational	0	0	0.00	0	1

Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

DYNO-ROD
Drain Cleaning, Inspection & Repair

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Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

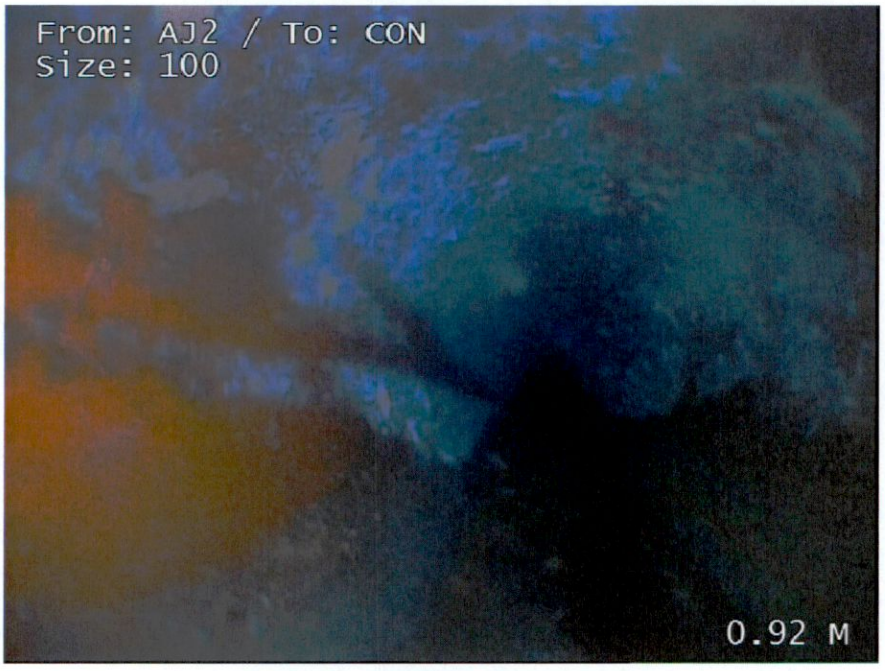
Pictures - Section No. 4 - AJ2 to CON

Client - **EOIN ROCHE**

S4C1

00:00:00 - 0.00 m
Start node type, inspection chamber, reference AJ2

S4C3



00:00:06 - 0.92 m
Line of drain/sewer deviates right

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 4 - AJ2 to CON

Client - **EOIN ROCHE**

S4C4

00:00:28 - 2.92 m
Finish node type, major connection without manhole, reference CON FRM STACK

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Damage Overview - Section No. 4 - AJ2 to CON

Client - **EOIN ROCHE**

Structural Defect	Quantity

There were no structural defects recorded

Service/Operational Defects	Quantity

There were no service/operational defects recorded

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

CCTV Inspection - Section No. 5 - AJ2 to GY2

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**14:06 - 14:07**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Upstream**	**0.24**	**0.00**

Start Node		
Ref	**AJ2**	
Depth	Invert Level	
-	-	

Drain/Sewer	
Sewer Use	**Foul**
Material	**Polyvinyl chloride**
Diameter	**100**

End Node		
Ref	**GY2**	
Depth	Invert Level	
-	-	

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	IC	Start node type, inspection chamber, reference AJ2	00:00:00	S5C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S5C2	0
0.24	GYF	Finish node type, gully, reference GY2	00:00:06	S5C3	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade	Key	
Structural	0	0	0.00	0	1	Structural Defects	Construction Observations
Operational	0	0	0.00	0	1	Service/Operational Defects	Miscellaneous Observations

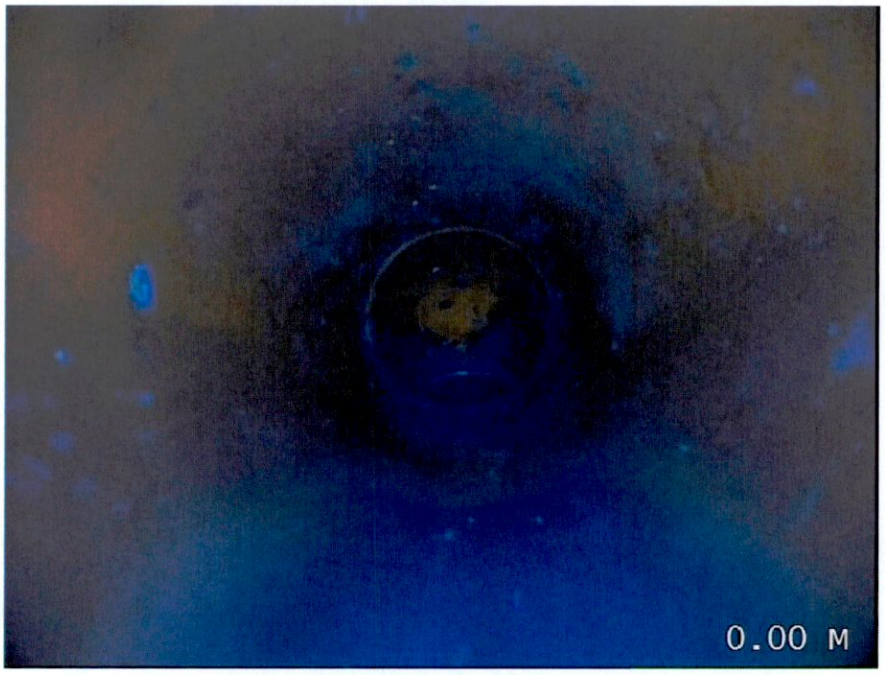
DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 5 - AJ2 to GY2

Client - **EOIN ROCHE**

S5C1



00:00:00 - 0.00 m
Start node type, inspection chamber, reference AJ2

S5C3

00:00:06 - 0.24 m
Finish node type, gully, reference GY2

Dyno Rod Dublin
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Tel: 00353 01663 0844

Damage Overview - Section No. 5 - AJ2 to GY2

Client - **EOIN ROCHE**

Structural Defect	Quantity

There were no structural defects recorded

Service/Operational Defects	Quantity

There were no service/operational defects recorded

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

CCTV Inspection - Section No. 6 - MH1 to MH2

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**14:13 - 14:16**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Downstream**	**10.00**	**0.00**

Start Node — Ref: **MH1** — Depth: - — Invert Level: -

Drain/Sewer — Sewer Use: **Foul** — Material: **Vitrified clay** — Diameter: **150**

End Node — Ref: **MH2** — Depth: - — Invert Level: -

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	MH	Start node type, manhole, reference MH1	00:00:00	S6C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S6C2	0
0.00	CL	Crack longitudinal at 8 o'clock - Remark: CRACK IN CHAMMEL	00:00:09	S6C3	10 / 1
0.04	MCPVC	Material of drain/sewer changes to polyvinyl chloride at this point	00:00:11	S6C4	0
0.47	OJL	Open joint large	00:00:20	S6C5	2
0.49	RM	Roots mass 50% cross-sectional area loss	00:00:21	S6C6	15
0.86	OBI	Other obstacles protruding through wall at 12 o'clock 90% cross-sectional area loss	00:00:30	S6C7	10
0.86	SA	Survey abandoned - Remark: CANNOT PASS	00:00:33	S6C8	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	2	10	13.95	12	2
Operational	3	15	30.23	26	5

Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

DYNO-ROD
Drain Cleaning, Inspection & Repair

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Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 6 - MH1 to MH2

Client - **EOIN ROCHE**

S6 Manhole Location

MH1 Location

S6 Manhole Internal

MH1 Internal

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Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
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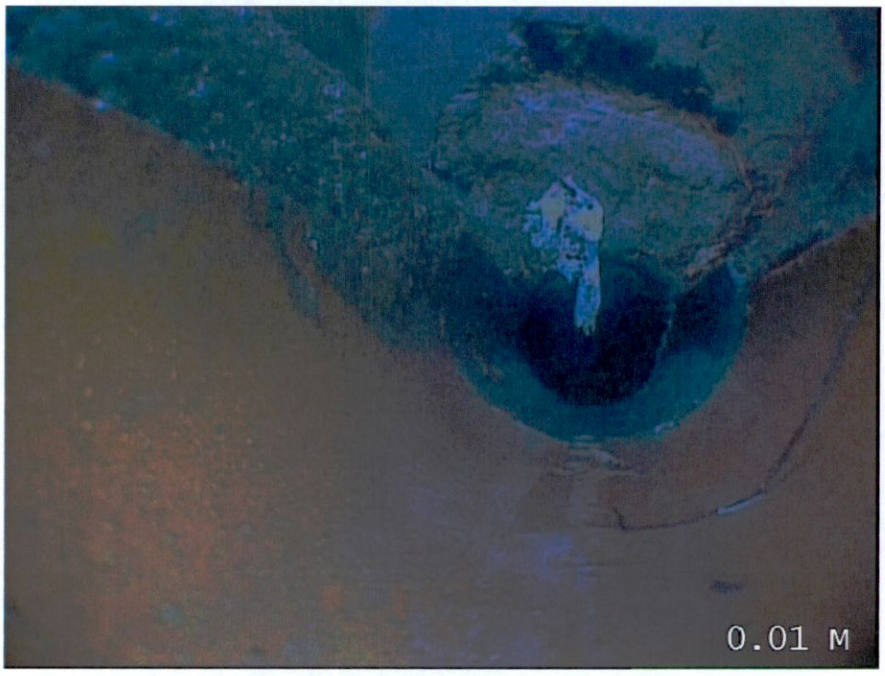
Tel: 00353 01663 0844

Pictures - Section No. 6 - MH1 to MH2

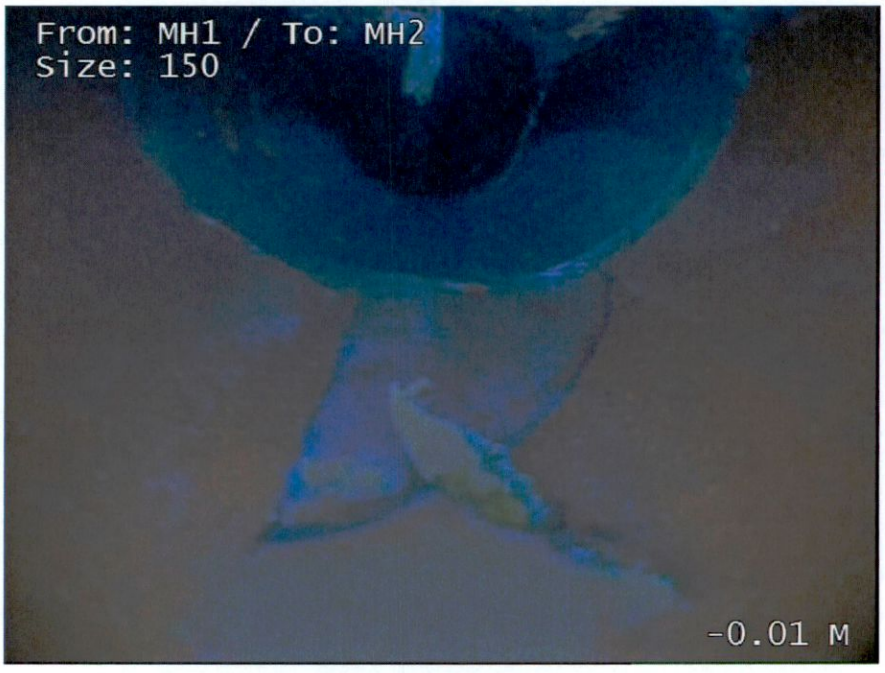
Client - **EOIN ROCHE**

S6C1



00:00:00 - 0.00 m
Start node type, manhole, reference MH1

S6C3



00:00:09 - 0.00 m
Crack longitudinal at 8 o'clock - Remark: CRACK IN CHAMMEL

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Drain Cleaning, Inspection & Repair

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Tel: 00353 01663 0844

Pictures - Section No. 6 - MH1 to MH2

Client - **EOIN ROCHE**

S6C4

00:00:11 - 0.04 m
Material of drain/sewer changes to polyvinyl chloride at this point

S6C5

00:00:20 - 0.47 m
Open joint large

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Pictures - Section No. 6 - MH1 to MH2

Client - **EOIN ROCHE**

S6C6

00:00:21 - 0.49 m
Roots mass 50% cross-sectional area loss

S6C7

00:00:30 - 0.86 m
Other obstacles protruding through wall at 12 o'clock 90% cross-sectional area loss

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Drain Cleaning, Inspection & Repair

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Pictures - Section No. 6 - MH1 to MH2

Client - **EOIN ROCHE**

S6C8

00:00:33 - 0.86 m
Survey abandoned - Remark: CANNOT PASS

S6 Manhole Location

MH2 Location

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 6 - MH1 to MH2

Client - **EOIN ROCHE**

S6 Manhole Internal

MH2 Internal

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Drain Cleaning, Inspection & Repair

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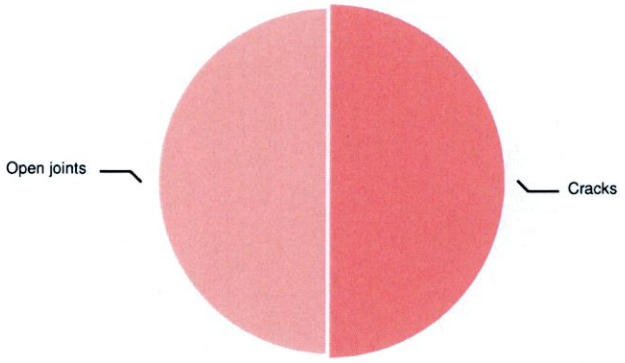
Tel: 00353 01663 0844

