

**Mayfield Library and St. Joseph's Centre Refurbishment**  
Planning Permission – Engineering Report





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## 1.0 Introduction

Cork City Council intend to apply for Part 8 Planning Permission for the redevelopment of the existing Mayfield Library and St. Joseph's Centre. The building is located in on Old Youghal Road, Mayfield, Cork. See Figure 1. The following is an Engineering report in support of a Planning Application for the above development. This report addresses the following engineering issues:

- a. Site Services -
  - Water supply
  - Foul drainage
  - Storm drainage
- b. Traffic & Transport
- c. Site Specific Flood Risk Assessment

## 2.0 Existing Site

The existing building is a 1980's steel structure and the new work will entail a major re-development of the facility with part demolition, refurbishment and an expansion on the current build area.

The proposed redevelopment plans have been developed by Cork City Council Architects Department in conjunction with the library service.

Figure 1





### 3.0 Site Services

The site is well served with all drainage and utility service including gas available around the site. A number of services drawings have been made available by CCC and the data collated from same suggest the presence of the following services:

- Storm water drainage line running along the back of the building. See figure 2
- Foul Drainage line running along the back of the building. See figure 3
- Combined foul/storm drainage line on old Youghal road. See figure 3
- Medium voltage/low voltage underground cable route on Old Youghal Road see figure 4
- Low voltage overhead line beside St. Joseph' centre see figure 4
- Gas distribution pipe running on Murmont Park and on Old Youghal road. See figure 5
- Virgin media cable beside St. Joseph centre see figure 6

An underground utility services survey was carried out using a ground penetration radar by Lemnar group, highlighting the position of all the services around the building. See figure 7. Refer to Horganlynch drawing MR72-003 for details of the proposed foul drainage system for this development. A3 copies of these drawings are set out in appendix A of this report.

Figure 2 – Storm drainage pipe

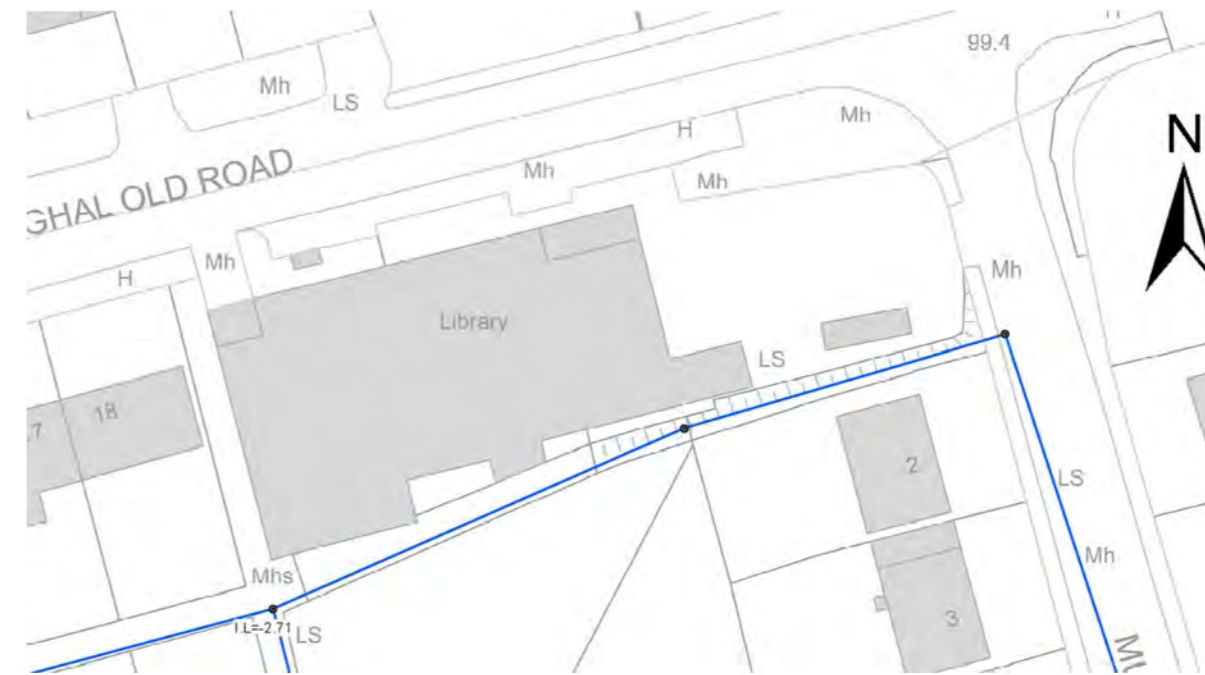


Figure 3- GREEN: combined drain, RED: foul drain



Figure 4 – BLUE: Low voltage overhead power line, RED: medium voltage/low voltage underground line

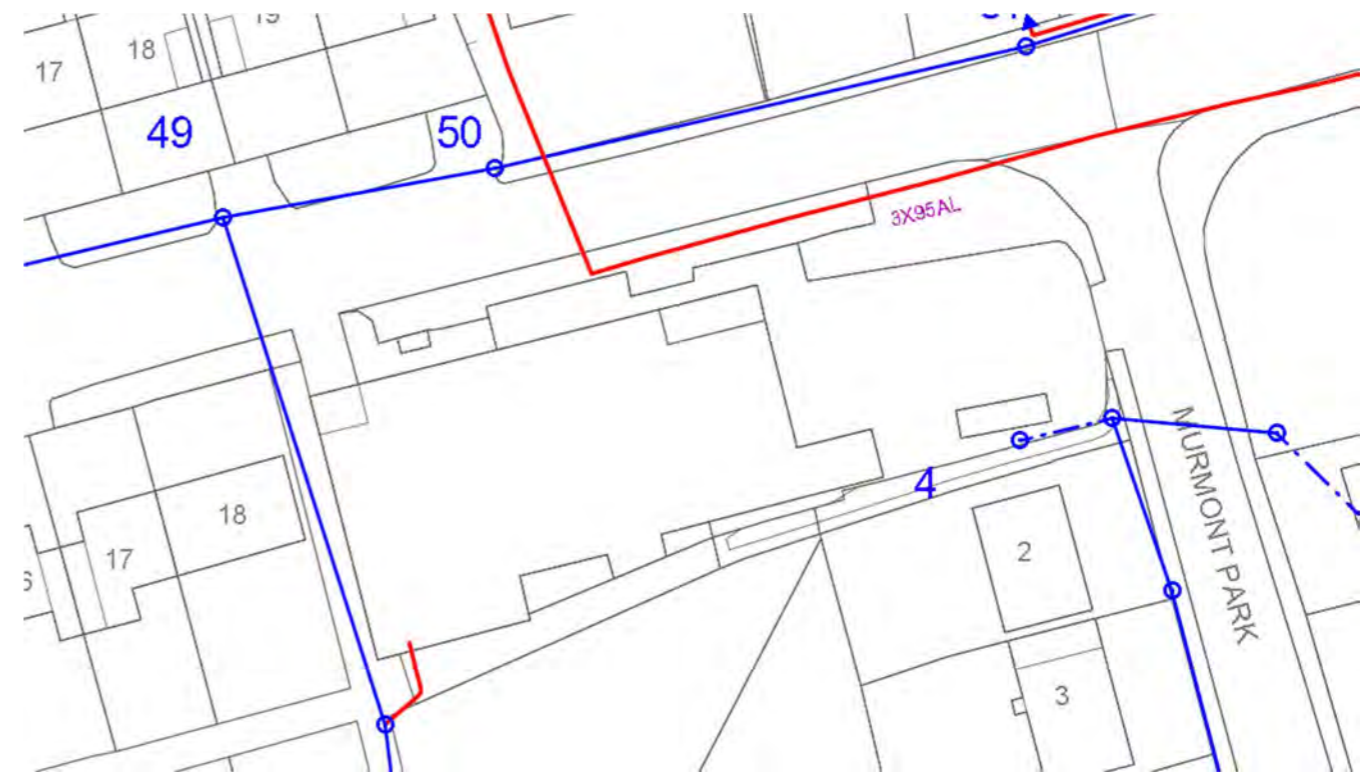




Figure 5 – Gas distribution

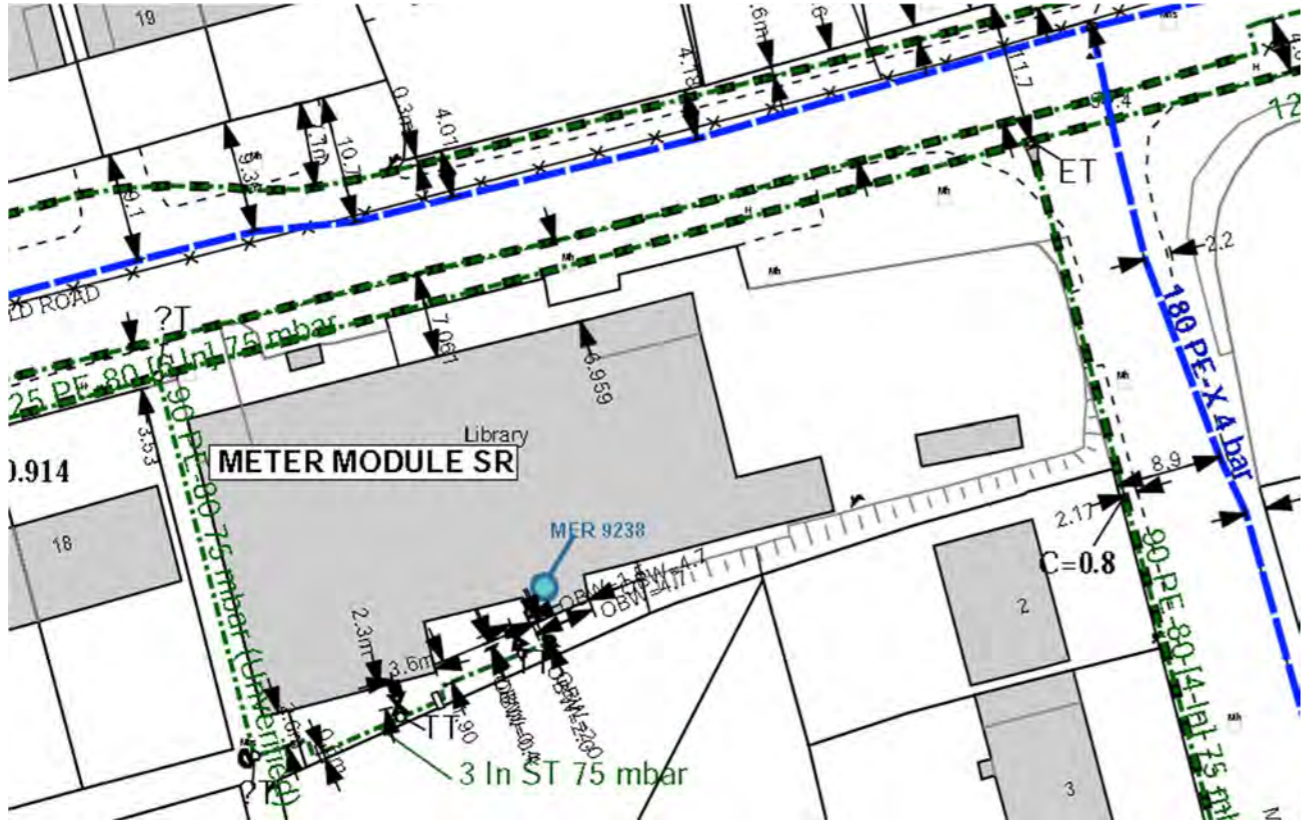
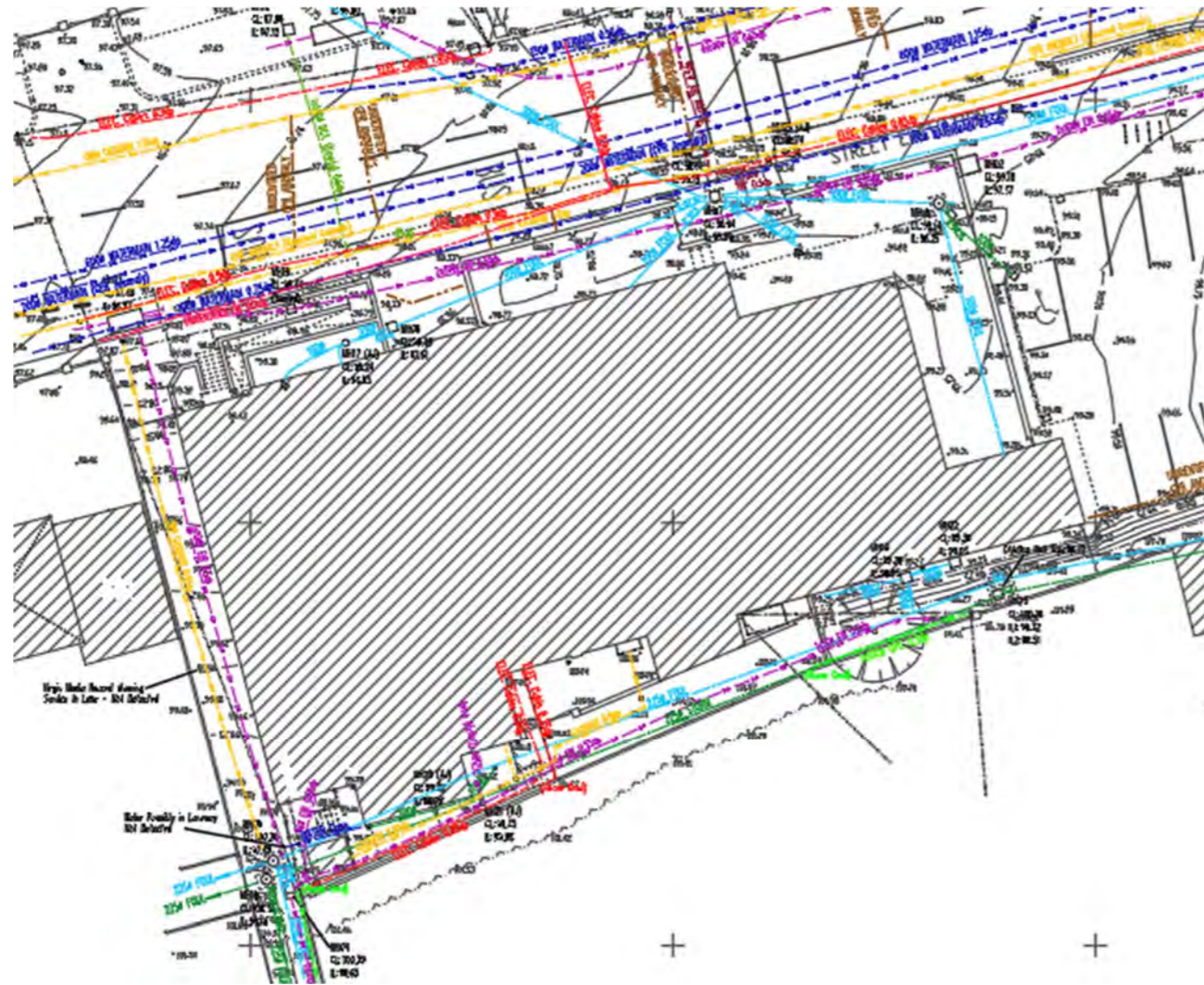


Figure 6 -Virgin Media cables





Figure 7 – Utility service survey with GPR- Refer to appendix D for A3 copy of this drawing



### 3.1 Existing site drainage

A combined foul and storm drain serves the front of the building, this is a 225mm sewer flowing from East to West on the Old Youghal Road. There is a storm line to the South of the building (See Figure 8), it's a 225mm storm drain flowing from East to West and comes from Murmont Road. This line and the combined drain are picking up storm water from the roofs, car park and paths on the site. There is a foul line to the South of the building (See Figure 9), it is a 225mm foul drain flowing from East to West and comes from Murmont Road.

On September 2020 Dyno-Rod carried out a CCTV survey of the existing foul and storm drainage lines. The combined line on the public road in front of the Library on Old Youghal road has been investigated. The copy of Dyno Rod survey report is set out in appendix B of this report.

Figure 8 – Storm drainage pipe



Figure 9- GREEN: combined drain, RED: foul drain





### 3.2 Proposed Foul drainage services

Currently there are existing 225mm dia. Foul drain and 225mm dia. Storm drainage lines coming from Murmont Park which are running to the rear of the existing building and picking up the foul and storm drainage from the building and the drains discharge to existing manholes located in a public laneway to the South West corner of the site.

As the proposed one story building extension will be located in the rear of the existing building, it is intended to remove a section of the existing foul line where the extension is being built. A new foul line will be constructed on Murmont Park to divert existing foul drainage lines to the existing combined sewer on the Old Youghal Road. The diversion will start at the existing foul manhole to the South east on Murmont Park and the proposed 225mm dia. foul will then join the existing combined sewer as per drawing MR72-003. See Figure 10.

The proposed foul discharge for the Creche/community centre at the Northwest area of the site will continue to be discharged to the combined sewer on the Old Youghal Road.

The new foul drainage for the development will be designed to be compliant with Irish Water requirements and has been designed for 6DWF.

The existing total occupancy of the building is 250 person and a value of 40 l/person/day for the creche and 20 l/person/day for the Library. The existing total design peak effluent flow for the development will be 6600 l/day. The proposed total occupancy of 271 person and a value of 40 l/person/day for the creche and 20 l/person/day for the Library. The proposed total design peak effluent flow for the development will be 7400 l/day. When we take the existing peak effluent flow from the proposed peak effluent flow we get an increase of 800 l/day to the foul drainage system.

An IW Pre Connection Enquiry Application has been filled out and sent to Irish water to advise them on the increased water/wastewater demand and contains further detail on calculations for Foul wastewater discharge. See appendix D.

Refer to Horganlynch drawing MR72-003 for details of the proposed foul drainage system for this development. A3 copies of these drawings are set out in appendix A of this report.

### 3.3 Proposed Storm drainage services

The existing storm drainage to the front of the building is discharging in a combined drainage line to the north side of the building on old Youghal road.

The existing surface water from the site roof and paved areas, including the existing impermeable carpark area, are discharging to the sewers on the front and rear of the building. As the proposed one story building extension will be located in the rear of the existing building, it is intended to remove a section of the existing storm line where the extension is being built. A new storm line will be constructed on Murmont Park to divert existing storm drainage lines to the existing combined sewer on the Old Youghal Road. The diversion will start at the existing

### Mayfield Library and St. Joseph's Centre Refurbishment

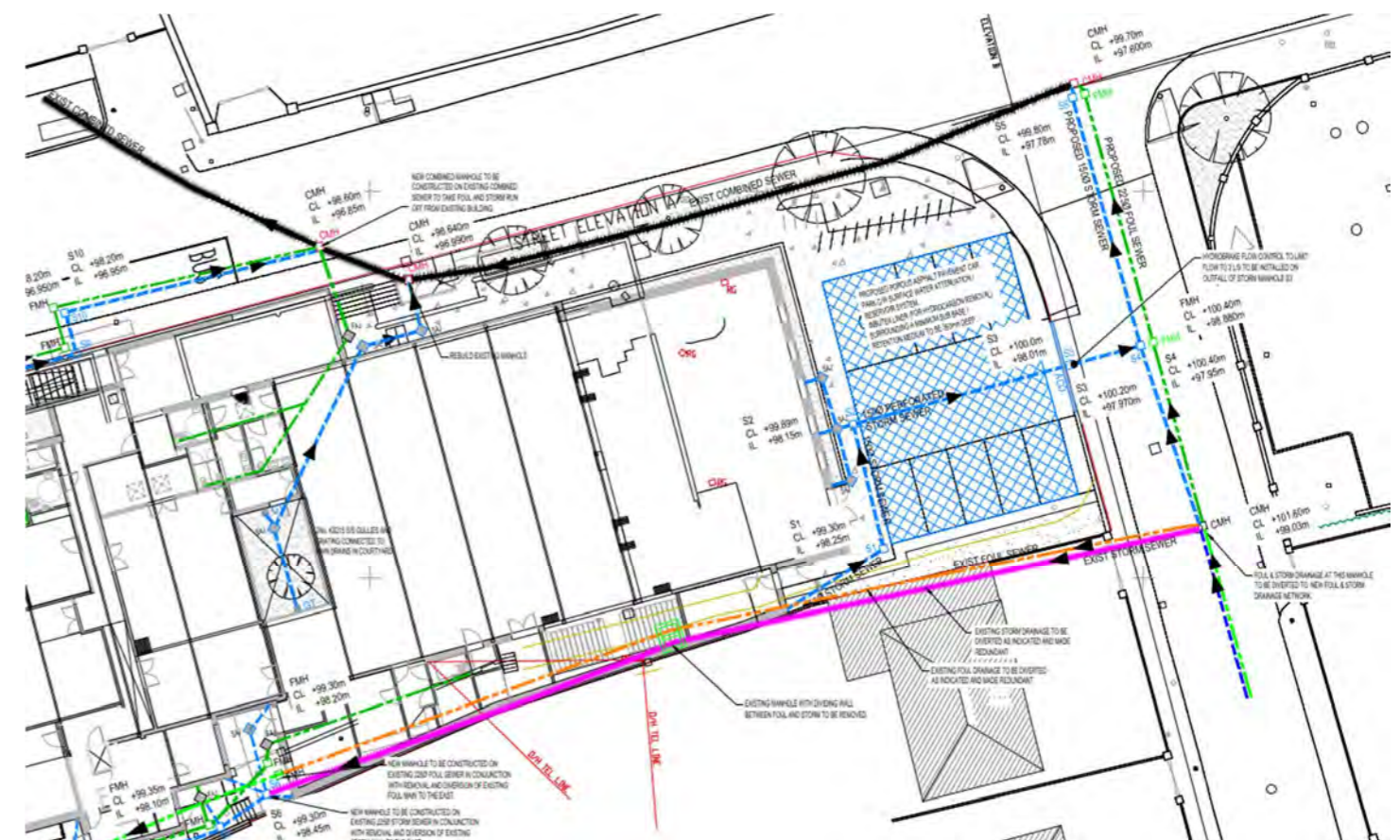
Date-August 2023 Ref: MR72R001

storm manhole to the South east on Murmont Park and the proposed 225mm dia. Foul storm will then join the existing combined sewer as per drawing MR72-003. See Figure 10.

In order to reduce the storm water discharge from the site, the surface water from the new building extension areas will be attenuated using a SUDS porous asphalt carpark area so the overall discharge of surface water from the site into the existing sewer on Old Youghal road will be reduced. The proposed porous asphalt pavement carpark will have a water attenuation reservoir system with an imbutex liner for hydrocarbon removal surrounding a minimum sub base/retention medium that will be 350mm deep. The proposed storm sewer will flow from rom the carpark to a hydrobrake flow control to limit flow to 2l/s, this will be installed on outfall of storm manhole S3. See Figure 10.