Damage Overview - Section No. 6 - MH1 to MH2

Client - **EOIN ROCHE**

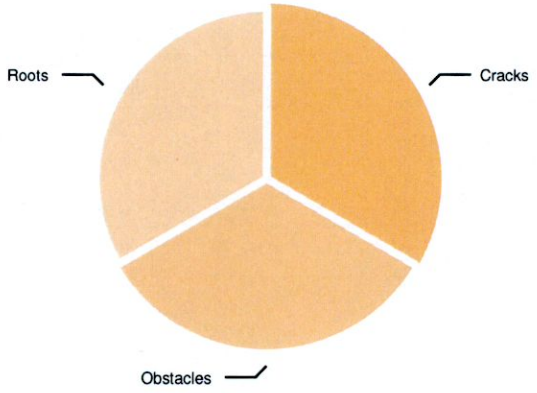
Structural Defect	Quantity
Open joints	1
Cracks	1

Structural



Service/Operational Defects	Quantity
Roots	1
Obstacles	1
Cracks	1

Service/Operational



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Tel: 00353 01663 0844

CCTV Inspection - Section No. 7 - MH1 to MH3

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**14:17 - 14:24**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Upstream**	**21.47**	**0.00**

Start Node: Ref **MH1**; Depth **-**; Invert Level **-**

Drain/Sewer: Sewer Use **Foul**; Material **Vitrified clay**; Diameter **150**

End Node: Ref **MH3**; Depth **-**; Invert Level **-**

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	MH	Start node type, manhole, reference MH1	00:00:00	S7C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S7C2	0
0.19	RF	Roots fine	00:00:12	S7C3	1
1.19	RM	Roots mass 25% cross-sectional area loss	00:00:25	S7C4	10
1.19	JDM	Joint displaced medium	00:00:26	S7C5	1 / 2
2.00	JDM	Joint displaced medium	00:00:37	S7C6	1 / 2
2.01	RT	Roots tap	00:00:37	S7C7	5
4.72	RF	Roots fine	00:00:59	S7C8	1
5.31	JDM	Joint displaced medium	00:01:08	S7C9	1 / 2
6.01	CM(F01)	Cracks multiple from 12 to 12 o'clock, Finished	00:01:23	S7C10	40 / 1
6.13	CM(S01)	Cracks multiple from 12 to 12 o'clock, Start	00:01:14	S7C11	40 / 1
7.46	RF	Roots fine	00:01:43	S7C12	1
16.10	REM	BELLY	00:03:38	S7C13	0
16.10	CUW	Loss of vision, camera under water	00:03:38	S7C14	0
17.41	JDM	Joint displaced medium	00:03:49	S7C15	1 / 2
18.15	JDM	Joint displaced medium	00:03:56	S7C16	1 / 2
18.50	JN	Junction at 2 o'clock, diameter 100mm	00:04:00	S7C17	0
18.69	JDM	Joint displaced medium	00:04:02	S7C18	1 / 2
20.22	CN	Connection other than junction at 12 o'clock, diameter 100mm	00:04:12	S7C19	0
21.47	MHF	Finish node type, manhole, reference MH3	00:04:21	S7C20	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	6	41	0.28	6	3
Operational	11	12	1.40	30	5

Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 7 - MH1 to MH3

Client - **EOIN ROCHE**

S7 Manhole Location

MH1 Location

S7 Manhole Internal

MH1 Internal

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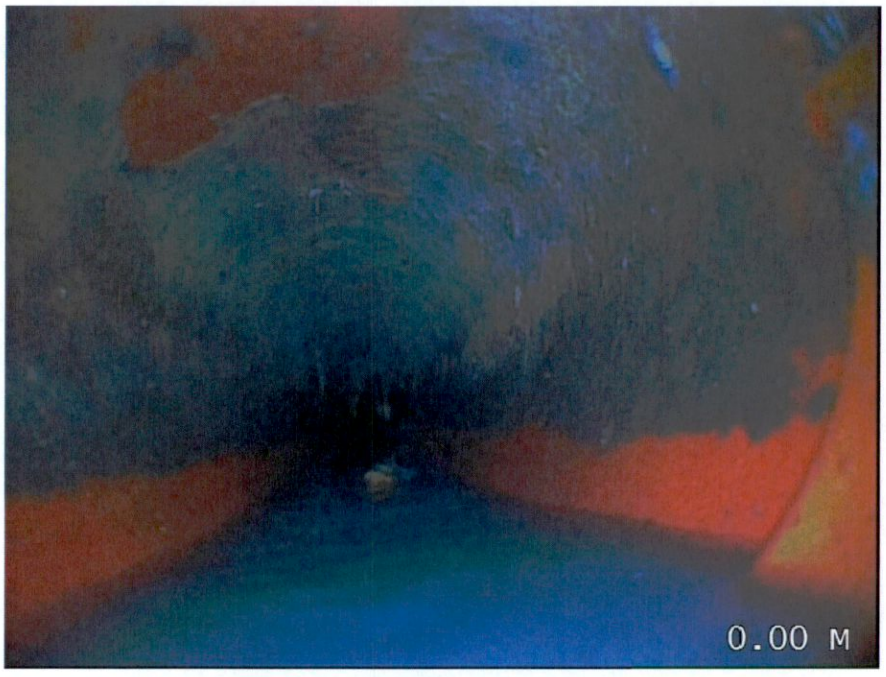
Tel: 00353 01663 0844

Pictures - Section No. 7 - MH1 to MH3

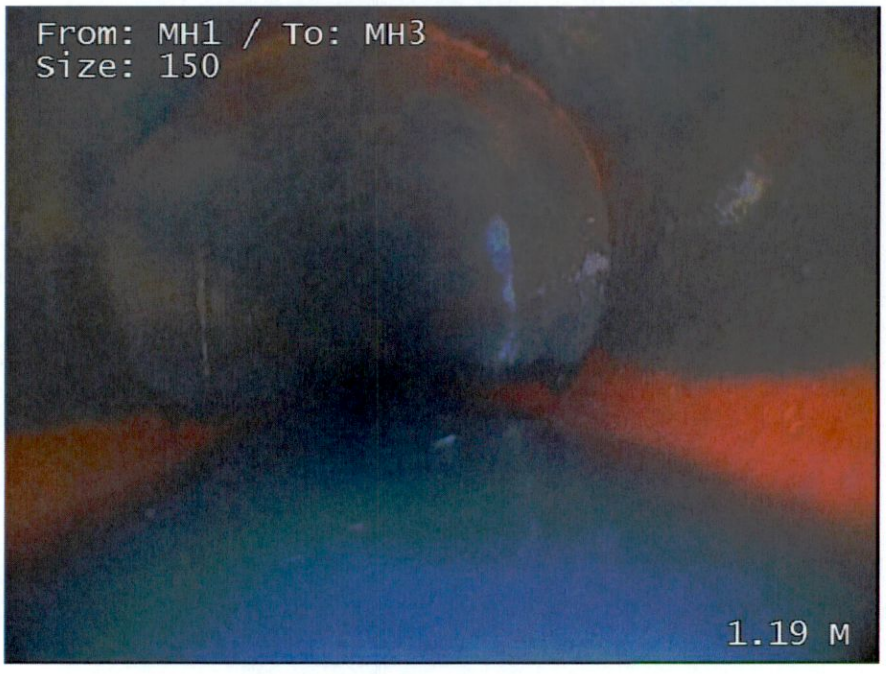
Client - **EOIN ROCHE**

S7C1



00:00:00 - 0.00 m
Start node type, manhole, reference MH1

S7C4



00:00:25 - 1.19 m
Roots mass 25% cross-sectional area loss

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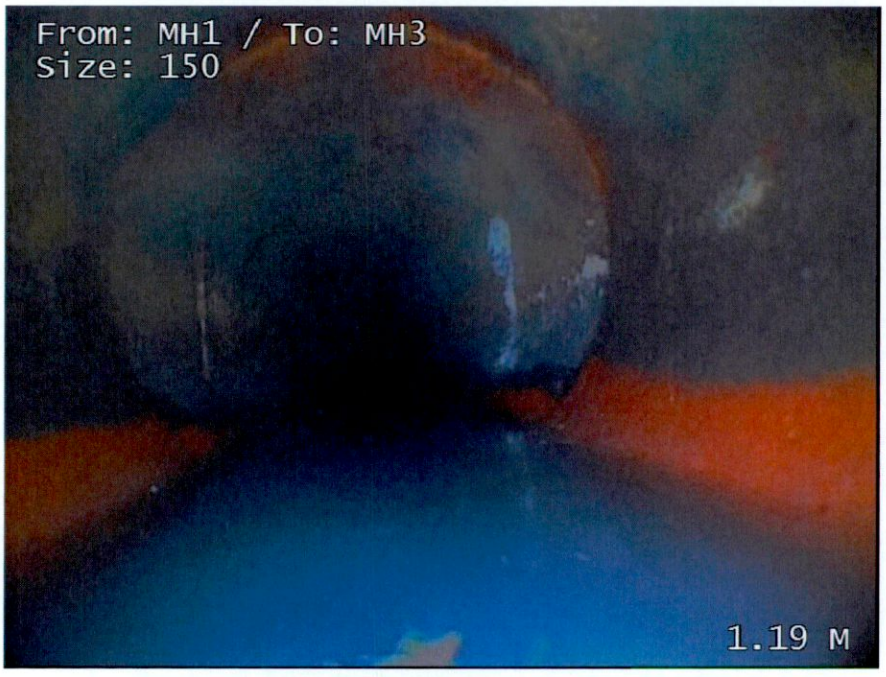
Tel: 00353 01663 0844

Pictures - Section No. 7 - MH1 to MH3

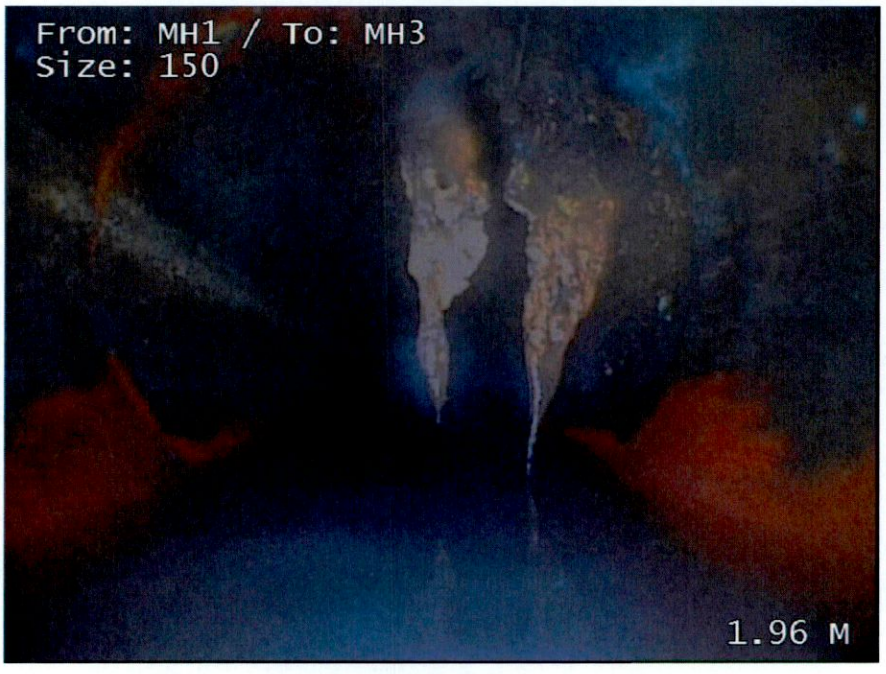
Client - **EOIN ROCHE**

S7C5



00:00:26 - 1.19 m
Joint displaced medium

S7C6



00:00:37 - 2.00 m
Joint displaced medium

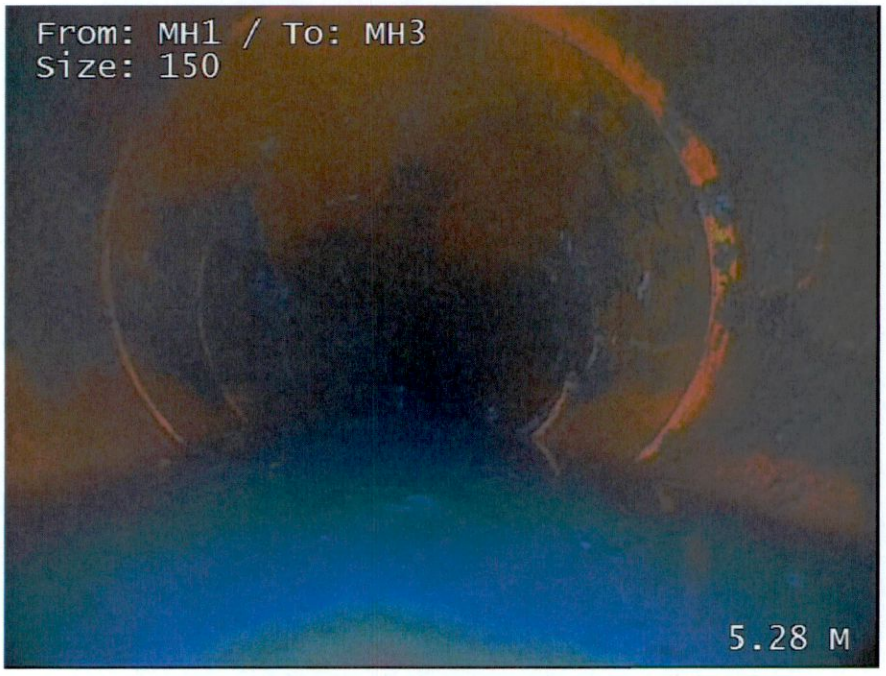
DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 7 - MH1 to MH3