Refer to Horganlynch drawing MR72-003 for details of the proposed storm drainage system for this development. A3 copies of these drawings are set out in appendix A of this report. Attenuation calculations from WinDes can be found in appendix C.

Figure 10 – Proposed Foul and Storm drainage





### 3.4 Water Demand

The existing total occupancy of the building is 250 person and a value of 40 l/person/day for the creche and 20 l/person/day for the Library. The existing average day/peak week demand for the development will be 6,480 l/day and the existing peak demand for sizing of pipe network for the development will be 32,850 l/day.

The proposed total occupancy of 271 person and a value of 40 l/person/day for the creche and 20 l/person/day for the Library. The proposed average day/peak week demand for the development will be 7,260 l/day and the proposed peak demand for sizing of pipe network for the development will be 37,200 l/day.

Therefore the required average day/peak week demand is 780 l/day and the required peak demand for sizing of pipe network is 4,350 l/day.

Given the relatively small increase in water demand it is intended to maintain the existing water supply connection to the building if acceptable to Irish water.

An IW Pre Connection Enquiry Application has been filled out and sent to Irish water to advise them on the increased water/wastewater demand and contains further detail on calculations for Water demand. See appendix D.

### 4.0 Vehicle Access

There will be no change to the entry way to the library from Murmont Park. Mayfield Library will be accessed from the carpark on the East side of the development. The existing carpark size will be reduced due to the extension of the library East.

Refer to Horganlynch drawing MR72-003 for details which is Appendix A of report.

### 5.0 Flood Risk Assessment

A site-specific flood risk assessment was carried out by Horganlynch Consulting Engineers on the site and the findings of same found as follows:

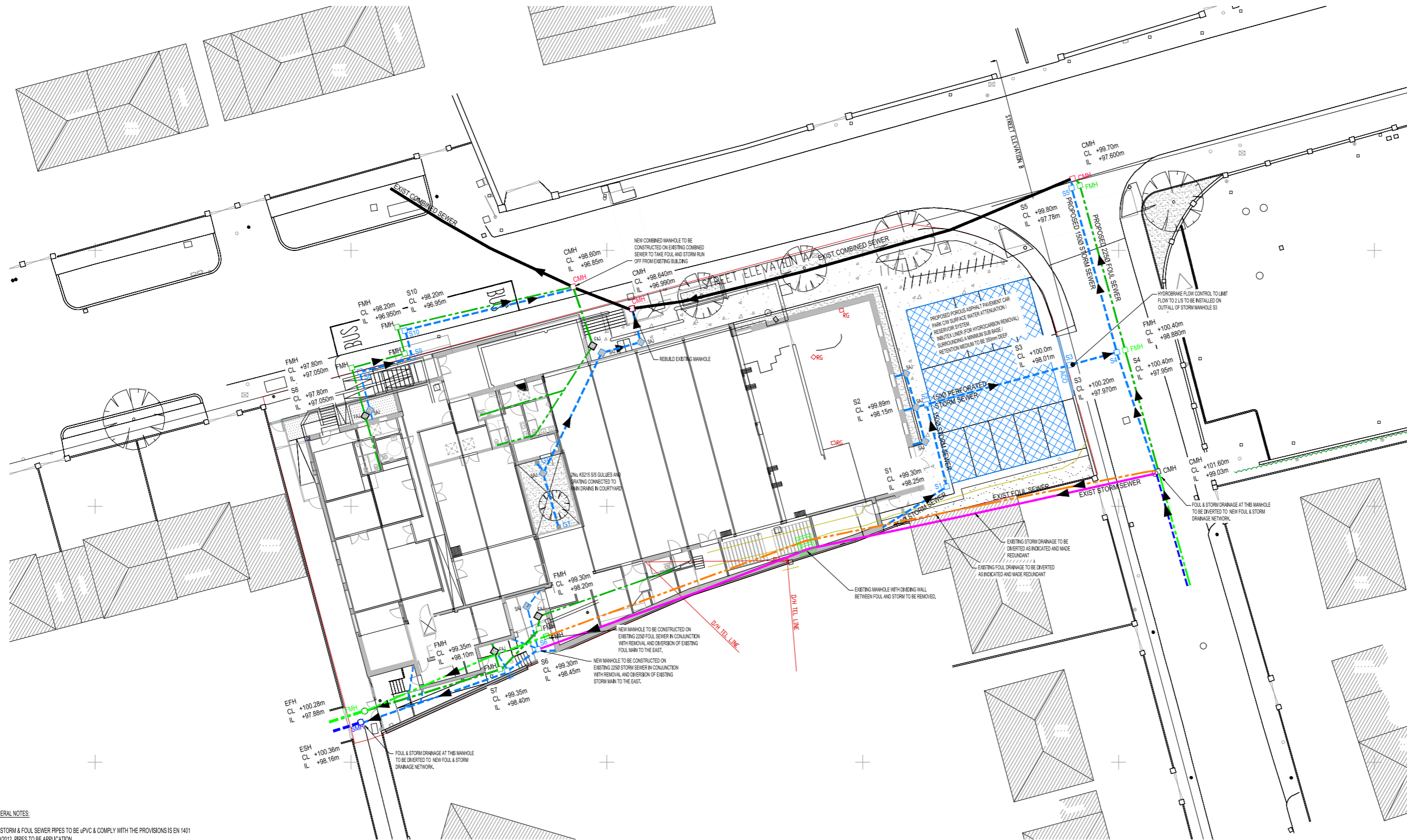
*'It is the considered view that the proposed development, which is a redevelopment and small extension of an existing library and community building facility, can be delivered on the subject site in the context*

#### **Mayfield Library and St. Joseph's Centre Refurbishment**

Date-August 2023 Ref: MR72R001

*of flood risk to same. The OPW's document 'The Planning System and Flood Risk Assessment Management – Guidelines For Planning Authorities' require that the proposed development is compatible with the flood risk for the site. In accordance with these guidelines, the subject site is located within Flood Zone 'C'. Lands in Flood Zone 'C' are suitable for all types of land use. In light of this, the proposed development is suitable for this type of flooding zoning and the Planning Guidelines Sequential Approach is passed. In summary, it is concluded that the proposed development meets the requirements of the Flood Risk Assessment Guidelines and that the proposed development is appropriate to this zone and a justification test is not required'*

# Appendix A Engineers drawing



**NOTES**

**LEGEND**

- CMH PROPOSED COMBINED MANHOLE
- ← EXISTING COMBINED SEWER
- FMH PROPOSED FOUL MANHOLE
- - - EXISTING FOUL DRAINAGE NETWORK
- - - EXISTING FOUL DRAINAGE LINE TO BE REMOVED
- - - PROPOSED FOUL DRAINAGE NETWORK
- S1 PROPOSED STORM MANHOLE
- RG PROPOSED STORM GULLY
- - - EXISTING STORM DRAINAGE LINE
- - - EXISTING STORM DRAINAGE LINE TO BE REMOVED
- - - PROPOSED STORM DRAINAGE LINE
- PROPOSED ACO DRAIN
- PROPOSED STORM ATTENUATION AREA

**PIPE COVER CHART - WITHOUT CONCRETE ENCASUREMENT**

| LOCATION:                           | MIN. COVER: |      |
|-------------------------------------|-------------|------|
| SEWERS IN ROAD                      |             | 1200 |
| SEWERS IN OPEN SPACES               |             | 900  |
| NOT ADJACENT TO ROADS               |             | 600  |
| SEWERS IN GARDENS                   |             | 600  |
| WATERMANS ALL LOCATIONS             |             | 900  |
| WATER SERVICES ALL LOCATIONS        |             | 600  |
| ELEC/ESB CABLE DUCTS IN ROADWAY     |             | 900  |
| ELEC/ESB CABLE DUCTS IN FOOTPATHS   |             | 500  |
| NATURAL GAS MAINS IN ROADWAYS       |             | 800  |
| NATURAL GAS MAINS IN FOOTPATHS      |             | 600  |
| TELECOM DUCTS IN ROADWAYS           |             | 750  |
| TELECOM DUCTS IN FOOTPATHS          |             | 350  |
| CABLE TV DUCTS IN ROADS & FOOTPATHS |             | 450  |

| REV | DATE     | BY | CHKD | DESCRIPTION                    |
|-----|----------|----|------|--------------------------------|
| E   | 08.08.23 | TP | PB   | ISSUED FOR INFORMATION         |
| D   | 14.07.23 | SC | KL   | ISSUED FOR INFORMATION         |
| C   | 26.08.23 | SC | PB   | ISSUED FOR INFORMATION         |
| B   | 10.12.20 | SC | PB   | ISSUE FOR STAGE 2A INFORMATION |
| A   | 26.11.20 | SC | PB   | ISSUE FOR INFORMATION          |

**GENERAL NOTES:**

ALL STORM & FOUL SEWER PIPES TO BE UPVC & COMPLY WITH THE PROVISIONS IS EN 1401 2009/2012. PIPES TO BE APPLICATION AREA CODE 'U' STIFFNESS CLASS BkN/m<sup>2</sup> (SN8), WITH A JETTING RESISTANCE OF 2600 psi (180 Bar). ALL PIPES TO BE A MINIMUM DISTANCE OF 1m (TO FACE) FROM ROAD KERB. ALL MANHOLES TO BE A MINIMUM DISTANCE OF 0.5m FROM THE KERB. LOCATION OF ALL STORM DRAINAGE IS INDICATIVE / REPRESENTATIVE ONLY. EXACT SET OUT OF FOUL DRAINAGE TO BE LOCATED ON SITE IN ACCORDANCE WITH IRISH WATER DETAILS.

**WATER TEST:** FOUL & STORM SEWERS SHOULD BE TESTED FOR A MIN OF 30 MINUTES, UNDER A HEAD OF NOT LESS THAN 1M OR GREATER THAN 2.5M OVER THE HIGHEST POINT ON THE LINE UNDER TEST. THE PIPELINE SHOULD 'STAND' FOR A PERIOD 2 HOURS AFTER FILLING AND TOPPED UP AS NECESSARY BEFORE COMMENCING THE TEST. THE MAXIMUM AMOUNT OF WATER LOSS SHOULD BE IN ACCORDANCE WITH LOCAL AUTHORITY GUIDELINES.

AN AIR TEST MAY BE CARRIED OUT IN LIEU OF THE ABOVE AND IN ACCORDANCE WITH LOCAL AUTHORITY GUIDELINES

AT TIME OF COMPLETION THE DEVELOPER SHOULD ENSURE THAT ALL DRAINS WITHIN THE SITE ARE CLEAN AND FREE OF OBSTRUCTIONS A CONDITION SURVEY SHOULD ALSO BE CARRIED OUT VIA CCTV FOOTAGE AND PRESENTED TO THE LOCAL AUTHORITY PRIOR TO SITE HANDOVER.

ALL EXISTING MANHOLE AND GULLY COVERS LOCATED IN AREAS WHERE THE SURFACE IS BEING REPLACED SHOULD BE TAKEN UP AND RE-BEDDED IN A C40/50 CONCRETE SURROUND 150mm WIDE x 150mm DEEP AND SET LEVEL WITH NEW SURFACES.

SURFACE RELAYED TO MATCH EXISTING FALLS & SITE LEVELS. ADJUST FALLS LOCALLY TO ASSIST RUN-OFF TO GULLIES WHERE POSSIBLE.

- 1) COPYRIGHT AND OWNERSHIP OF THIS DRAWING IS VESTED IN HORGANLYNCH WHOSE PRIOR WRITTEN CONSENT IS REQUIRED FOR ITS USE, REPRODUCTION OR FOR PUBLICATION.
- 2) THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S, SERVICES ENGINEER'S AND HORGANLYNCH DRAWINGS, DETAILS AND SPECIFICATIONS.
- 3) ALL DIMENSIONS TO BE CHECKED ON SITE AND ANY DISCREPANCY TO BE REPORTED TO THE ARCHITECT / ENGINEER. FIGURED DIMENSIONS ONLY TO BE USED. DRAWINGS NOT TO BE SCALED. ALL LEVELS ARE STRUCTURAL UNLESS OTHERWISE NOTED.
- 4) THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL HL DRAWINGS AND SPECIFICATIONS

ALL WASTEWATER DETAILS ARE TO COMPLY WITH AND BE ADOPTED FROM THE IRISH WATER - CONNECTION AND DEVELOPER SERVICES DOCUMENT FOR WASTEWATER INFRASTRUCTURE STANDARD DETAILS, REF TO IRISH WATER DOCUMENT No IW-CDS-5030-01

CONTRACTOR IS ALSO TO REFER TO THE CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE DOCUMENT, CONNECTIONS AND DEVELOPER SERVICES, DESIGN AND CONSTRUCTION REQUIREMENTS FOR SELF LAY DEVELOPMENTS DOCUMENT IW-CDS-5030-03

**Horganlynch**  
Consulting Engineers

Tullagano, Blackrock Road, Cork. t: +353 21 4936100 f: +353 21 4936199 e: cork@horganlynch.ie

Merchant's Hall, 25/26 Merchant's Quay Dublin 8. t: +353 1 6770366 f: +353 1 6770604 e: dublin@horganlynch.ie

JOB TITLE  
**MAYFIELD LIBRARY & St. JOSEPHS CENTRE REFRUBISHMENT**  
ORG. TITLE  
**PROPOSED FOUL AND STORM DRAINAGE LAYOUT PLANS**

Scales 1:200 | A1 | Drawn TP

Date AUG '23

|                |                 |        |
|----------------|-----------------|--------|
| DRAWING NUMBER | <b>MR72-003</b> | REV. E |
|----------------|-----------------|--------|

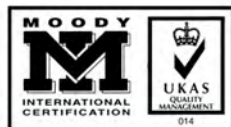
# Appendix B Drainage site investigation report

CCTV Inspection Report

**MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE  
MAYFIELD,  
CORK.**

**30/09/2020**

**Job Number: Q299679 - 002**



**Crowley Services (Cork) Ltd**  
T/A Dyno-Rod, Unit P1, Marina Commercial Park,  
Centre Park Road, Cork  
Tel: 021 4322 444 | Fax: 021 4322 433  
info@crwly.com  
www.dynorod.ie  
Company Registration Number 52987

Job Number  
**Q299679 - 002**

Surveyed by (Operator)  
**BRIAN AHERN**

Base Unit  
**N11E42YTAA**

Date  
**30/09/2020**

Client Details:

HORGANLYNCH CONSULTING ENGINEERS.

Site Details:

MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE  
MAYFIELD,  
CORK.

Contractor Details:

Dyno Rod Cork  
Unit P1, Marina Commercial Park  
Centre Park Road  
Cork City  
County Cork  
EIRE  
Ireland

Office Contact Number: 00353 21500 4100

Purpose of Survey:

DRAINAGE CONDITION SURVEY.

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
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|------------------------------------|--|--------------------------------|---------------------------|

1: Occurences without damage. For example, laterals, joints,etc.

**NO DEFECTS WERE DETECTED.**

2: Constructional deficiencies or occurences with insignificant influence to tightness, hydraulic or static pressure or pipe: Eg. wide joints, badly torched intakes, minor deformation of plastic pipes, minor erosions etc.

**REHABILITATION CAN BE SCHEDULED LONG-TERM.**

3: Constructional deficiencies diminishing static, hydraulic and tightness: Eg. untorched intakes, cracks, minor drainage obstructions such as calcite build ups, protruding laterals, minor damages to pipe wall, individual root penetrations, corroded pipe walls etc.

**REHABILITATION IS NECESSARY MEDIUM-TERM WITHIN 3 TO 5 YEARS.**

4: Constructional damages with insufficient static safety, hydraulic or tightness: Eg. axial/radial pipe bursts, pipe deformations, visually noticeable infiltration/exfiltration, cavities, in pipe-wall, severe protruding, laterals severe root penetrations, severe corrosion of pipe wall etc.

**REHABILITATION PROCEDURE IS URGENT AND HAS TO BE COMPLETED WITHIN 1 TO 2 YEARS. NECESSITY FOR EMERGENCY OPERATIONS HAS TO BE EXAMINED.**

5: Pipe is already or will shortly be impermeable: Eg. collapsed pipe, deeply rooted pipe or other drainage obstructions. Pipe loses water or danger of backwater in basements etc.

**REHABILITATION IS URGENT AND SHORT-TERM. IN ORDER TO PREVENT FURTHER DAMAGE, NECESSARY TEMPORARY SPOT REPAIR HAS TO BE CONDUCTED ON EMERGENCY LEVEL.**

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



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|------------------------------------|--|--------------------------------|---------------------------|

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



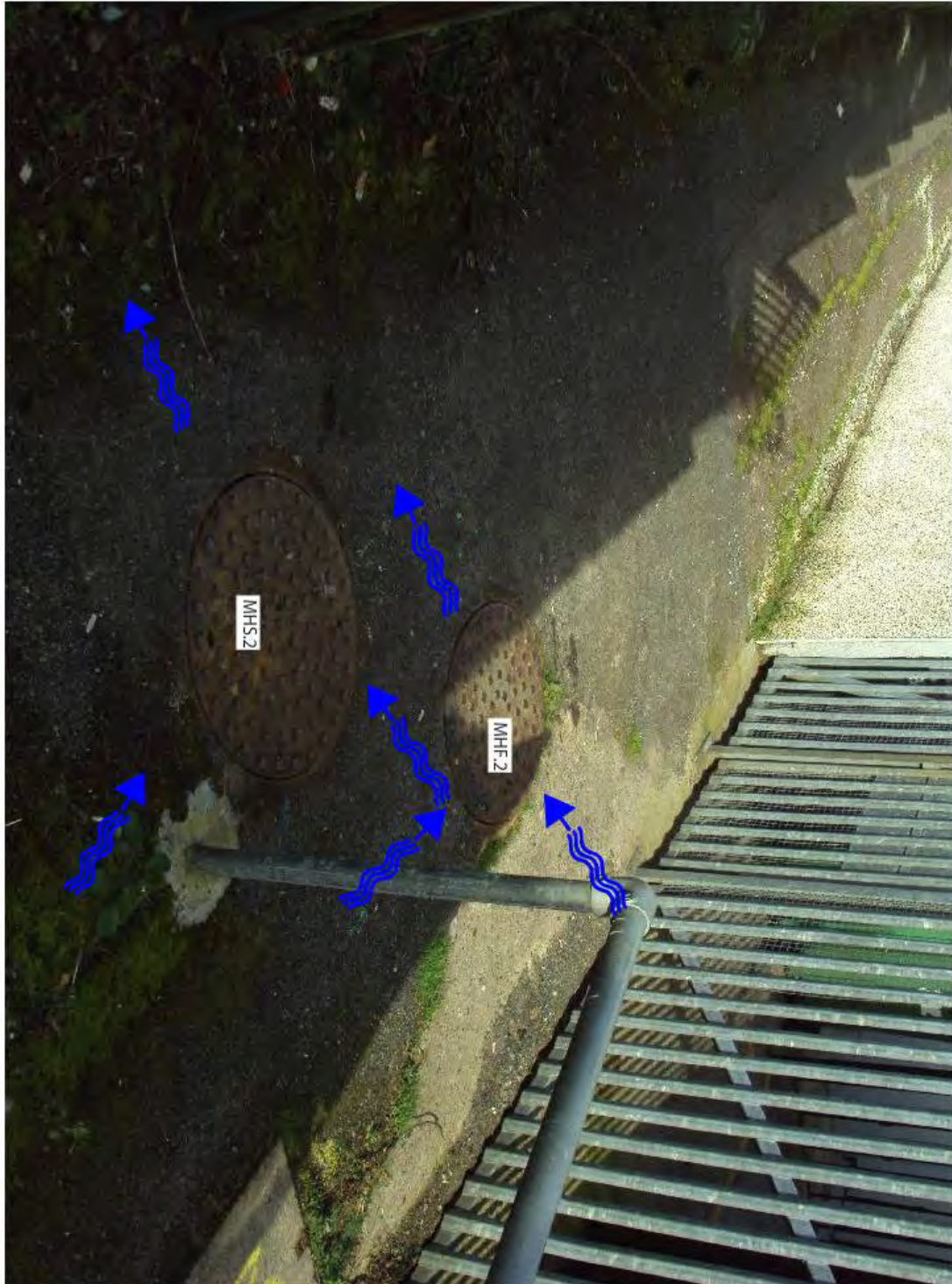
|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

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



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

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





|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

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



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

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



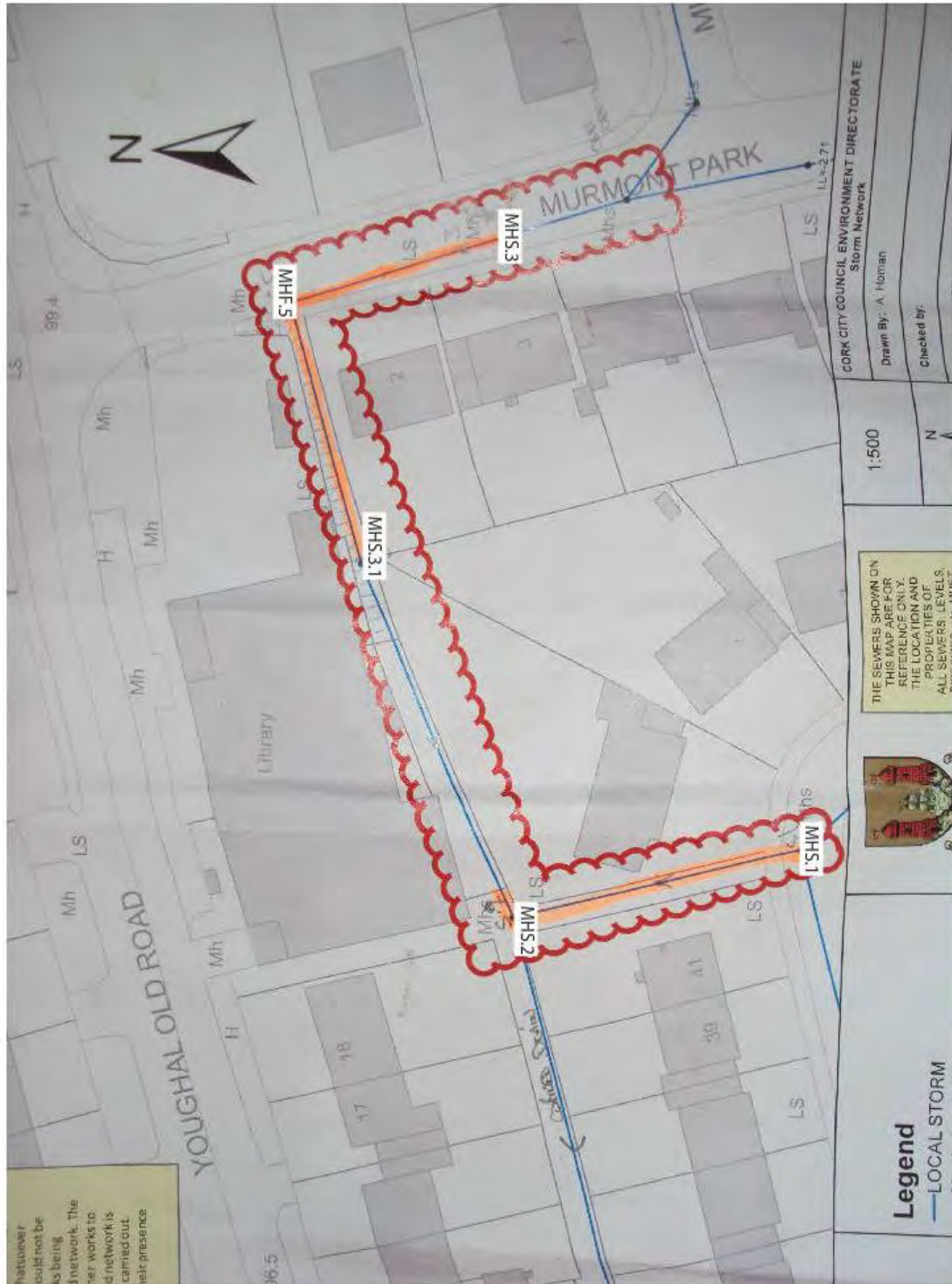
|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