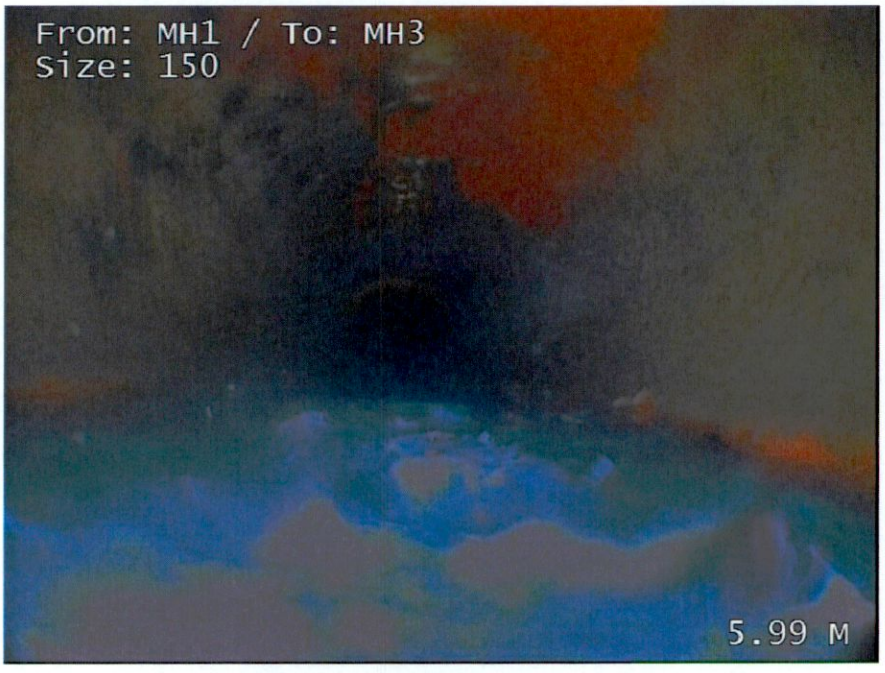
Client - **EOIN ROCHE**

S7C9



00:01:08 - 5.31 m
Joint displaced medium

S7C10



00:01:23 - 6.01 m
Cracks multiple from 12 to 12 o'clock, Finished

DYNO-ROD
Drain Cleaning, Inspection & Repair

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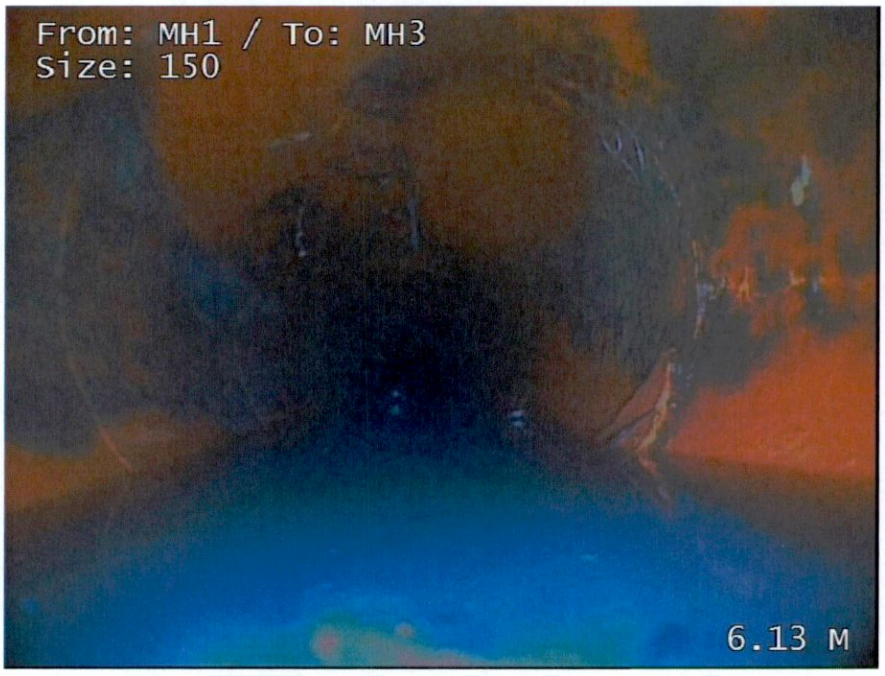
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Pictures - Section No. 7 - MH1 to MH3

Client - **EOIN ROCHE**

S7C11



00:01:14 - 6.13 m
Cracks multiple from 12 to 12 o'clock, Start

S7C14

00:03:38 - 16.10 m
Loss of vision, camera under water

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Tel: 00353 01663 0844

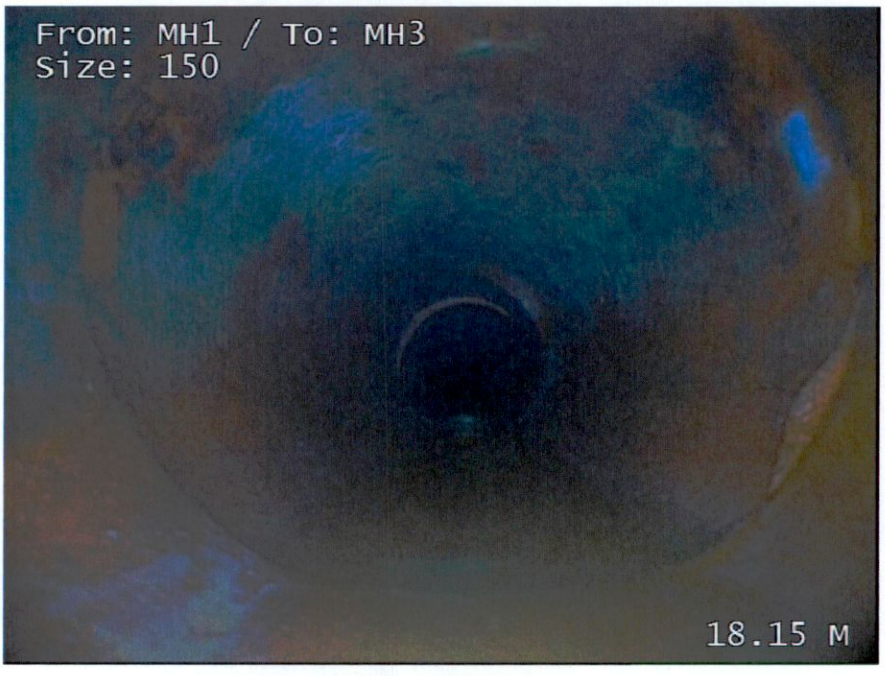
Pictures - Section No. 7 - MH1 to MH3

Client - **EOIN ROCHE**

S7C15

00:03:49 - 17.41 m
Joint displaced medium

S7C16



00:03:56 - 18.15 m
Joint displaced medium

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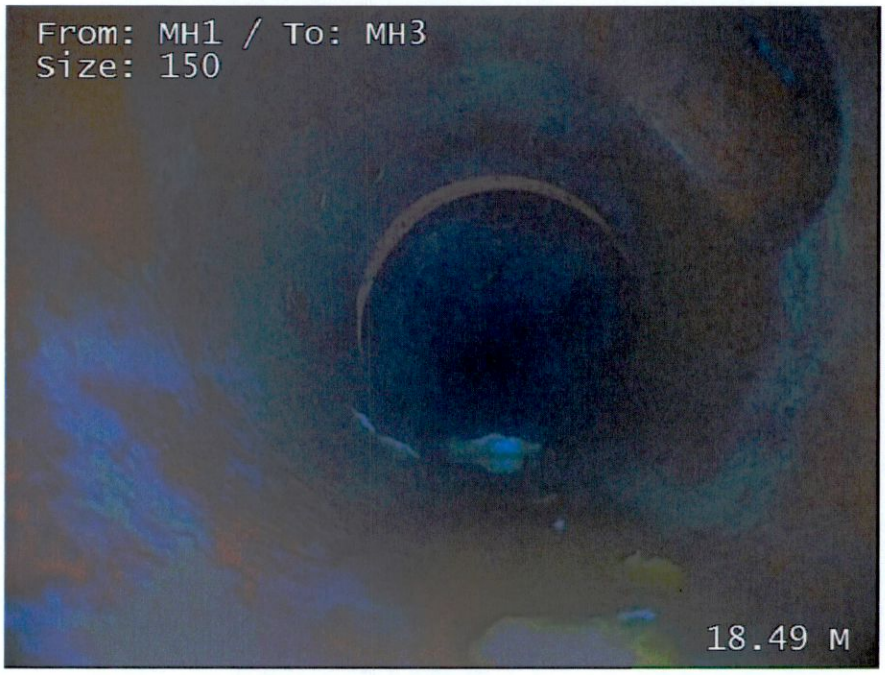
Pictures - Section No. 7 - MH1 to MH3

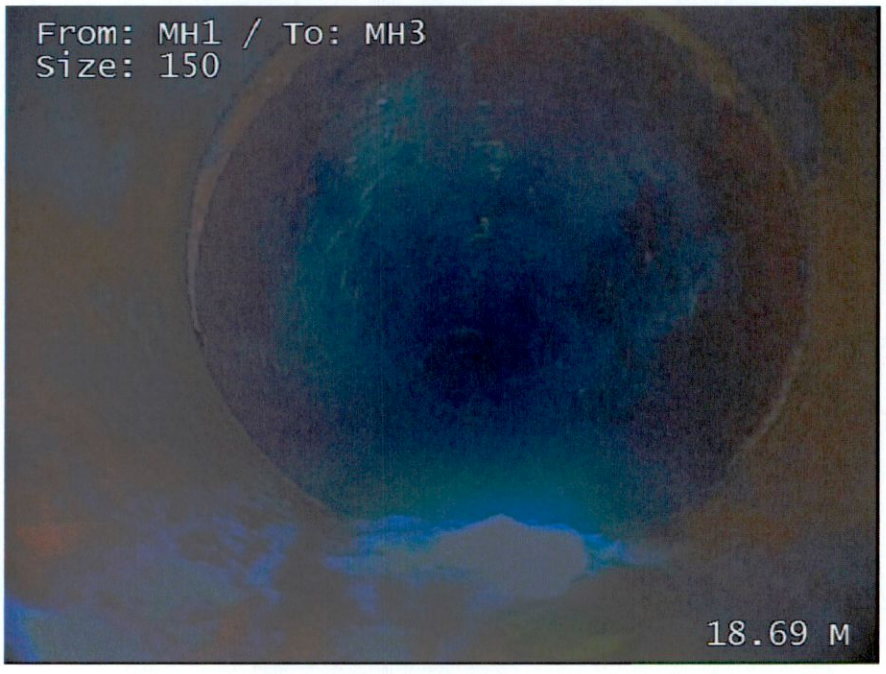
Client - **EOIN ROCHE**

S7C17



00:04:00 - 18.50 m
Junction at 2 o'clock, diameter 100mm

S7C18



00:04:02 - 18.69 m
Joint displaced medium

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Pictures - Section No. 7 - MH1 to MH3

Client - **EOIN ROCHE**

S7C19

00:04:12 - 20.22 m
Connection other than junction at 12 o'clock, diameter 100mm

S7C20

00:04:21 - 21.47 m
Finish node type, manhole, reference MH3

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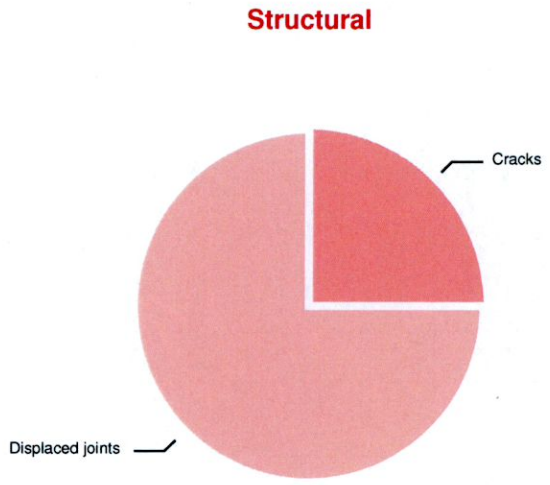
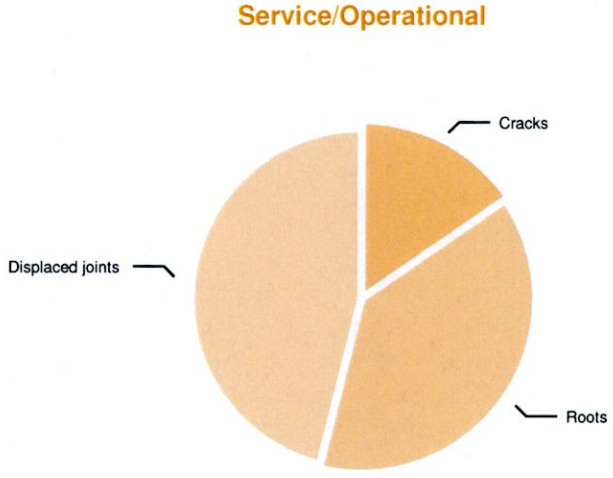
Damage Overview - Section No. 7 - MH1 to MH3

Client - **EOIN ROCHE**

Structural Defect	Quantity
Displaced joints	6
Cracks	2



Service/Operational Defects	Quantity
Displaced joints	6
Roots	5
Cracks	2



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CCTV Inspection - Section No. 8 - AJ4 to GY3

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**14:43 - 14:43**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Upstream**	**2.37**	**0.00**

Start Node — Ref: **AJ4** — Depth: - — Invert Level: -

Drain/Sewer — Sewer Use: **Surface water** — Material: **Polyvinyl chloride** — Diameter: **100**

End Node — Ref: **GY3** — Depth: - — Invert Level: -

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	IC	Start node type, inspection chamber, reference AJ4	00:00:00	S8C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S8C2	0
2.37	GYF	Finish node type, gully, reference GY3	00:00:17	S8C3	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	0	0	0.00	0	1
Operational	0	0	0.00	0	1

Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

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Tel: 00353 01663 0844

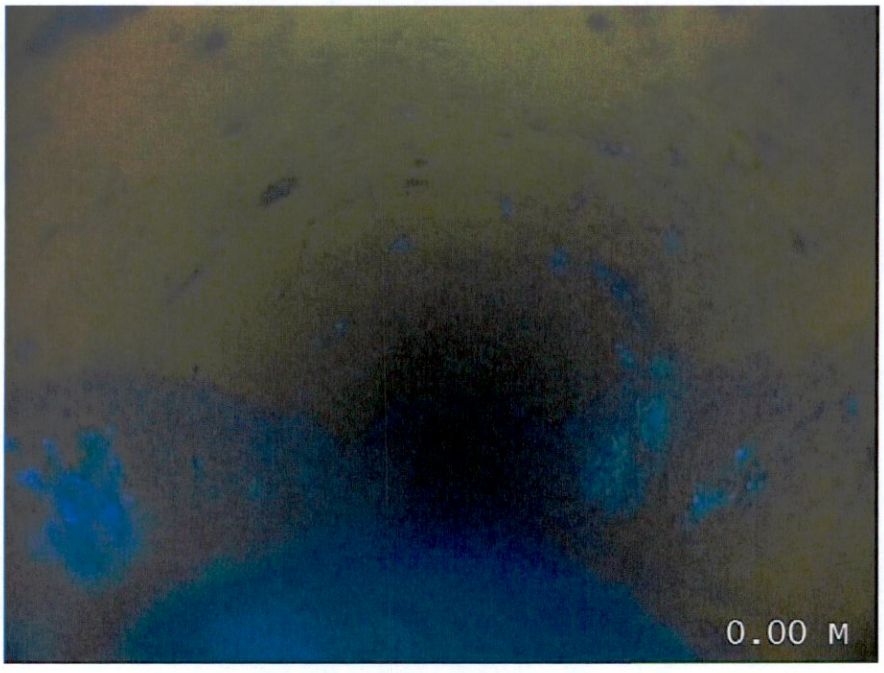
Pictures - Section No. 8 - AJ4 to GY3

Client - **EOIN ROCHE**

S8 Manhole Internal

AJ4 Internal

S8C1



00:00:00 - 0.00 m
Start node type, inspection chamber, reference AJ4

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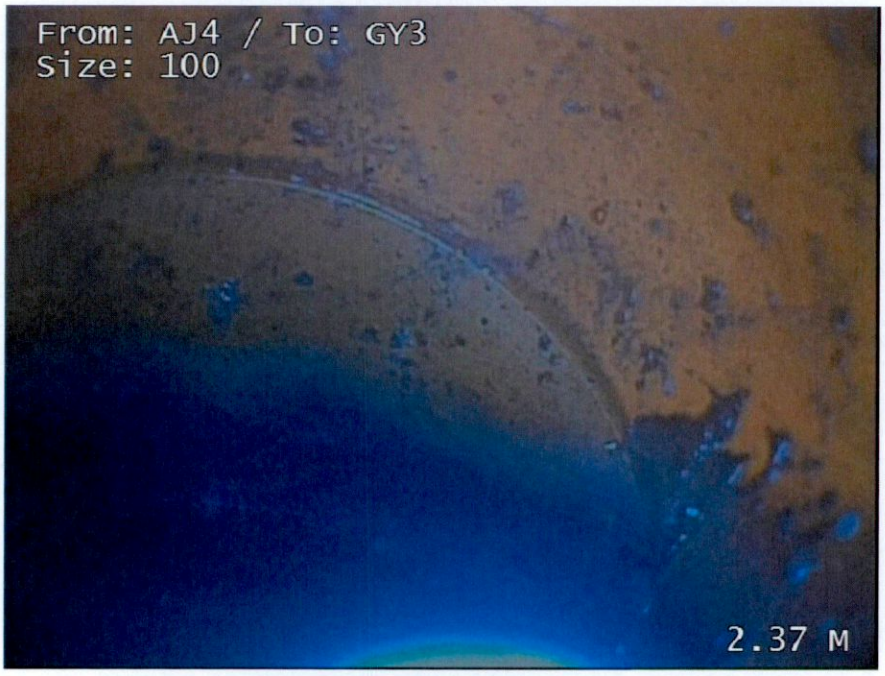
Pictures - Section No. 8 - AJ4 to GY3

Client - **EOIN ROCHE**

S8C3



00:00:17 - 2.37 m
Finish node type, gully, reference GY3

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Damage Overview - Section No. 8 - AJ4 to GY3

Client - **EOIN ROCHE**

Structural Defect	Quantity

There were no structural defects recorded

Service/Operational Defects	Quantity

There were no service/operational defects recorded

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

CCTV Inspection - Section No. 9 - AJ4 to AJ3

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**14:45 - 14:45**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Downstream**	**5.87**	**0.00**

Start Node — Ref: **AJ4** — Depth: - — Invert Level: -

Drain/Sewer — Sewer Use: **Surface water** — Material: **Polyvinyl chloride** — Diameter: **100**

End Node — Ref: **AJ3** — Depth: - — Invert Level: -

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	IC	Start node type, inspection chamber, reference AJ4	00:00:00	S9C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S9C2	0
5.37	DER	Settled deposits coarse 10% cross-sectional area loss	00:00:13	S9C3	2
5.87	ICF	Finish node type, inspection chamber, reference AJ3	00:00:18	S9C4	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	0	0	0.00	0	1
Operational	1	2	0.34	2	3

Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

Dyno Rod Dublin
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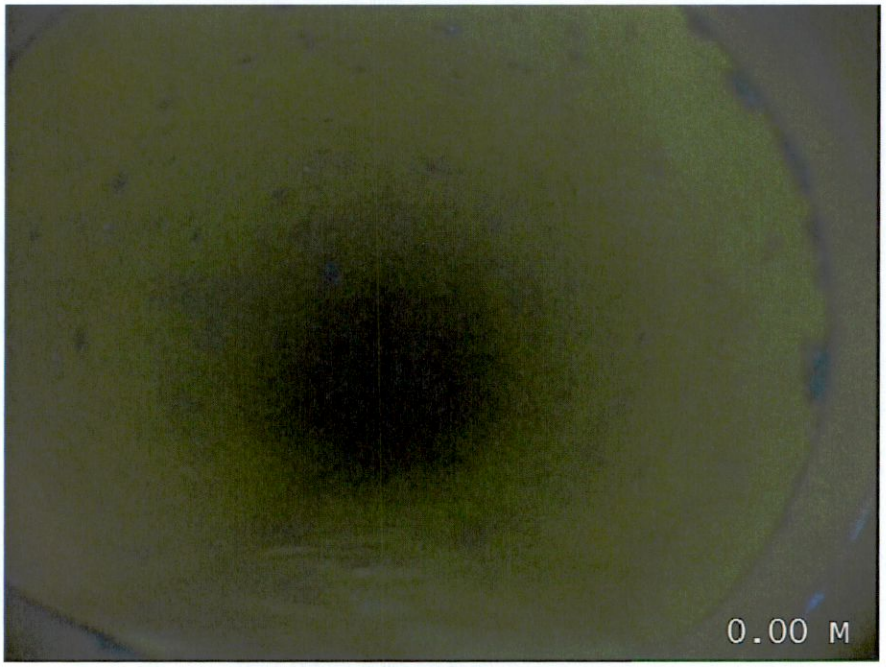
Pictures - Section No. 9 - AJ4 to AJ3

Client - **EOIN ROCHE**

S9 Manhole Internal

AJ4 Internal

S9C1



00:00:00 - 0.00 m
Start node type, inspection chamber, reference AJ4

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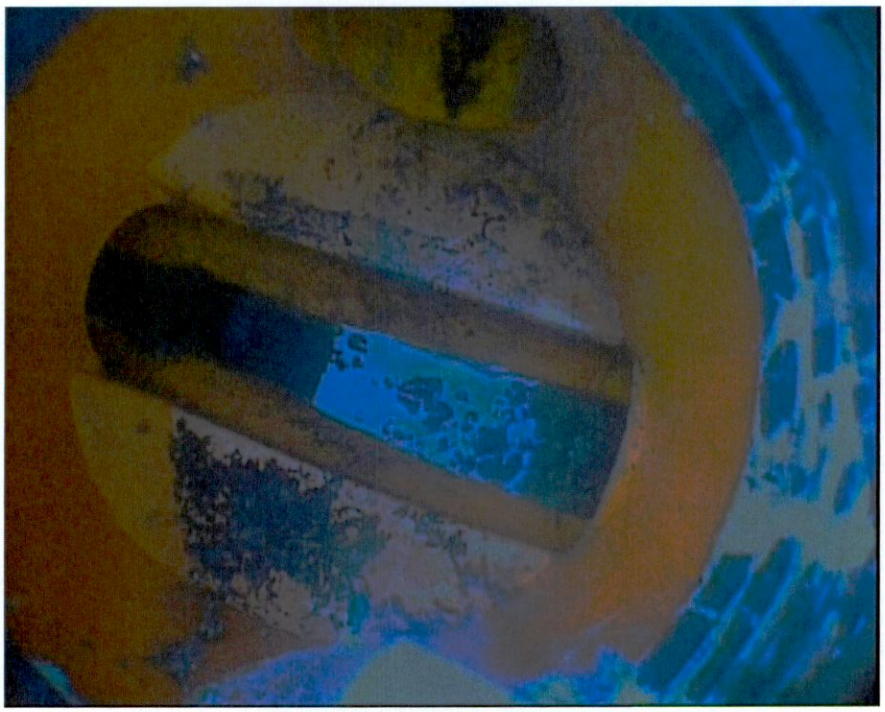
Pictures - Section No. 9 - AJ4 to AJ3

Client - **EOIN ROCHE**

S9C4

00:00:18 - 5.87 m
Finish node type, inspection chamber, reference AJ3

S9 Manhole Internal



AJ3 Internal

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Tel: 00353 01663 0844

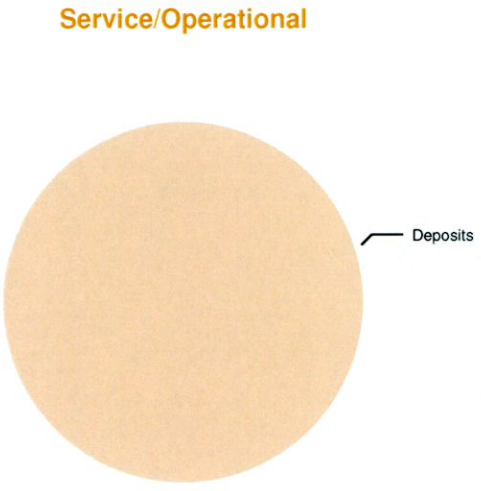
Damage Overview - Section No. 9 - AJ4 to AJ3

Client - **EOIN ROCHE**

Structural Defect	Quantity

There were no structural defects recorded

Service/Operational Defects	Quantity
Deposits	1



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Tel: 00353 01663 0844

CCTV Inspection - Section No. 10 - AJ3 to CON

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**14:47 - 14:50**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Downstream**	**3.86**	**0.00**

Start Node — Ref: **AJ3** — Depth: - — Invert Level: -

Drain/Sewer — Sewer Use: **Surface water** — Material: **Polyvinyl chloride** — Diameter: **100**

End Node — Ref: **CON** — Depth: - — Invert Level: -

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	IC	Start node type, inspection chamber, reference AJ3	00:00:00	S10C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S10C2	0
3.50	LD	Line of drain/sewer deviates down	00:00:15	S10C3	0
3.86	REM	SURFACE LINE. NO ACCESS TO TRACE LINE. TIE IN IS LOCATED UNDER PAVING	00:01:43	S10C4	0
3.86	BRF	Finish node type, major connection without manhole, reference CON	00:01:47	S10C5	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	0	0	0.00	0	1
Operational	0	0	0.00	0	1

Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

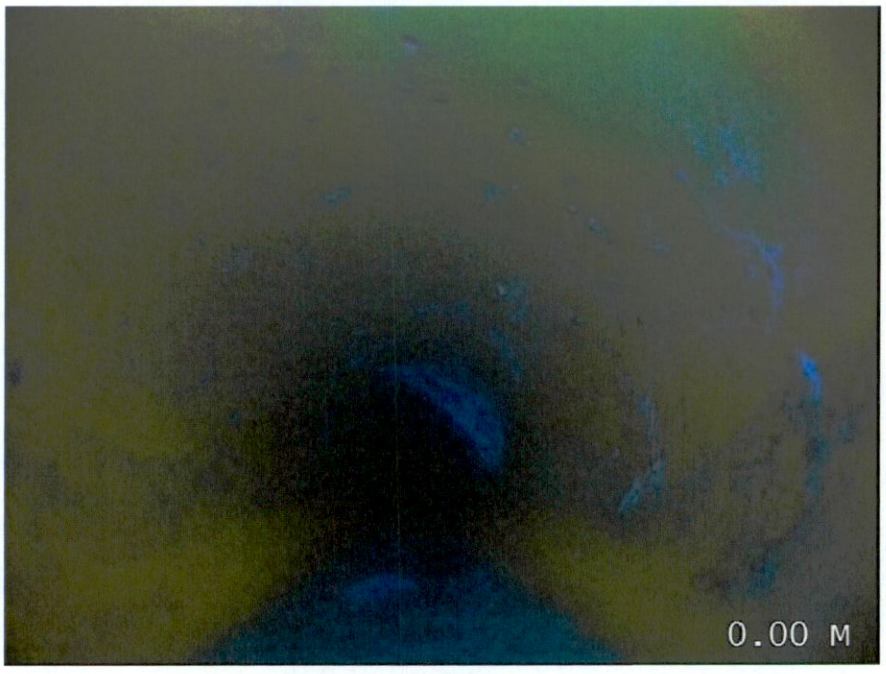
Pictures - Section No. 10 - AJ3 to CON

Client - **EOIN ROCHE**

S10 Manhole Internal

AJ3 Internal

S10C1



00:00:00 - 0.00 m
Start node type, inspection chamber, reference AJ3

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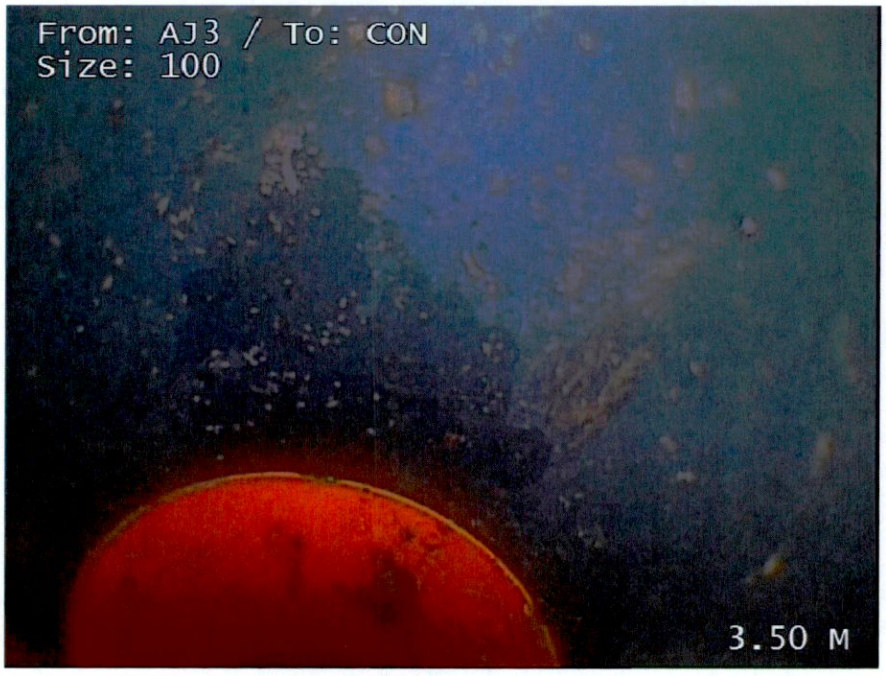
Tel: 00353 01663 0844

Pictures - Section No. 10 - AJ3 to CON

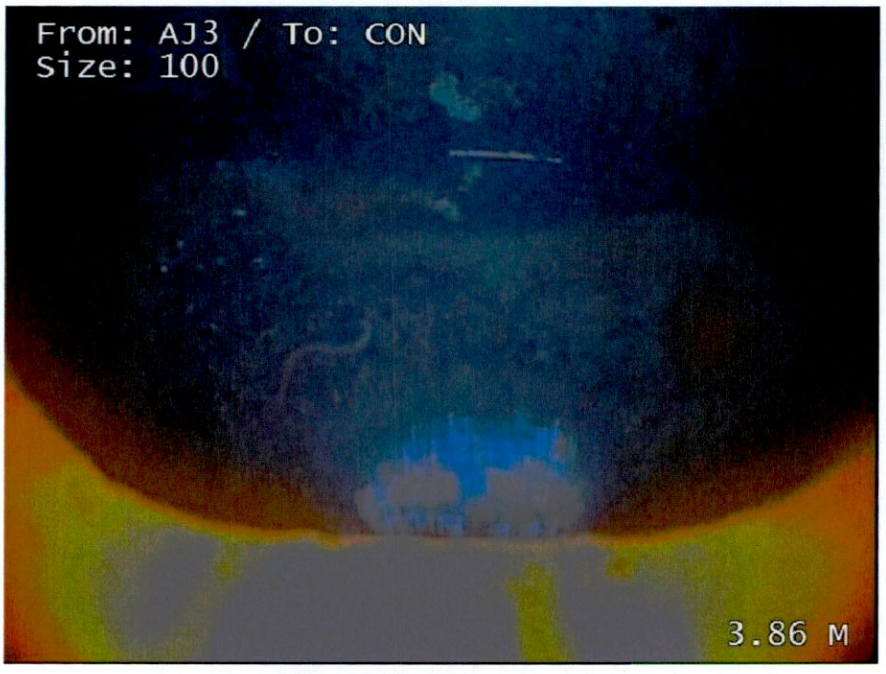
Client - **EOIN ROCHE**

S10C3



00:00:15 - 3.50 m
Line of drain/sewer deviates down

S10C5



00:01:47 - 3.86 m
Finish node type, major connection without manhole, reference CON

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Damage Overview - Section No. 10 - AJ3 to CON

Client - **EOIN ROCHE**

Structural Defect	Quantity

There were no structural defects recorded

Service/Operational Defects	Quantity

There were no service/operational defects recorded

Dyno Rod Dublin
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CCTV Inspection - Section No. 11 - AJ3 to GY4

Client - **EOIN ROCHE**

Job Info	
Contractor's Job Ref.	**169836**

Location	
Site Address	**1 FONTHILL PARK, RATHFARNHAM, D14**
Ground Surface	**Concrete**

Factors	
Date	**06/07/2022**
Time	**14:53 - 14:54**
Weather	**1 - Dry**

Surveyor Details	
Name of Surveyor	Camera System
DAMIEN MC EVOY	

Survey Details			
Pre Cleaned	Direction	Expected Length	Inspected Length
Flushed through to enable survey	**Upstream**	**2.44**	**0.00**

Start Node — Ref: **AJ3** — Depth: - — Invert Level: -

Drain/Sewer — Sewer Use: **Surface water** — Material: **Polyvinyl chloride** — Diameter: **100**

End Node — Ref: **GY4** — Depth: - — Invert Level: -

Position (m)	Code	Observation	Video Ref	Photo Ref	Score
0.00	IC	Start node type, inspection chamber, reference AJ3	00:00:00	S11C1	0
0.00	WL	Water level 5% height/diameter	00:00:00	S11C2	0
2.44	GYF	Finish node type, gully, reference GY4	00:00:12	S11C3	0

General Remarks

Defect	Quantity	Peak	Mean	Total	Grade
Structural	0	0	0.00	0	1
Operational	0	0	0.00	0	1

Key	
Structural Defects	Construction Observations
Service/Operational Defects	Miscellaneous Observations

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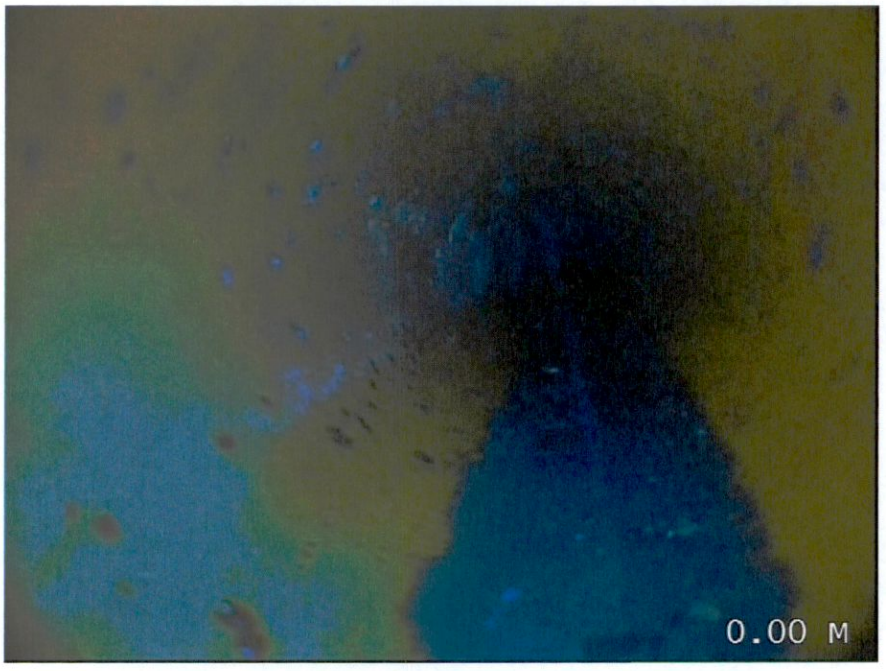
Pictures - Section No. 11 - AJ3 to GY4

Client - **EOIN ROCHE**

S11 Manhole Internal

AJ3 Internal

S11C1



00:00:00 - 0.00 m
Start node type, inspection chamber, reference AJ3

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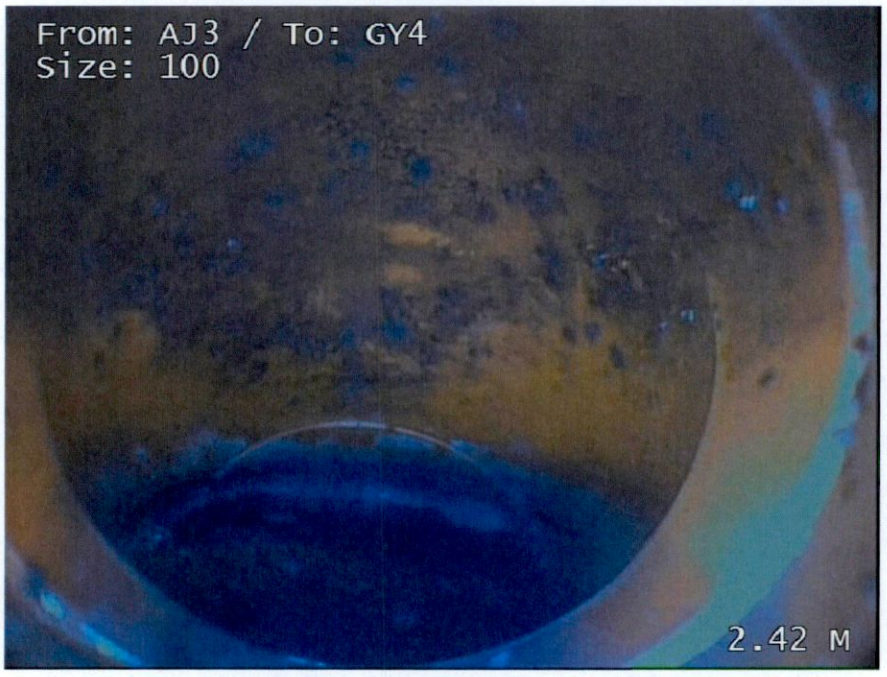
Pictures - Section No. 11 - AJ3 to GY4

Client - **EOIN ROCHE**

S11C3



00:00:12 - 2.44 m
Finish node type, gully, reference GY4

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Damage Overview - Section No. 11 - AJ3 to GY4

Client - **EOIN ROCHE**

Structural Defect	Quantity

There were no structural defects recorded

Service/Operational Defects	Quantity

There were no service/operational defects recorded

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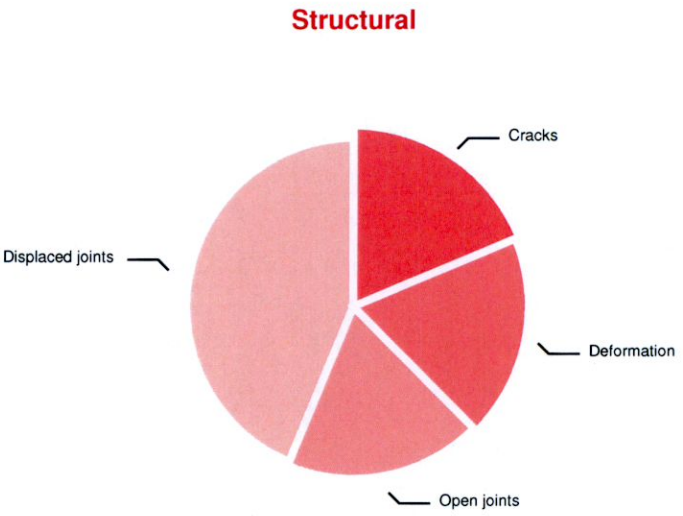
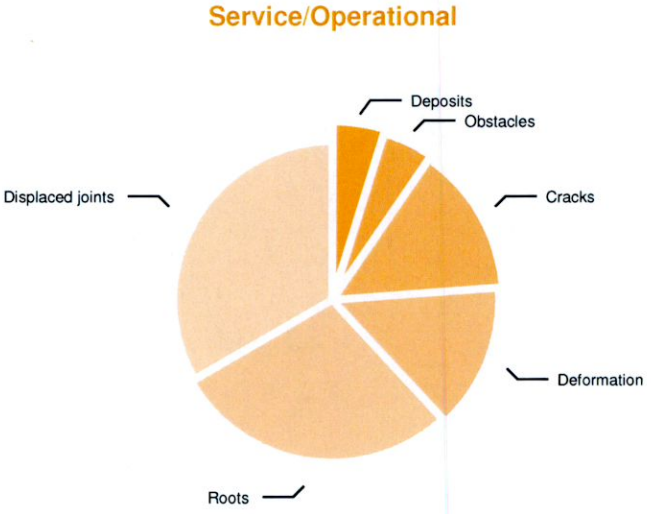
Damage Overview - All Sections

Client - **EOIN ROCHE**

Structural Defect	Quantity
Displaced joints	7
Open joints	3
Deformation	3
Cracks	3



Service/Operational Defects	Quantity
Displaced joints	7
Roots	6
Deformation	3
Cracks	3
Obstacles	1
Deposits	1



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Inspection Summary

Client - **EOIN ROCHE**

Node		Section		Expected	Defects							
From	To	Height (mm)	Length (m)	Length (m)	JD	OJ	D	C	OB	R	DE	Total
AJ1	CON	100	0.91	0.91	1	1	0	0	0	0	0	2
AJ1	GY1	100	0.08	0.08	0	1	0	0	0	0	0	1
AJ2	CON	100	7.58	7.58	0	0	3	0	0	3	0	6
AJ2	CON	100	2.92	2.92	0	0	0	0	0	0	0	0
AJ2	GY2	100	0.24	0.24	0	0	0	0	0	0	0	0
MH1	MH2	150	0.86	10.00	0	1	0	1	1	1	0	4
MH1	MH3	150	21.47	21.47	6	0	0	4	0	6	0	16
AJ4	GY3	100	2.37	2.37	0	0	0	0	0	0	0	0
AJ4	AJ3	100	5.87	5.87	0	0	0	0	0	0	1	1
AJ3	CON	100	3.86	3.86	0	0	0	0	0	1	0	1
AJ3	GY4	100	2.44	2.44	0	0	0	0	0	0	0	0
Total			48.60	57.74	7	3	3	5	1	11	1	31

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Summary - All Sections

Client - **EOIN ROCHE**

Sewer Network Information	
Number of Sections	**11**
Total Length	**57.74 m**
Inspected Length	**48.6 m**
Not Inspected Length	**9.14 m**

Resources Collected
Inspection Photos **71**
Inspection Videos **11**
Manhole Photos **8**
Abandoned Surveys **1**