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



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

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



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

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



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



**Manhole / Access Point: MHF.3 Internal**



**Manhole / Access Point: MHF.3 Location**



**Manhole / Access Point: MHF.4 Location**



**Manhole / Access Point: MHF.5 Location**



**Manhole / Access Point: MHF.5 Internal**



**Manhole / Access Point: MHF.1 Location**

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



**Manhole / Access Point: MHF.1 Internal**



**Manhole / Access Point: MHS.1 Internal**



**Manhole / Access Point: MHS.1 Location**



**Manhole / Access Point: MHF.2 Internal**



**Manhole / Access Point: MHF.2 Location**



**Manhole / Access Point: MHS.2 Internal**

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



**Manhole / Access Point: MHS.2 Location**



**Manhole / Access Point: MHC.1 Location**



**Manhole / Access Point: MHC.2 Location**



**Manhole / Access Point: MHC.2 Internal**



**Manhole / Access Point: MHC.3 Location**



**Manhole / Access Point: MHC.1 Internal**



|   |   |   |                                |  |
|---|---|---|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                        | Pipe Length Reference(PLR)<br><b>ROAD GULLYX</b>                                      | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/1</b>  | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>1</b>                             |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details  |                                |  |
| Purpose<br>Duty <b>Combined</b><br>Catchment  | Shape/Size <b>100mm</b><br>Material <b>EW</b><br>Category | Start MH <b>MHC.1</b><br>End MH <b>ROAD GULLY</b><br>Total length <b>14.55 metres</b> |                                |  |
| Scale <b>1:0.73</b><br>Direction <b>Upstream</b>  |   |   |                                |  |

M/H Ref:MHC.1 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade     |
|----------|------|---|---------|----------------|
| 0.00     | ST   | Start of Survey Length  | 4429333 | Comment / 0    |
| 0.00     | MH   | Start node type, manhole, reference MHC.1                                   | 4429334 | Comment / 0    |
| 0.00     | WL   | Water level 5% height/diameter  | 4429335 | Comment / 0    |
| 0.29     | CN   | Connection at 12 o'clock, diameter 100mm - Remark: EW                       | 4429336 | Comment / 0    |
| 0.47     | JDM  | Joint displaced medium  | 4429339 | Structural / 1 |
| 0.99     | JDM  | Joint displaced medium  | 4429340 | Structural / 1 |
| 2.94     | JDM  | Joint displaced medium  | 4429341 | Structural / 1 |
| 14.19    | JDM  | Joint displaced medium  | 4429348 | Structural / 1 |
| 14.49    | CN   | Connection at 12 o'clock, diameter 100mm - Remark: PVC.. GULLY IN CAR PARK. | 4429354 | Comment / 0    |
| 14.55    | MHF  | Manhole Finish (GULLY IN CAR PARK.)   | 4429365 | Comment / 0    |

M/H Ref:ROAD GULLY | I/L : metres

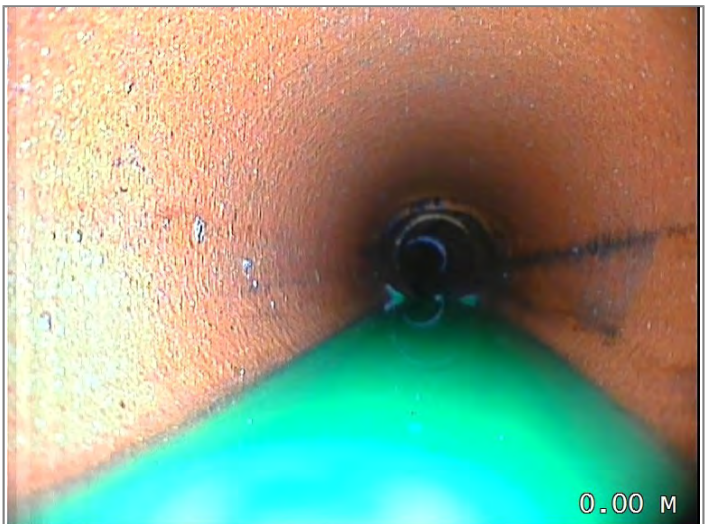
|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



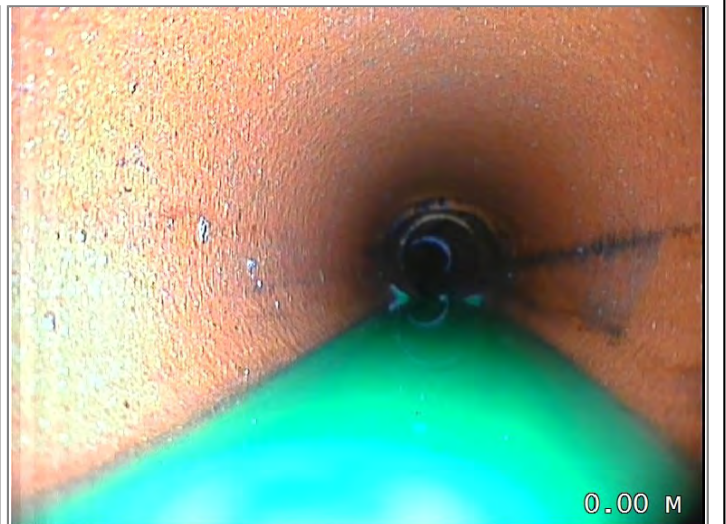
MHC.1 Location



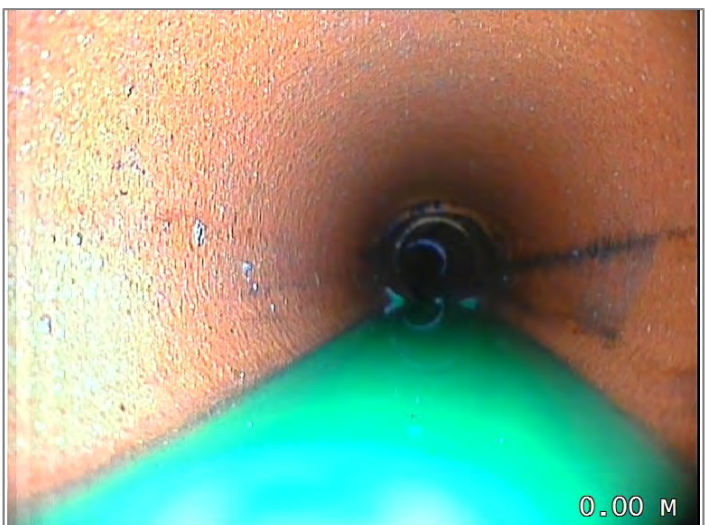
MHC.1 Internal



Start of Survey Length



Start node type, manhole, reference MHC.1



Water level 5% height/diameter



From: MHC.1 / To: ROAD GULLY  
Size: 100mm

Connection at 12 o'clock, diameter 100mm - Remark: EW

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Joint displaced medium



Joint displaced medium



Joint displaced medium



Joint displaced medium

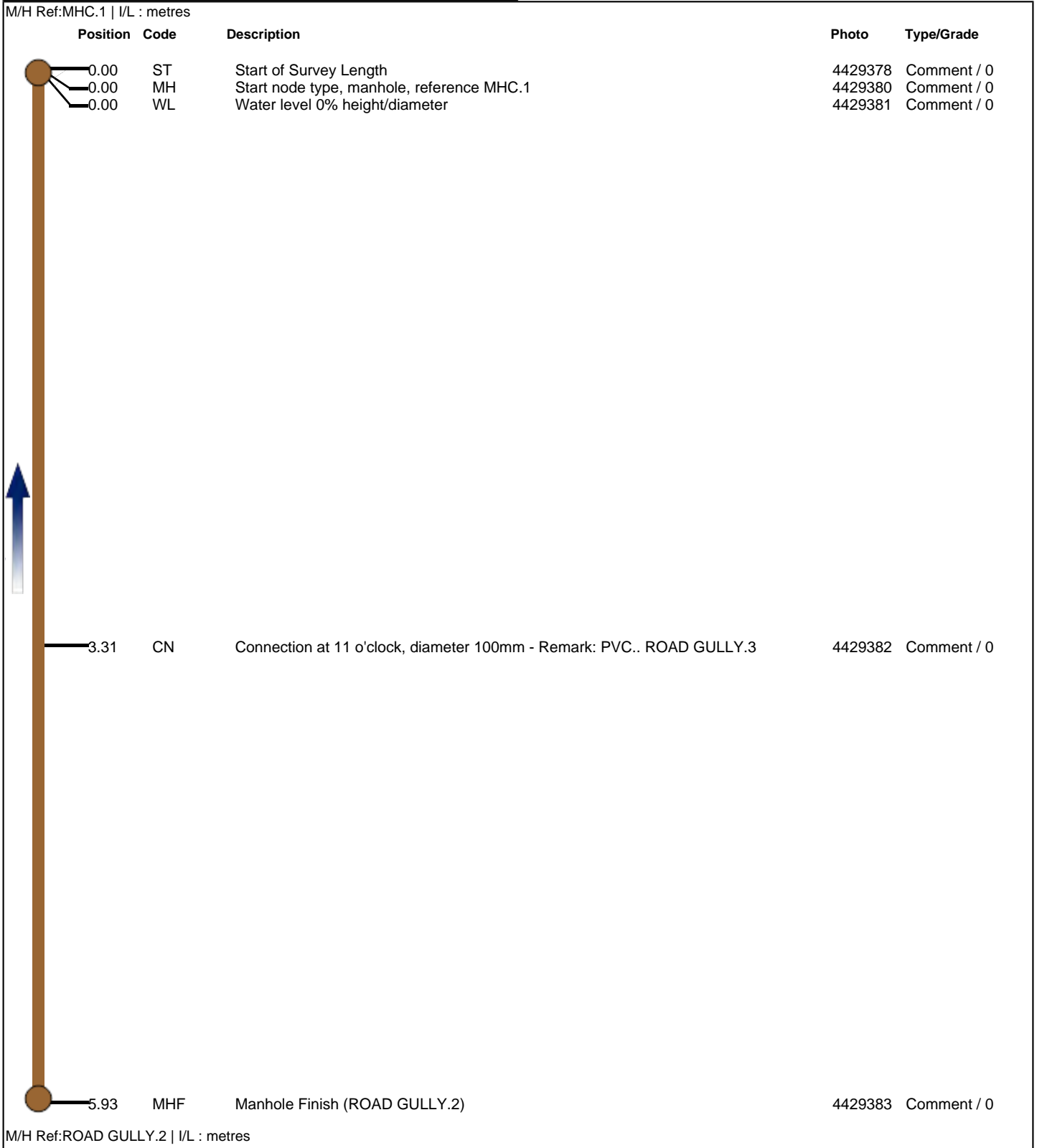


Connection at 12 o'clock, diameter 100mm - Remark: PVC.. GULLY IN CAR PARK.