Section Breakdowns / Data Collections 1 - 3 / 11

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	Total Length
AJ1 X	**Downstream**	**AJ1**	**CON**	**Vitrified clay**	**100 mm**	**0.91m**	**0.91m**

Meas. from MH (m)	Code	Observation
0	IC	Start node type, inspection chamber, reference AJ1
0	WL	Water level 5% height/diameter
0.12	JDM	Joint displaced medium - Remark: PATCH ADVISED
0.46	OJM	Open joint medium - Remark: PATCH ADVISED
0.91	BRF	Finish node type, major connection without manhole, reference CON TO COMMON TIE IN POINT

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	Total Length
GY1 X	**Upstream**	**AJ1**	**GY1**	**Vitrified clay**	**100 mm**	**0.08m**	**0.08m**

Meas. from MH (m)	Code	Observation
0	IC	Start node type, inspection chamber, reference AJ1
0	WL	Water level 5% height/diameter
0.03	GYF	Finish node type, gully, reference GY1
0.08	OJM	Open joint medium

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	Total Length
AJ2 X	**Downstream**	**AJ2**	**CON**	**Polyvinyl chloride**	**100 mm**	**7.58m**	**7.58m**

Meas. from MH (m)	Code	Observation
0	IC	Start node type, inspection chamber, reference AJ2
0	WL	Water level 5% height/diameter
1.04	REM	BELLY
1.67	JN	Junction at 11 o'clock, diameter 100mm

Summary - All Sections

Client - **EOIN ROCHE**

Section Breakdowns / Data Collections ...3 - 5 / 11

Meas. from MH (m)	Code	Observation
2.73	REM	BACKFALL
2.73	D	Deformed drain/sewer 10%
4.47	D	Deformed drain/sewer 10% - Remark: @12
5.13	REM	BELLY
5.78	D	Deformed drain/sewer 10% - Remark: @6
6.38	JN	Junction at 9 o'clock, diameter 100mm
7.27	LD	Line of drain/sewer deviates down
7.58	MHF	Finish node type, manhole, reference CON TO MH1

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	2.92m
CON X	Upstream	AJ2	CON	Polyvinyl chloride	100 mm	Total Length	2.92m

Meas. from MH (m)	Code	Observation
0	IC	Start node type, inspection chamber, reference AJ2
0	WL	Water level 5% height/diameter
0.92	LR	Line of drain/sewer deviates right
2.92	BRF	Finish node type, major connection without manhole, reference CON FRM STACK

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	0.24m
GY2 X	Upstream	AJ2	GY2	Polyvinyl chloride	100 mm	Total Length	0.24m

Meas. from MH (m)	Code	Observation
0	IC	Start node type, inspection chamber, reference AJ2
0	WL	Water level 5% height/diameter
0.24	GYF	Finish node type, gully, reference GY2

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Summary - All Sections

Client - **EOIN ROCHE**

Section Breakdowns / Data Collections 6 / 11

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	0.86m
MH1 X	Downstream	MH1	MH2	Vitrified clay	150 mm	Total Length	10m

Meas. from MH (m)	Code	Observation
0	MH	Start node type, manhole, reference MH1
0	WL	Water level 5% height/diameter
0	CL	Crack longitudinal at 8 o'clock - Remark: CRACK IN CHAMMEL
0.04	MCPVC	Material of drain/sewer changes to polyvinyl chloride at this point
0.47	OJL	Open joint large
0.49	RM	Roots mass 50% cross-sectional area loss
0.86	OBI	Other obstacles protruding through wall at 12 o'clock 90% cross-sectional area loss
0.86	SA	Survey abandoned - Remark: CANNOT PASS

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Dyno Rod Dublin
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Tel: 00353 01663 0844

Summary - All Sections

Client - **EOIN ROCHE**

Section Breakdowns / Data Collections 7 / 11

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	21.47m
MH3 X	Upstream	MH1	MH3	Vitrified clay	150 mm	Total Length	21.47m

Meas. from MH (m)	Code	Observation
0	MH	Start node type, manhole, reference MH1
0	WL	Water level 5% height/diameter
0.19	RF	Roots fine
1.19	RM	Roots mass 25% cross-sectional area loss
1.19	JDM	Joint displaced medium
2	JDM	Joint displaced medium
2.01	RT	Roots tap
4.72	RF	Roots fine
5.31	JDM	Joint displaced medium
6.01	CM	Cracks multiple from 12 to 12 o'clock, Finished
6.13	CM	Cracks multiple from 12 to 12 o'clock, Start
7.46	RF	Roots fine
16.1	REM	BELLY
16.1	CUW	Loss of vision, camera under water
17.41	JDM	Joint displaced medium
18.15	JDM	Joint displaced medium
18.5	JN	Junction at 2 o'clock, diameter 100mm
18.69	JDM	Joint displaced medium
20.22	CN	Connection other than junction at 12 o'clock, diameter 100mm
21.47	MHF	Finish node type, manhole, reference MH3

DYNO-ROD
Drain Cleaning, Inspection & Repair

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Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Summary - All Sections

Client - **EOIN ROCHE**

Section Breakdowns / Data Collections 8 - 11 / 11

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	Total Length
GY3 X	Upstream	AJ4	GY3	Polyvinyl chloride	100 mm	2.37m	2.37m

Meas. from MH (m)	Code	Observation
0	IC	Start node type, inspection chamber, reference AJ4
0	WL	Water level 5% height/diameter
2.37	GYF	Finish node type, gully, reference GY3

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	Total Length
AJ4 X	Downstream	AJ4	AJ3	Polyvinyl chloride	100 mm	5.87m	5.87m

Meas. from MH (m)	Code	Observation
0	IC	Start node type, inspection chamber, reference AJ4
0	WL	Water level 5% height/diameter
5.37	DER	Settled deposits coarse 10% cross-sectional area loss
5.87	ICF	Finish node type, inspection chamber, reference AJ3

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	Total Length
AJ3 X	Downstream	AJ3	CON	Polyvinyl chloride	100 mm	3.86m	3.86m

Meas. from MH (m)	Code	Observation
0	IC	Start node type, inspection chamber, reference AJ3
0	WL	Water level 5% height/diameter
3.5	LD	Line of drain/sewer deviates down
3.86	REM	SURFACE LINE. NO ACCESS TO TRACE LINE. TIE IN IS LOCATED UNDER PAVING
3.86	BRF	Finish node type, major connection without manhole, reference CON

Pipeline Length Ref.	Direction	Upstream Node	Downstream Node	Pipe Material	Dia/Height	Inspected Length	Total Length
GY4 X	Upstream	AJ3	GY4	Polyvinyl chloride	100 mm	2.44m	2.44m

Meas. from MH (m)	Code	Observation
0	IC	Start node type, inspection chamber, reference AJ3
0	WL	Water level 5% height/diameter
2.44	GYF	Finish node type, gully, reference GY4

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Report Overview

Client - **EOIN ROCHE**

Sewer Network Information	
Number of Sections	**11**
Total Length	**57.74 m**
Inspected Length	**48.6 m**
Not Inspected Length	**9.14 m**

Resources Collected
Inspection Photos **71**
Inspection Videos **11**
Site Drawings **2**
Site Photos **1**

Defects Found	
Structural	**16**
Service	**21**
Abandoned Survey(s)	**1**

Work Carried Out	
Pipeline(s) Surveyed	**11**
Pipeline(s) Pre Cleaned	**11**
Flow Control(s) Used	**0**

DYNO-ROD
Drain Cleaning, Inspection & Repair

Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Scoring Summary

Client - **EOIN ROCHE**

Stuctural Defects

Grade 3	Grade 4	Grade 5	
Best practice suggests consideration to be given to repair in the medium term.	Best practice suggests consideration to be given to repair to avoid potential collapse.	Best practice suggests this pipe is at risk of collapse at any time; urgent consideration should be given to repair to avoid collapse.	These summaries are based on the SRM grading from the WRC.

Section	PLR	Grade	Fault Description
3	AJ2 X	4	Deformation
7	MH3 X	3	Multiple defects, made up of displaced joints & cracks

Service/Operational Defects

Grade 3	Grade 4	Grade 5	
Best practice suggests consideration to be given to maintenance activities in the medium term.	Best practice suggests consideration to be given to maintenance to avoid potential blockage.	Best practice suggests this pipe is at risk of backing up / causing flooding.	These summaries are based on the SRM grading from the WRC.

Section	PLR	Grade	Fault Description
1	AJ1 X	3	Displaced joints
3	AJ2 X	3	Deformation
6	MH1 X	5	Multiple defects, made up of obstacles , roots & cracks
7	MH3 X	5	Multiple defects, made up of displaced joints , roots & cracks
9	AJ4 X	3	Deposits

DYNO-ROD
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Dyno Rod Dublin
Unit 49 Boeing Road, Airways Industrial Estate, Santry, Dublin 17, D17 DX34
Tel: 00353 01663 0844

Scoring Summary

Client - **EOIN ROCHE**

Abandoned Surveys

Section	PLR	Fault Description
6	MH1 X	Survey Abandoned

Appendix C – Wavin Aquacell

Product Datasheet

AquaCell Plus-R

Product description

AquaCell Plus-R has been designed primarily for use in applications where inspectability is required, and is suitable for use in all applications from landscaped areas to heavily trafficked areas.

Technical specification

Product code / SAP code	6LB250 / 4064832	**Void ratio**	95%
Colour	Black	**Material**	Recycled PP
Dimensions	1m x 0.5m x 0.4m	**Vertical loading**	70.2 tonnes/m² (702 kN/m²)
Weight	12.7kg	**Lateral loading**	15.1 tonnes/m² (151 kN/m²)
Storage volume	190 litres		

Maximum installation depths

Typical soil type	**Maximum depth of installation – to base of units (m)[1]**				
	Soil weight kN/m³	**Angle of internal friction φ (degrees)[2, 3]**	**Landscaped areas**	**Vehicle mass <9 tonnes[4, 5]**	**Vehicle mass <44 tonnes**
Over consolidated stiff clay	20	24	4.67	4.42	4.17
Silty sandy clay	19	26	5.03	4.78	4.53
Loose sand and gravel	18	30	5.86	5.61	5.36
Medium dense sand and gravel	19	34	6.87	6.62	6.37
Dense sand and gravel	20	38	7.82	7.57	7.30

Minimum cover depths

	Landscaped areas	**Car parks with vehicle mass <3 tonnes[5]**	**Car parks with vehicle mass <9 tonnes**	**Car parks with vehicle mass <12 tonnes**	**Low speed roads with vehicle mass <60 tonnes**
Minimum cover depth (m)	0.30	0.50	0.69	0.81	1.30

1. Without groundwater present below base of units – AquaCell Plus-R may be used where groundwater is present, contact Wavin for technical advice.
2. Loosening of dense sand or softening of clay by water can occur during installation. The designer should allow for any such likely effects when choosing an appropriate value of φ.
3. The design is very sensitive to small changes in the assumed value of φ, therefore, it should be confirmed by a chartered geotechnical engineer. In clay soils, it may be possible to utilise cohesion in some cases.
4. Applicable for car parks or other areas trafficked only by cars or occasional refuse collection trucks or similar vehicles (typically one per week).
5. This category should be used when considering landscaped areas that may be trafficked by ride on mowers.

Assumptions made:

- Ground surface is horizontal
- Shear planes or other weaknesses are not present within the structure of the soil

Wavin Ireland Ltd | Balbriggan | Co Dublin | K32 K840
Tel 01 8020200 | **Email** info.ie@wavin.com | **Website** www.wavin.ie

June 2021

Appendix D – Flow Control Hydro Brake Optimum Specification

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	0.600	0.400
Flush-Flo™	0.143	0.343
Kick-Flo®	0.287	0.292
Mean Flow		0.323

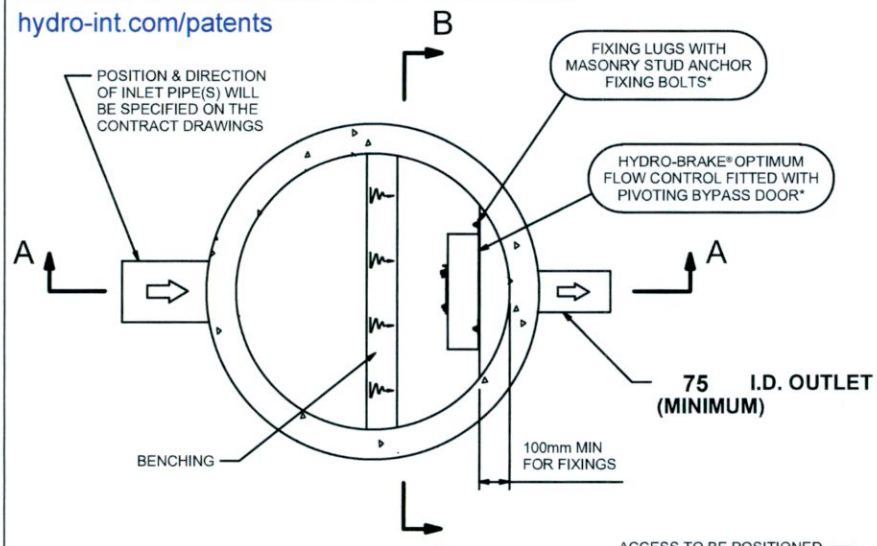
Hydro-Brake® Optimum Flow Control including:

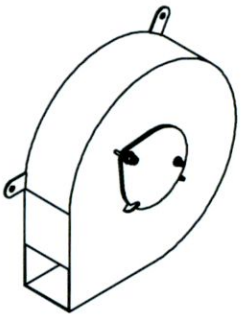
- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet

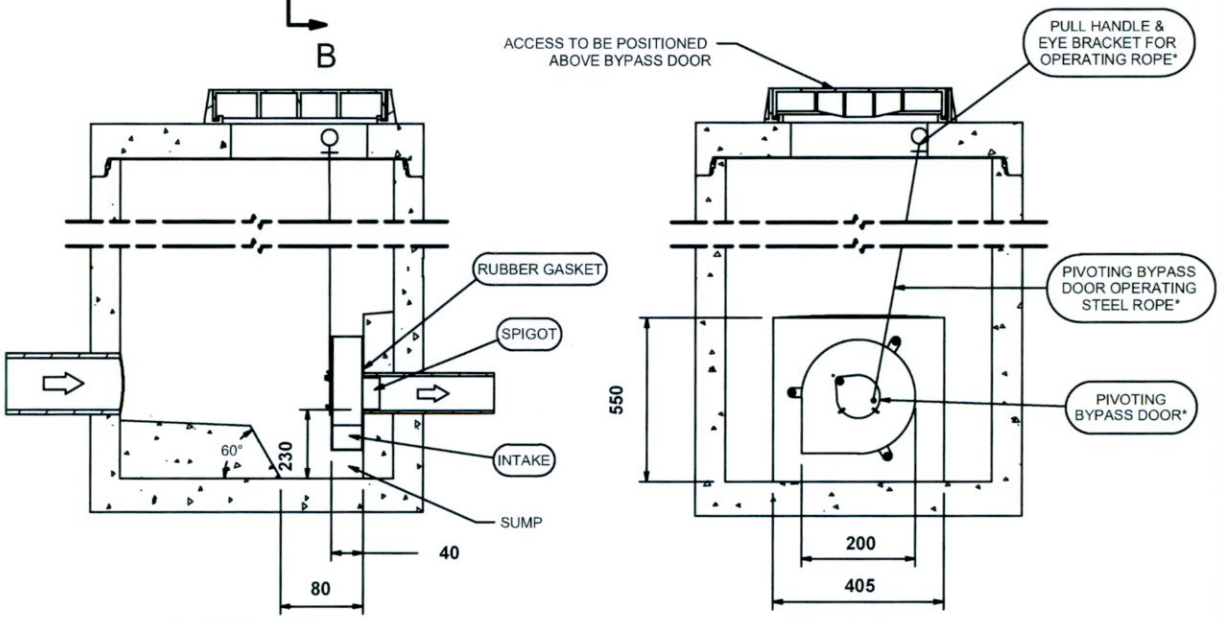
BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 08/4596

WRc Approved
PT/329/0412

hydro-int.com/patents







SECTION A-A

SECTION B-B

IMPORTANT:
- LIMIT OF HYDRO INTERNATIONAL SUPPLY
- THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
- FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER 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-0032-4000-0600-4000 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.

Hydro International®

DATE	5/13/2021 9:09 AM
SITE	Dublin
DESIGNER	T B
REF	Prussia Apartment

SHE-0032-4000-0600-4000
Hydro-Brake® Optimum

tbuda@draconsulting.ie

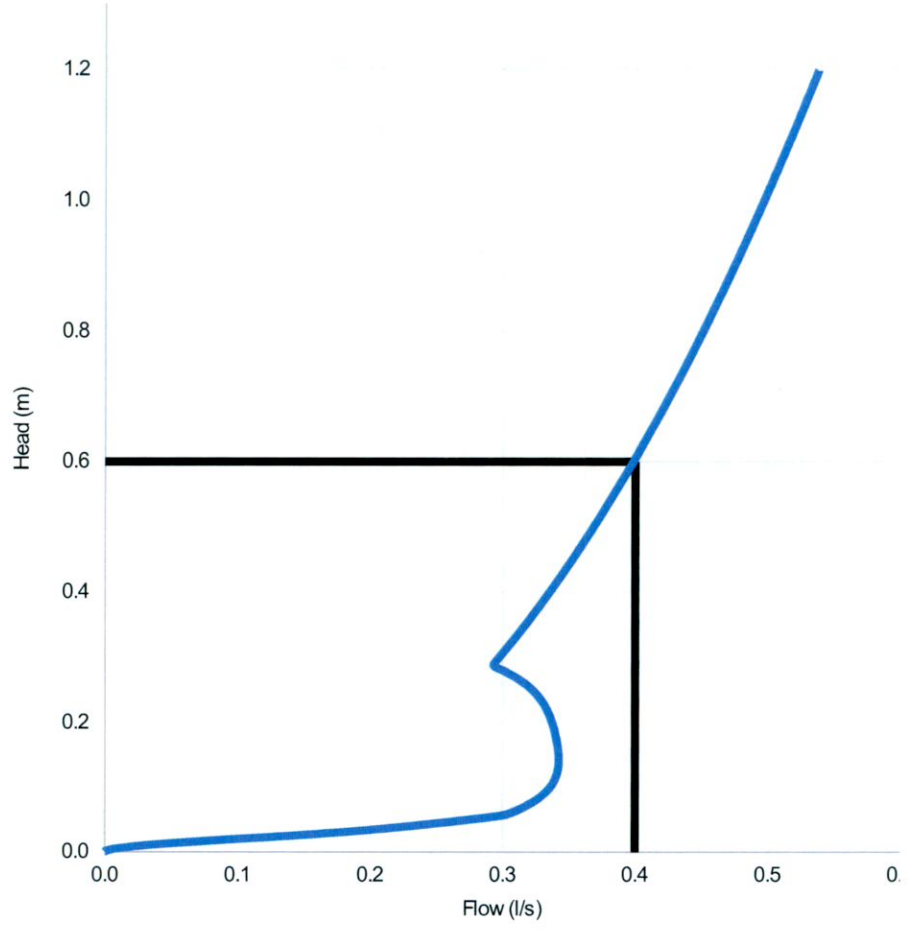
Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	0.600	0.400
Flush-Flo	0.143	0.343
Kick-Flo®	0.287	0.292
Mean Flow		0.323

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE No 08/4596

WRc APPROVED
PT/329/0412

hydro-int.com/patents



Head (m)	Flow (l/s)
0.000	0.000
0.021	0.105
0.041	0.237
0.062	0.309
0.083	0.327
0.103	0.337
0.124	0.342
0.145	0.342
0.166	0.342
0.186	0.339
0.207	0.336
0.228	0.331
0.248	0.324
0.269	0.310
0.290	0.293
0.310	0.302
0.331	0.310
0.352	0.318
0.372	0.325
0.393	0.333
0.414	0.340
0.434	0.347
0.455	0.354
0.476	0.361
0.497	0.368
0.517	0.374
0.538	0.380
0.559	0.386
0.579	0.393
0.600	0.398

DESIGN ADVICE

The head/flow characteristics of this SHE-0032-4000-0600-4000 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.**

Hydro International®

DATE	13/05/2021 09:09
Site	Dublin
DESIGNER	T B
Ref	Prussia Apartment

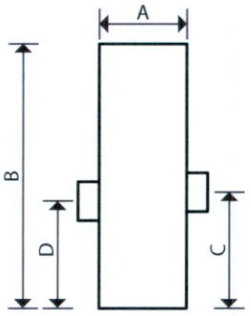
SHE-0032-4000-0600-4000

Hydro-Brake Optimum®

Appendix E – Silt Separator

Product Details
Supplementary Items

Silt Trap – Domestic – for non loaded applications

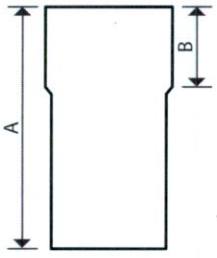


Domestic Silt Trap

- 250mm x 750mm depth
- With 110mm diameter inlet and outlet spigots
- For use with the 4D961 cover and frame

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm) A	B	C	D
–	6LB300	250	750	330	305

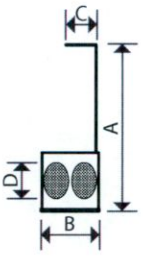


Extension Piece for 6LB300

- 250mm x 500mm depth (effective length = 335mm)

Material: PVC-U

Nominal Size (mm)	Part Number	Dimensions (mm) A	B
–	6LB301	500	165



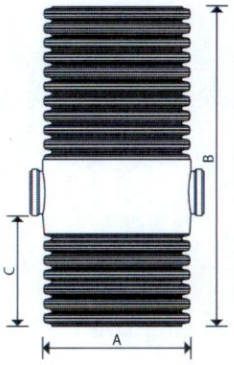
Silt Trap Bucket for 6LB300

- 200mm x 210mm depth

Material: PVC-U/Polypropylene

Nominal Size (mm)	Part Number	Dimensions (mm) A	B	C	D
–	6LB302	597	208	114	127.5

Silt Trap – Trafficked



Silt Trap

- 500mm diameter x 1.25m depth
- 160mm diameter inlet and outlets

Material: Polypropylene

Nominal Size (mm)	Part Number	Dimensions (mm) A	B	C
–	6LB600	500	1250	450

Appendix F - Qbar Calculation, Attenuation Storage Design and Met Eireann Rainfall Data

INPUT	
OUTPUT	

Calculations By:	ER
Checked By:	BMG

Mable
Consulting Engineers

SITE DETAILS

Location	1 Fonthill Park, Rathfarnham, Dublin 14					
Area:	Existing House - Proposed Arrangment					
Site Area	0.0275	Ha	275	m2	0.000275	km2

ALLOWABLE DISCHARGE FROM SITE

Equation: Q_{bar}: 0.00108 x AREA$^{0.89}$ x SAAR$^{1.17}$ x SOIL$^{2.17}$

Q_{bar}:	Mean Annual Peak Flow From Site		(m^3/s)			
AREA:	Area of Site		km^2			
SAAR:	Standard Annual Average Rainfall (Station)	7	Dublin Airport	SAAR:	666.6	mm
SOIL:	Soil Index	4	SOIL:	0.47		

1	0.1	Very Low	Sandy, Well Drained
2	0.3	Low	Intermediate Soil (Silty)
3	0.37	Moderate	Intermediate Soil (Sandy)
4	0.47	High	Clayey, Poorly Drained
5	0.53	Very High	Steep, Rocky area

Rainfall Intesities
Climate Change % 10%

If site is <50Ha, calculate Q-Bar for 50Ha and linearly interpolate for Site Area

Q_{bar} 50 Ha - STANDARD

Area	Ha/km^2	50	0.5
Q_{bar}	=	0.0228	m^3/s
Q_{bar}	=	22.80	l/s
Q_{bar}	=	0.46	l/s/ha

Q_{bar} 50 Ha - Restricted

Area	Ha/km^2	0.0275	0.000275
Q_{bar}	=	0.0003	m^3/s
Q_{bar}	=	**0.29**	l/s
$Q_{bar\ (Allowable)}$	=	2.00	l/s/ha

Qbar Note:
If Qbar is less than 0.4l/s it will be inputted as a lower outflow is not practical & can cause maintence issues and blockages of the outfall pipe.

Qbar Used	=	0.40	l/s

Attenuation Design Inputs (Contribution Areas)

Location	Area (m^2)	Area (Ha)		
Roof & Terrace	107	**0.0107**	100	% Impervious
Footpath, Access, Road & Carparking	0	**0**	90	% Impervious
GreenField	131	**0.0131**	15	% Impervious
Permeable Area	37	**0.0037**	15	% Impervious

Duration (minutes)	Met Ereann Rainfall (mm)	Rainfall (mm) + 20%	Rainfall + 20% (m3/ha)	Proposed Total Outflow (m3)	Proposed Un-Attenuated Outflow Rate (l/s)	Attenuated Outflow (m3)	Storage (m3)	
5	18.20	21.84	218.40	2.89	9.624	0.120	**2.77**	
10	25.40	30.48	304.80	4.03	6.716	0.240	**3.79**	
15	29.90	35.88	358.80	4.74	5.270	0.360	**4.38**	
30	37.00	44.40	444.00	5.87	3.261	0.720	**5.15**	
60	45.70	54.84	548.40	7.25	2.014	1.440	**5.81**	
120	56.50	67.80	678.00	8.96	1.245	2.880	**6.08**	MAX
180	64.00	76.80	768.00	10.15	0.940	4.320	**5.83**	
240	69.90	83.88	838.80	11.09	0.770	5.760	**5.33**	
360	79.20	95.04	950.40	12.56	0.582	8.640	**3.92**	
540	89.60	107.52	1075.20	14.21	0.439	12.960	**1.25**	
720	97.90	117.48	1174.80	15.53	0.360	17.280	**-1.75**	

INPUT	
OUTPUT	

Calculations By:	ER
Checked By:	BMG

Mable
Consulting Engineers

SITE DETAILS

Location	**1 Fonthill Park, Rathfarnham, Dublin 14**				
Area:	**Proposed House - Proposed Arrangment**				
Site Area	0.0201	Ha	**201**	m2	**0.000201** km2

ALLOWABLE DISCHARGE FROM SITE

Equation: Q_{bar}: 0.00108 x AREA$^{0.89}$ x SAAR$^{1.17}$ x SOIL$^{2.17}$

Q_{bar}:	Mean Annual Peak Flow From Site	(m^3/s)				
AREA:	Area of Site	km^2				
SAAR:	Standard Annual Average Rainfall (Station)	7	**Dublin Airport**	SAAR:	**666.6**	mm
SOIL:	Soil Index SOIL TYPE:	4	SOIL:	**0.47**		

1	0.1	Very Low	Sandy, Well Drained
2	0.3	Low	Intermediate Soil (Silty)
3	0.37	Moderate	Intermediate Soil (Sandy)
4	0.47	High	Clayey, Poorly Drained
5	0.53	Very High	Steep, Rocky area

Rainfall Intesities
Climate Change % 10%

If site is <50Ha, calculate Q-Bar for 50Ha and linearly interpolate for Site Area

Q_{bar} 50 Ha - STANDARD

Area	Ha/km^2	50	0.5
Q_{bar}	=	0.0228	m^3/s
Q_{bar}	=	22.80	l/s
Q_{bar}	=	0.46	l/s/ha

Q_{bar} 50 Ha - Restricted

Area	Ha/km^2	0.0201	0.000201
Q_{bar}	=	0.0002	m^3/s
Q_{bar}	=	**0.22**	l/s
$Q_{bar (Allowable)}$	=	2.00	l/s/ha

Qbar Note:

If Qbar is less than 0.4l/s it will be inputted as a lower outflow is not practical & can cause maintence issues and blockages of the outfall pipe.

Qbar Used	=	**0.40 l/s**

Attenuation Design Inputs (Contribution Areas)

Location	Area (m^2)	Area (Ha)		
Roof & Terrace	87	**0.0087**	100	% Impervious
Footpath, Access, Road & Carparking	0	**0**	90	% Impervious
GreenField	50	**0.005**	15	% Impervious
Permeable Area	64	**0.0064**	15	% Impervious

Duration (minutes)	Met Ereann Rainfall (mm)	Rainfall (mm) + 20%	Rainfall + 20% (m3/ha)	Proposed Total Outflow (m3)	Proposed Un-Attenuated Outflow Rate (l/s)	Attenuated Outflow (m3)	Storage (m3)	
5	18.20	21.84	218.40	2.27	7.578	0.120	**2.15**	
10	25.40	30.48	304.80	3.17	5.288	0.240	**2.93**	
15	29.90	35.88	358.80	3.74	4.150	0.360	**3.38**	
30	37.00	44.40	444.00	4.62	2.568	0.720	**3.90**	
60	45.70	54.84	548.40	5.71	1.586	1.440	**4.27**	MAX
120	56.50	67.80	678.00	7.06	0.980	2.880	**4.18**	
180	64.00	76.80	768.00	7.99	0.740	4.320	**3.67**	
240	69.90	83.88	838.80	8.73	0.606	5.760	**2.97**	
360	79.20	95.04	950.40	9.89	0.458	8.640	**1.25**	
540	89.60	107.52	1075.20	11.19	0.345	12.960	**-1.77**	
720	97.90	117.48	1174.80	12.23	0.283	17.280	**-5.05**	

Met Eireann

Return Period Rainfall Depths for sliding Durations

Irish Grid: Easting: 314107, Northing: 227828,

	Interval		Years												
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.6,	3.9,	4.6,	5.6,	6.4,	6.9,	8.9,	11.1,	12.6,	14.8,	16.7,	18.2,	20.6,	22.5,	24.1,	N/A ,
10 mins	3.7,	5.4,	6.4,	7.9,	8.9,	9.7,	12.4,	15.5,	17.6,	20.6,	23.3,	25.4,	28.7,	31.3,	33.5,	N/A ,
15 mins	4.3,	6.4,	7.5,	9.2,	10.4,	11.4,	14.5,	18.2,	20.7,	24.2,	27.4,	29.9,	33.8,	36.9,	39.4,	N/A ,
30 mins	5.7,	8.3,	9.7,	11.9,	13.4,	14.6,	18.4,	22.9,	25.9,	30.1,	34.0,	37.0,	41.6,	45.3,	48.3,	N/A ,
1 hours	7.6,	10.8,	12.6,	15.3,	17.2,	18.6,	23.4,	28.8,	32.4,	37.5,	42.1,	45.7,	51.3,	55.6,	59.2,	N/A ,
2 hours	10.0,	14.1,	16.4,	19.7,	22.0,	23.8,	29.6,	36.2,	40.6,	46.8,	52.3,	56.5,	63.1,	68.2,	72.5,	N/A ,
3 hours	11.8,	16.5,	19.1,	22.9,	25.5,	27.5,	34.0,	41.4,	46.3,	53.2,	59.3,	64.0,	71.3,	76.9,	81.6,	N/A ,
4 hours	13.2,	18.4,	21.2,	25.4,	28.2,	30.4,	37.5,	45.6,	50.9,	58.3,	64.8,	69.9,	77.7,	83.8,	88.8,	N/A ,
6 hours	15.5,	21.5,	24.7,	29.5,	32.7,	35.1,	43.1,	52.1,	58.0,	66.2,	73.5,	79.2,	87.8,	94.5,	100.0,	N/A ,
9 hours	18.3,	25.2,	28.8,	34.2,	37.8,	40.6,	49.6,	59.6,	66.2,	75.3,	83.4,	89.6,	99.2,	106.5,	112.6,	N/A ,
12 hours	20.5,	28.1,	32.1,	37.9,	41.9,	44.9,	54.7,	65.6,	72.7,	82.5,	91.2,	97.9,	108.1,	116.0,	122.5,	N/A ,
18 hours	24.2,	32.8,	37.3,	44.0,	48.4,	51.8,	62.8,	75.0,	82.9,	93.8,	103.5,	110.9,	122.1,	130.8,	137.9,	N/A ,
24 hours	27.2,	36.6,	41.6,	48.9,	53.7,	57.4,	69.3,	82.5,	91.0,	102.8,	113.1,	121.1,	133.1,	142.4,	150.0,	176.4,
2 days	33.8,	44.7,	50.3,	58.4,	63.7,	67.8,	80.8,	94.9,	104.0,	116.5,	127.3,	135.5,	148.0,	157.6,	165.4,	192.2,
3 days	39.3,	51.2,	57.3,	66.1,	71.8,	76.2,	90.1,	105.1,	114.6,	127.7,	139.1,	147.7,	160.6,	170.5,	178.6,	206.1,
4 days	44.0,	56.9,	63.4,	72.8,	78.9,	83.5,	98.2,	113.9,	124.0,	137.6,	149.4,	158.3,	171.7,	181.9,	190.2,	218.5,
6 days	52.3,	66.8,	74.0,	84.4,	91.2,	96.3,	112.2,	129.3,	140.1,	154.7,	167.3,	176.8,	191.0,	201.8,	210.5,	240.1,
8 days	59.7,	75.5,	83.4,	94.6,	101.9,	107.4,	124.5,	142.7,	154.1,	169.6,	182.9,	192.9,	207.8,	219.1,	228.2,	259.1,
10 days	66.4,	83.4,	91.9,	103.9,	111.6,	117.5,	135.6,	154.8,	166.8,	183.1,	197.0,	207.4,	222.9,	234.7,	244.2,	276.2,
12 days	72.7,	90.9,	99.8,	112.5,	120.7,	126.8,	145.9,	166.0,	178.6,	195.5,	209.9,	220.8,	236.9,	249.1,	258.9,	291.9,
16 days	84.4,	104.5,	114.4,	128.3,	137.3,	144.0,	164.7,	186.4,	200.0,	218.1,	233.6,	245.1,	262.3,	275.2,	285.6,	320.5,
20 days	95.3,	117.1,	127.8,	142.9,	152.5,	159.7,	181.9,	205.0,	219.4,	238.7,	255.0,	267.2,	285.3,	298.8,	309.8,	346.3,
25 days	108.0,	131.8,	143.4,	159.7,	170.1,	177.8,	201.7,	226.4,	241.8,	262.3,	279.6,	292.5,	311.6,	325.9,	337.5,	375.9,

NOTES:

N/A Data not available

These values are derived from a Depth Duration Frequency (DDF) Model

For details refer to:

'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

Appendix G – Irish Water Confirmation of Feasibility

CONFIRMATION OF FEASIBILITY

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

Eoin Roche

30 Drumcondra Road
Upper Drumcondra
Dublin 9
Co. Dublin
D09 FT7K
Ireland

8 August 2022

Our Ref: CDS22005488 Pre-Connection Enquiry
1 Fonthill Park, Rathfarnham, Dublin 14, Dublin

Dear Applicant/Agent,

We have completed the review of the Pre-Connection Enquiry.

Irish Water has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Single Domestic of 1 unit(s) at 1 Fonthill Park, Rathfarnham, Dublin 14, Dublin, (the **Development)**.

Based upon the details provided we can advise the following regarding connecting to the networks;

• **Water Connection**	-	Feasible without infrastructure upgrade by Irish Water
• **Wastewater Connection**	-	Feasible without infrastructure upgrade by Irish Water
	-	Please note the wastewater sewer running through the site is private and the storm water sewer is owned by Local Authority. Proposed diversions have to be agreed with the owners of the infrastructure. Please see below map with infrastructure owned by Irish Water.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Irish Water infrastructure. Before the Development can be connected to our network(s) you must submit a connection application and be granted and sign a connection agreement with Irish Water.

As the network capacity changes constantly, this review is only valid at the time of its completion. As soon as planning permission has been granted for the Development, a completed connection application should be submitted. The connection application is available at www.water.ie/connections/get-connected/

Where can you find more information?

- **Section A** - What is important to know?
- **Section B** - Details of Irish Water's Network(s)

This letter is issued to provide information about the current feasibility of the proposed connection(s) to Irish Water's network(s). This is not a connection offer and capacity in Irish Water's network(s) may only be secured by entering into a connection agreement with Irish Water.

For any further information, visit **www.water.ie/connections**, **email newconnections@water.ie** or contact 1800 278 278.

Yours sincerely,

Yvonne Harris

Yvonne Harris
Head of Customer Operations

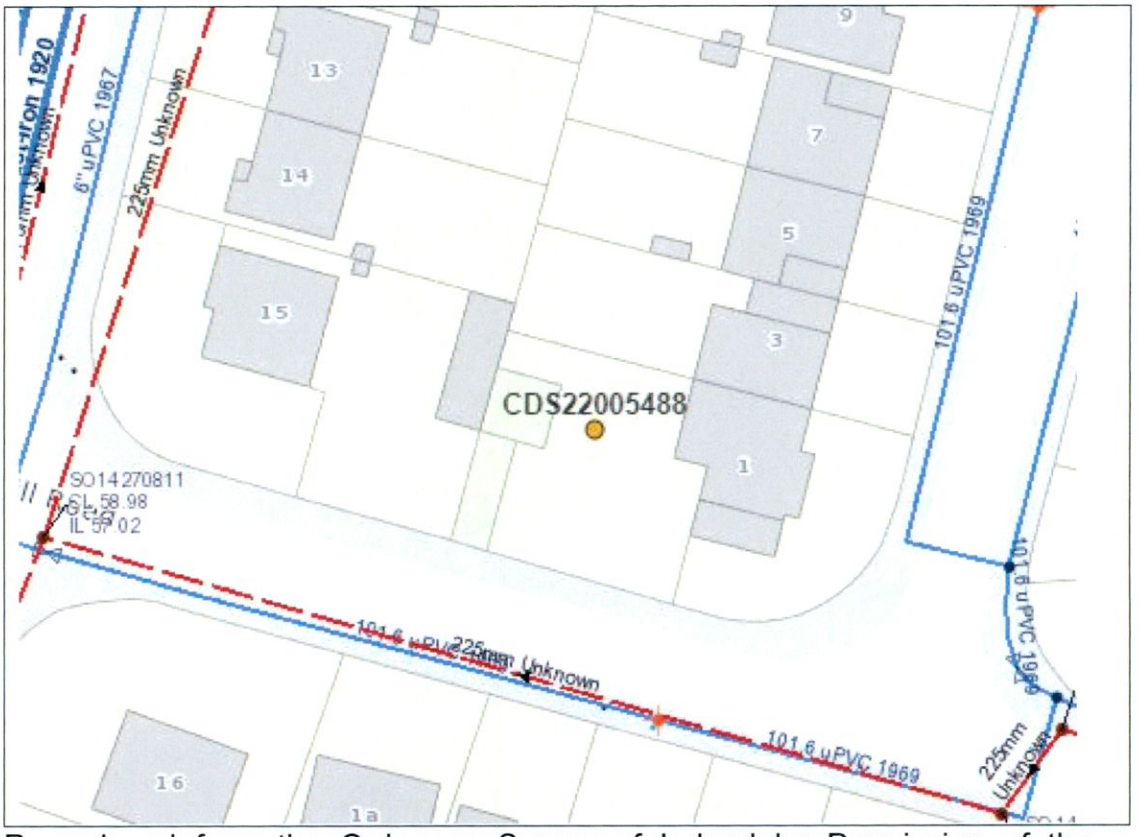
Section A - What is important to know?

What is important to know?	Why is this important?
Do you need a contract to connect?	• Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Irish Water's network(s). • Before the Development can connect to Irish Water's network(s), you must submit a connection application and be granted and sign a connection agreement with Irish Water.
When should I submit a Connection Application?	• A connection application should only be submitted after planning permission has been granted.
Where can I find information on connection charges?	• Irish Water connection charges can be found at: https://www.water.ie/connections/information/charges/
Who will carry out the connection work?	• All works to Irish Water's network(s), including works in the public space, must be carried out by Irish Water*. *Where a Developer has been granted specific permission and has been issued a connection offer for Self-Lay in the Public Road/Area, they may complete the relevant connection works
Fire flow Requirements	• The Confirmation of Feasibility does not extend to fire flow requirements for the Development. Fire flow requirements are a matter for the Developer to determine. • **What to do?** - Contact the relevant Local Fire Authority
Plan for disposal of storm water	• The Confirmation of Feasibility does not extend to the management or disposal of storm water or ground waters. • **What to do?** - Contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges.
Where do I find details of Irish Water's network(s)?	• Requests for maps showing Irish Water's network(s) can be submitted to: datarequests@water.ie

What are the design requirements for the connection(s)?	• The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this Development shall comply with ***the Irish Water Connections and Developer Services Standard Details and Codes of Practice,*** available at www.water.ie/connections
Trade Effluent Licensing	• Any person discharging trade effluent** to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). • More information and an application form for a Trade Effluent License can be found at the following link: https://www.water.ie/business/trade-effluent/about/ **trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended)

Section B – Details of Irish Water's Network(s)

The map included below outlines the current Irish Water infrastructure adjacent the Development: To access Irish Water Maps email datarequests@water.ie



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Note: The information provided on the included maps as to the position of Irish Water's underground network(s) is provided as a general guide only. The information is based on the best available information provided by each Local Authority in Ireland to Irish Water.

Whilst every care has been taken in respect of the information on Irish Water's network(s), Irish Water assumes no responsibility for and gives no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided, nor does it accept any liability whatsoever arising from or out of any errors or omissions. This information should not be solely relied upon in the event of excavations or any other works being carried out in the vicinity of Irish Water's underground network(s). The onus is on the parties carrying out excavations or any other works to ensure the exact location of Irish Water's underground network(s) is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.