Manhole Finish (GULLY IN CAR PARK.)

|   |  |  |                                |  |
|---|--|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                         | Pipe Length Reference(PLR)<br><b>ROAD GULLYX</b>                                       | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present   | Service Grade/Structural Grade<br><b>0/0</b>   | Base Unit<br><b>N11E42YTAA</b> | Section Number<br><b>2</b>                             |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |  | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Combined</b><br>Catchment  | Shape/Size <b>100mm</b><br>Material <b>PVC</b><br>Category | Start MH <b>MHC.1</b><br>End MH <b>ROAD GULLY.2</b><br>Total length <b>5.93 metres</b> |                                |  |
| Scale <b>1:0.26</b><br>Direction <b>Upstream</b>  |  |  |                                |  |



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHC.1 Location



MHC.1 Internal



0.00 M

Start of Survey Length



0.00 M

Start node type, manhole, reference MHC.1



0.00 M

Water level 0% height/diameter



From: MHC.1 / To: ROAD GULLY.2  
Size: 100mm

3.33 M

Connection at 11 o'clock, diameter 100mm - Remark: PVC.. ROAD GULLY.3

Job Number  
**Q299679 - 002**

Surveyed by (Operator)  
**BRIAN AHERN**

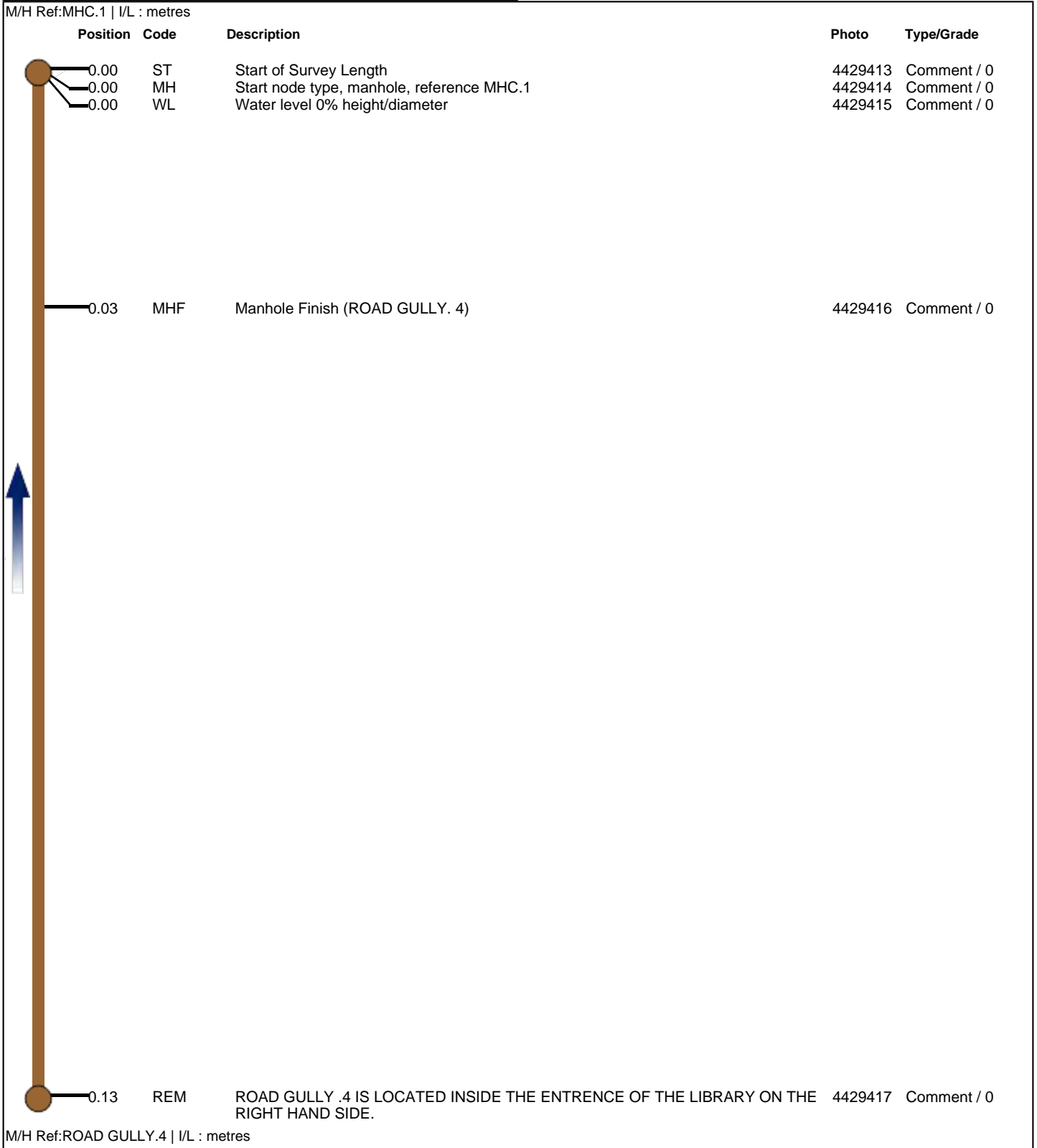
Base Unit  
**N11E42YTAA**

Date  
**30/09/2020**



Manhole Finish (ROAD GULLY.2)

|   |  |  |                                |  |
|---|--|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                         | Pipe Length Reference(PLR)<br><b>ROAD GULLYX</b>                                       | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present   | Service Grade/Structural Grade<br><b>0/0</b>   | Base Unit<br><b>N11E42YTAA</b> | Section Number<br><b>3</b>                             |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |  | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Combined</b><br>Catchment  | Shape/Size <b>100mm</b><br>Material <b>PVC</b><br>Category | Start MH <b>MHC.1</b><br>End MH <b>ROAD GULLY.4</b><br>Total length <b>0.13 metres</b> |                                |  |
| Scale <b>1:0.00</b><br>Direction <b>Upstream</b>  |  |  |                                |  |



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHC.1 Location



MHC.1 Internal



Start of Survey Length



Start node type, manhole, reference MHC.1



Water level 0% height/diameter



Manhole Finish (ROAD GULLY. 4)



Job Number  
**Q299679 - 002**

Surveyed by (Operator)  
**BRIAN AHERN**

Base Unit  
**N11E42YTAA**

Date  
**30/09/2020**



ROAD GULLY .4 IS LOCATED INSIDE THE ENTRENCE OF THE LIBRARY ON THE RIGHT HAND SIDE.

|   |   |  |                                |  |
|---|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                        | Pipe Length Reference(PLR)<br><b>MHC.1 X</b>                                     | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/4</b>                                     | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>4</b>                             |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Combined</b><br>Catchment  | Shape/Size <b>100mm</b><br>Material <b>EW</b><br>Category | Start MH <b>MHC.1</b><br>End MH <b>MHC.2</b><br>Total length <b>13.27 metres</b> |                                |  |
| Scale <b>1:0.68</b><br>Direction <b>Downstream</b>  |   |  |                                |  |

M/H Ref:MHC.1 | I/L : metres

| Position | Code | Description  | Photo   | Type/Grade     |
|----------|------|--|---------|----------------|
| 0.00     | ST   | Start of Survey Length   | 4429421 | Comment / 0    |
| 0.00     | MH   | Start node type, manhole, reference MHC.1  | 4429422 | Comment / 0    |
| 0.00     | WL   | Water level 0% height/diameter   | 4429423 | Comment / 0    |
| 0.60     | OJM  | Open joint medium  | 4429427 | Structural / 1 |
| 2.51     | JDM  | Joint displaced medium   | 4429428 | Structural / 1 |
| 3.48     | JDM  | Joint displaced medium   | 4429429 | Structural / 1 |
| 7.35     | MC   | Material of sewer changes at this point - Remark: PVC  | 4429433 | Comment / 0    |
| 9.74     | D    | Deformed sewer 10%   | 4429435 | Structural / 4 |
| 10.23    | D    | Deformed sewer 5%  | 4429436 | Structural / 2 |
| 13.27    | MHF  | Manhole Finish (MHC.2)   | 4429439 | Comment / 0    |
| 13.27    | REM  | MHC.1 IS LOCATED INSIDE THE GATE ON THE RIGHT HAND SIDE IN THE LIBRARY AND MHC.2 IS LOCATED ON THE FOOTPATH IN FRONT OF THE LIBRARY. | 4429450 | Comment / 0    |

M/H Ref:MHC.2 | I/L : metres

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHC.1 Location



MHC.1 Internal



Start of Survey Length





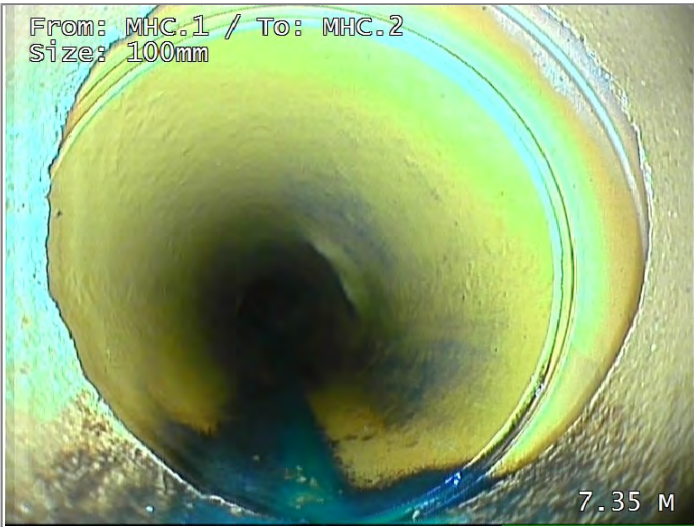
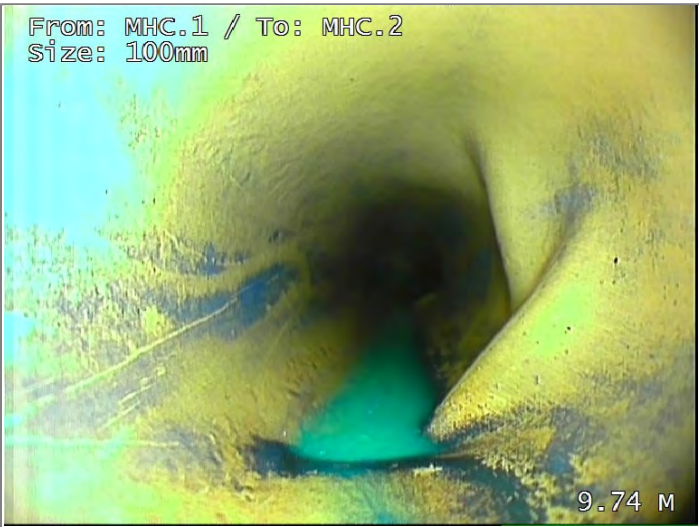
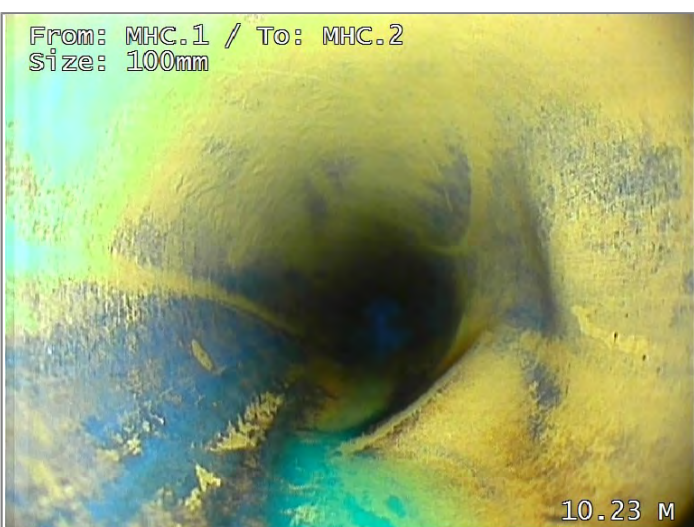

Start node type, manhole, reference MHC.1



Water level 0% height/diameter



Open joint medium

| Job Number<br>Q299679 - 002   | Surveyed by (Operator)<br>BRIAN AHERN  | Base Unit<br>N11E42YTAA | Date<br>30/09/2020 |
|---|--|-------------------------|--------------------|
| <p>From: MHC.1 / To: MHC.2<br/>Size: 100mm</p>  <p>2.51 M</p> <p>Joint displaced medium</p>                                 | <p>From: MHC.1 / To: MHC.2<br/>Size: 100mm</p>  <p>3.46 M</p> <p>Joint displaced medium</p>    |                         |                    |
| <p>From: MHC.1 / To: MHC.2<br/>Size: 100mm</p>  <p>7.35 M</p> <p>Material of sewer changes at this point - Remark: PVC</p> | <p>From: MHC.1 / To: MHC.2<br/>Size: 100mm</p>  <p>9.74 M</p> <p>Deformed sewer 10%</p>       |                         |                    |
| <p>From: MHC.1 / To: MHC.2<br/>Size: 100mm</p>  <p>10.23 M</p> <p>Deformed sewer 5%</p>                                   | <p>From: MHC.1 / To: MHC.2<br/>Size: 100mm</p>  <p>13.27 M</p> <p>Manhole Finish (MHC.2)</p> |                         |                    |

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHC.1 IS LOCATED INSIDE THE GATE ON THE RIGHT HAND SIDE IN THE LIBRARY AND MHC.2 IS LOCATED ON THE FOOTPATH IN FRONT OF THE LIBRARY.



MHC.2 Internal



MHC.2 Location

|   |   |  |                                |  |
|---|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHC.2 X</b>                                     | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/1</b>                                     | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>5</b>                             |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Combined</b><br>Catchment  | Shape/Size <b>300mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHC.2</b><br>End MH <b>MHC.3</b><br>Total length <b>25.63 metres</b> |                                |  |

Scale **1:1.31**  
Direction **Downstream**

M/H Ref:MHC.2 | I/L : metres

| Position | Code | Description                               | Photo   | Type/Grade     |
|----------|------|---|---------|----------------|
| 0.00     | ST   | Start of Survey Length                    | 4430114 | Comment / 0    |
| 0.00     | MH   | Start node type, manhole, reference MHC.2 | 4430115 | Comment / 0    |
| 0.00     | WL   | Water level 5% height/diameter            | 4430116 | Comment / 0    |
| 1.83     | JDM  | Joint displaced medium                    | 4430121 | Structural / 1 |
| 4.32     | JDM  | Joint displaced medium                    | 4430123 | Structural / 1 |
| 5.39     | LR   | Line of sewer deviates right              | 4430129 | Comment / 0    |
| 5.39     | JDM  | Joint displaced medium                    | 4430130 | Structural / 1 |
| 7.42     | JDM  | Joint displaced medium                    | 4430135 | Structural / 1 |
| 8.38     | JDM  | Joint displaced medium                    | 4430136 | Structural / 1 |
| 18.45    | JDM  | Joint displaced medium                    | 4430141 | Structural / 1 |
| 19.40    | JDM  | Joint displaced medium                    | 4430143 | Structural / 1 |
| 20.32    | JDM  | Joint displaced medium                    | 4430144 | Structural / 1 |
| 23.12    | JDM  | Joint displaced medium                    | 4430146 | Structural / 1 |
| 25.63    | MHF  | Manhole Finish (MHC.3)                    | 4430148 | Comment / 0    |
| 25.63    | REM  | BUIRED MH                                 | 4430152 | Comment / 0    |

M/H Ref:MHC.3 | I/L : metres

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHC.2 Location



MHC.2 Internal



Start of Survey Length



Start node type, manhole, reference MHC.2



Water level 5% height/diameter



From: MHC.2 / To: MHC.3  
Size: 300mm

Joint displaced medium

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Joint displaced medium



Line of sewer deviates right



Joint displaced medium



Joint displaced medium



Joint displaced medium



Joint displaced medium



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Joint displaced medium



Joint displaced medium



Joint displaced medium



Manhole Finish (MHC.3)



BUIRED MH



MHC.3 Location

|   |   |  |                                |  |
|---|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHC.3 X</b>                                     | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>3/0</b>                                     | Base Unit<br><b>N11E42YTAA</b> | Section Number<br><b>6</b>                             |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Combined</b><br>Catchment  | Shape/Size <b>300mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHC.3</b><br>End MH <b>MHC.4</b><br>Total length <b>30.43 metres</b> |                                |  |
| Scale <b>1:1.57</b><br>Direction <b>Downstream</b>  |   |  |                                |  |

M/H Ref:MHC.3 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade  |
|----------|------|---|---------|-------------|
| 0.00     | ST   | Start of Survey Length  | 4430165 | Comment / 0 |
| 0.00     | MH   | Start node type, manhole, reference MHC.3                             | 4430166 | Comment / 0 |
| 0.00     | WL   | Water level 5% height/diameter  | 4430167 | Comment / 0 |
|          |      |   |         |             |
| 26.88    | DE   | Debris 15% cross-sectional area loss                                  | 4430168 | Service / 3 |
| 30.01    | CN   | Connection at 9 o'clock, diameter 150mm                               | 4430176 | Comment / 0 |
| 30.01    | REM  | ROAD GULLY  | 4430184 | Comment / 0 |
| 30.43    | CNI  | Connection at 9 o'clock, diameter 150mm, intrusion 25mm               | 4430190 | Comment / 0 |
| 30.43    | SA   | Survey abandoned - Remark: CAMERA WILL NOT PASS CONNECTION INTRUSION. | 4430216 | Comment / 0 |

M/H Ref:MHC.4 | I/L : metres

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHC.3 Location



Start of Survey Length



Start node type, manhole, reference MHC.3



Water level 5% height/diameter



Debris 15% cross-sectional area loss



Connection at 9 o'clock, diameter 150mm

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



ROAD GULLY



Connection at 9 o'clock, diameter 150mm, intrusion 25mm



Survey abandoned - Remark: CAMERA WILL NOT PASS CONNECTION INTRUSION.

|   |   |   |                                |  |
|---|---|---|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>SOURCE X</b>                                     | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/0</b>                                      | Base Unit<br><b>N11E42YTAA</b> | Section Number<br><b>7</b>                             |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details  |                                |  |
| Purpose<br>Duty <b>Combined</b><br>Catchment  | Shape/Size <b>300mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHC.2</b><br>End MH <b>SOURCE</b><br>Total length <b>41.62 metres</b> |                                |  |
| Scale <b>1:2.15</b><br>Direction <b>Upstream</b>  |   |   |                                |  |

M/H Ref:MHC.2 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade  |
|----------|------|---|---------|-------------|
| 0.00     | ST   | Start of Survey Length  | 4431021 | Comment / 0 |
| 0.00     | MH   | Start node type, manhole, reference MHC.2   | 4431023 | Comment / 0 |
| 0.00     | WL   | Water level 5% height/diameter  | 4431025 | Comment / 0 |
| 41.62    | SA   | Survey abandoned - Remark: 15% DEBRIS + SILT IN LINE, VACTOR UNIT NEEDED TO DESILT LINES. | 4431064 | Comment / 0 |

M/H Ref:SOURCE | I/L : metres

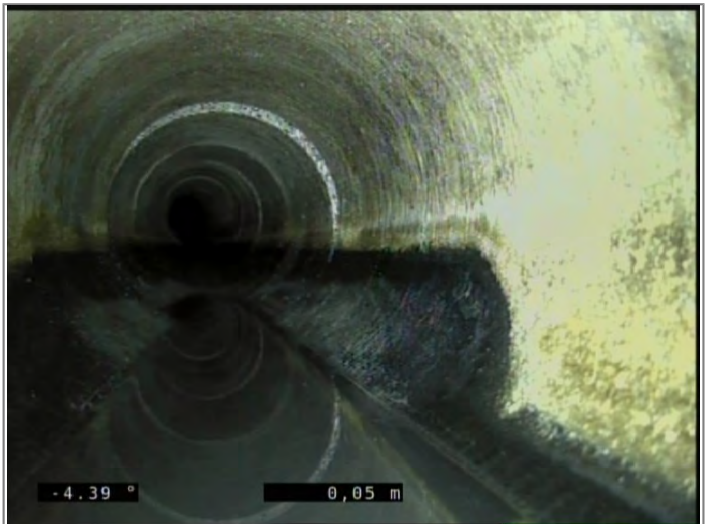
|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



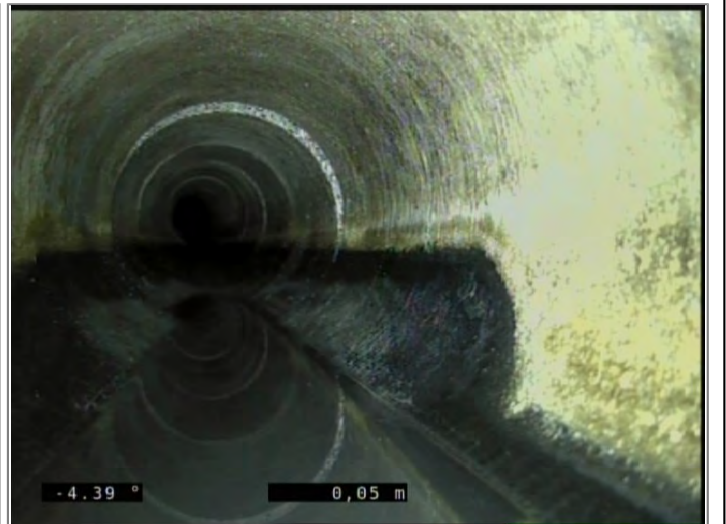
MHC.2 Location



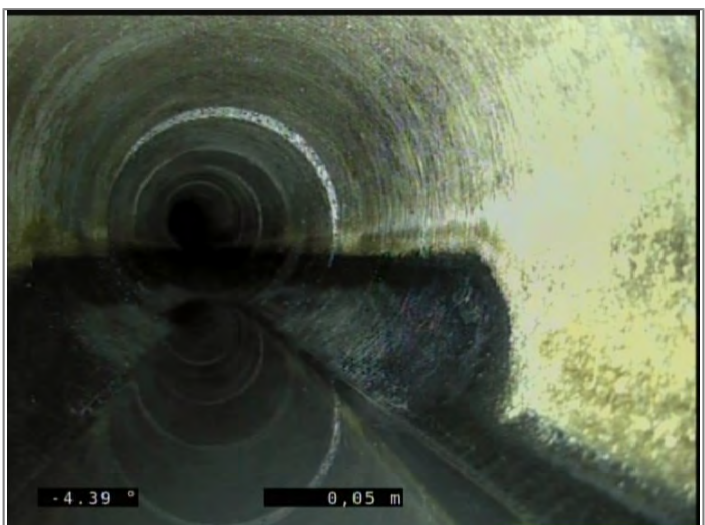
MHC.2 Internal



Start of Survey Length



Start node type, manhole, reference MHC.2



Water level 5% height/diameter



From: MHC.2 / To: SOURCE  
Size: 300mm

Survey abandoned - Remark: 15% DEBRIS + SILT IN LINE, VACTOR UNIT NEEDED TO DESILT LINES.

|   |   |  |                                |  |
|---|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHF.1 X</b>                                     | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/1</b>                                     | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>8</b>                             |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Foul</b><br>Catchment  | Shape/Size <b>225mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHF.1</b><br>End MH <b>MHF.2</b><br>Total length <b>31.88 metres</b> |                                |  |
| Scale <b>1:1.63</b><br>Direction <b>Downstream</b>  |   |  |                                |  |

M/H Ref:MHF.1 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade     |
|----------|------|---|---------|----------------|
| 0.00     | ST   | Start of Survey Length                                | 4431542 | Comment / 0    |
| 0.00     | MH   | Start node type, manhole, reference MHF.1             | 4431543 | Comment / 0    |
| 0.00     | WL   | Water level 5% height/diameter                        | 4431544 | Comment / 0    |
| 12.15    | CN   | Connection at 10 o'clock, diameter 100mm - Remark: EW | 4431550 | Comment / 0    |
| 21.97    | CN   | Connection at 10 o'clock, diameter 100mm - Remark: EW | 4431553 | Comment / 0    |
| 30.90    | JDM  | Joint displaced medium                                | 4431567 | Structural / 1 |
| 31.88    | JDM  | Joint displaced medium                                | 4431587 | Structural / 1 |
| 31.88    | LD   | Line of sewer deviates down                           | 4431590 | Comment / 0    |
| 31.88    | MHF  | Manhole Finish (MHF.2)                                | 4431592 | Comment / 0    |
| 31.88    | REM  | DROP SHAFT INTO MHF.2                                 | 4431595 | Comment / 0    |

M/H Ref:MHF.2 | I/L : metres

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHF.1 Location



MHF.1 Internal



Start of Survey Length



Start node type, manhole, reference MHF.1



Water level 5% height/diameter



Connection at 10 o'clock, diameter 100mm - Remark: EW



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Connection at 10 o'clock, diameter 100mm - Remark: EW



Joint displaced medium



Joint displaced medium



Line of sewer deviates down



Manhole Finish (MHF.2)



DROP SHAFT INTO MHF.2

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHF.2 Internal



MHF.2 Location

|   |   |   |                                |  |
|---|---|---|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHS.1 X</b>                                    | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/1</b>                                    | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>9</b>                             |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details  |                                |  |
| Purpose<br>Duty <b>Surface water</b><br>Catchment   | Shape/Size <b>225mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHS.1</b><br>End MH <b>MHS.2</b><br>Total length <b>33.4 metres</b> |                                |  |
| Scale <b>1:1.73</b><br>Direction <b>Downstream</b>  |   |   |                                |  |

M/H Ref:MHS.1 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade     |
|----------|------|---|---------|----------------|
| 0.00     | ST   | Start of Survey Length                                      | 4431639 | Comment / 0    |
| 0.00     | MH   | Start node type, manhole, reference MHS.1                   | 4431640 | Comment / 0    |
| 0.00     | WL   | Water level 5% height/diameter                              | 4431642 | Comment / 0    |
| 0.94     | LR   | Line of sewer deviates right                                | 4431650 | Comment / 0    |
| 22.93    | CN   | Connection at 10 o'clock, diameter 100mm - Remark: EW       | 4431652 | Comment / 0    |
| 26.27    | CN   | Connection at 12 o'clock, diameter 100mm - Remark: EW       | 4431664 | Comment / 0    |
| 31.38    | LR   | Line of sewer deviates right                                | 4431665 | Comment / 0    |
| 31.51    | JDM  | Joint displaced medium                                      | 4431667 | Structural / 1 |
| 32.54    | OJM  | Open joint medium   | 4431668 | Structural / 1 |
| 33.27    | JDM  | Joint displaced medium                                      | 4431669 | Structural / 1 |
| 33.40    | LD   | Line of sewer deviates down - Remark: DROR SHAFT INTO MHS.2 | 4431670 | Comment / 0    |
| 33.40    | MHF  | Manhole Finish (MHS.2)                                      | 4431671 | Comment / 0    |

M/H Ref:MHS.2 | I/L : metres

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHS.1 Location



MHS.1 Internal



Start of Survey Length



Start node type, manhole, reference MHS.1



Water level 5% height/diameter



Line of sewer deviates right

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Connection at 10 o'clock, diameter 100mm - Remark: EW



Connection at 12 o'clock, diameter 100mm - Remark: EW



Line of sewer deviates right



Joint displaced medium



Open joint medium



Joint displaced medium

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Line of sewer deviates down - Remark: DROR SHAFT INTO MHS.2



Manhole Finish (MHS.2)



MHS.2 Internal



MHS.2 Location

|   |   |  |                                |  |
|---|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHF.3 X</b>                                     | Date<br><b>30/09/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/1</b>                                     | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>10</b>                            |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Foul</b><br>Catchment  | Shape/Size <b>225mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHF.3</b><br>End MH <b>MHF.4</b><br>Total length <b>37.65 metres</b> |                                |  |

Scale **1:1.94**  
Direction **Downstream**

M/H Ref:MHF.3 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade     |
|----------|------|---|---------|----------------|
| 0.00     | ST   | Start of Survey Length                                      | 4431828 | Comment / 0    |
| 0.00     | MH   | Start node type, manhole, reference MHF.3                   | 4431830 | Comment / 0    |
| 0.00     | WL   | Water level 5% height/diameter                              | 4431831 | Comment / 0    |
| 0.25     | CNI  | Connection at 2 o'clock, diameter 100mm, intrusion 25mm     | 4431847 | Comment / 0    |
| 1.84     | JDM  | Joint displaced medium                                      | 4431838 | Structural / 1 |
| 2.77     | LD   | Line of sewer deviates down                                 | 4431839 | Comment / 0    |
| 8.98     | CN   | Connection at 9 o'clock, diameter 100mm - Remark: EW        | 4431850 | Comment / 0    |
| 23.02    | CN   | Connection at 9 o'clock, diameter 100mm - Remark: EW        | 4431851 | Comment / 0    |
| 36.45    | CN   | Connection at 10 o'clock, diameter 100mm                    | 4431860 | Comment / 0    |
| 36.62    | JDM  | Joint displaced medium                                      | 4431863 | Structural / 1 |
| 37.65    | LD   | Line of sewer deviates down - Remark: DROP SHAFT INTO MHF.4 | 4431867 | Comment / 0    |
| 37.65    | MHF  | Manhole Finish (MHF.4)                                      | 4431869 | Comment / 0    |

M/H Ref:MHF.4 | I/L : metres

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHF.3 Location



MHF.3 Internal



Start of Survey Length



Start node type, manhole, reference MHF.3



Water level 5% height/diameter



Connection at 2 o'clock, diameter 100mm, intrusion 25mm



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Joint displaced medium



Line of sewer deviates down



Connection at 9 o'clock, diameter 100mm - Remark: EW



Connection at 9 o'clock, diameter 100mm - Remark: EW



Connection at 10 o'clock, diameter 100mm



Joint displaced medium

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Line of sewer deviates down - Remark: DROP SHAFT INTO MHF.4



Manhole Finish (MHF.4)



MHF.4 Location

|   |   |  |                                |  |
|---|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHF.2 X</b>   | Date<br><b>01/10/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/0</b>   | Base Unit<br><b>N11E42YTAA</b> | Section Number<br><b>11</b>                            |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Foul</b><br>Catchment  | Shape/Size <b>225mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHF.2</b><br>End MH <b>OFF SITE.</b><br>Total length <b>10.31 metres</b> |                                |  |
| Scale <b>1:0.52</b><br>Direction <b>Downstream</b>  |   |  |                                |  |

M/H Ref:MHF.2 | I/L : metres

| Position | Code | Description  | Photo   | Type/Grade  |
|----------|------|--|---------|-------------|
| 0.00     | ST   | Start of Survey Length                               | 4433437 | Comment / 0 |
| 0.00     | MH   | Start node type, manhole, reference MHS.2            | 4433440 | Comment / 0 |
| 0.00     | WL   | Water level 5% height/diameter                       | 4433442 | Comment / 0 |
| 9.75     | CN   | Connection at 2 o'clock, diameter 100mm - Remark: EW | 4433450 | Comment / 0 |
| 10.31    | MHF  | Manhole Finish (OFF SITE.)                           | 4433451 | Comment / 0 |

M/H Ref:OFF SITE. | I/L : metres

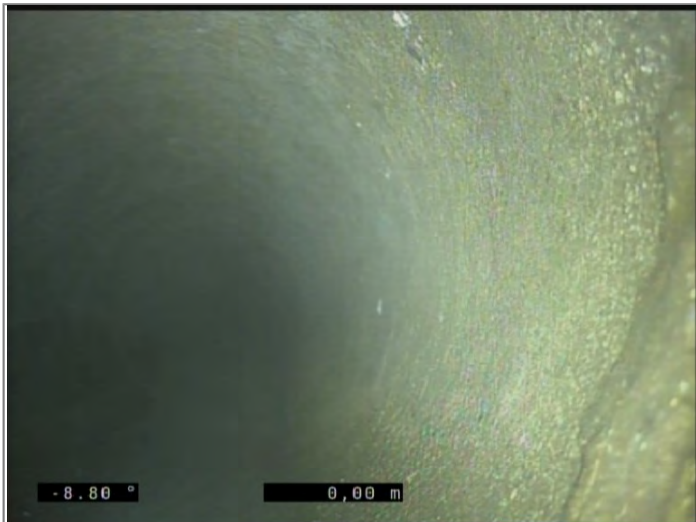
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|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>01/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



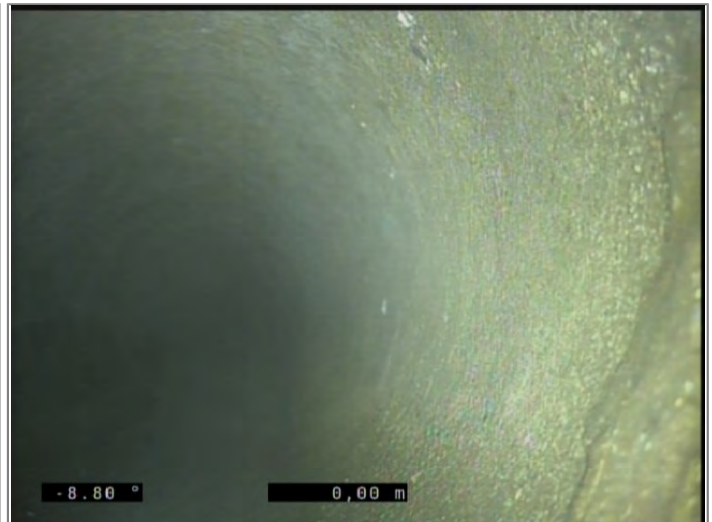
MHF.2 Location



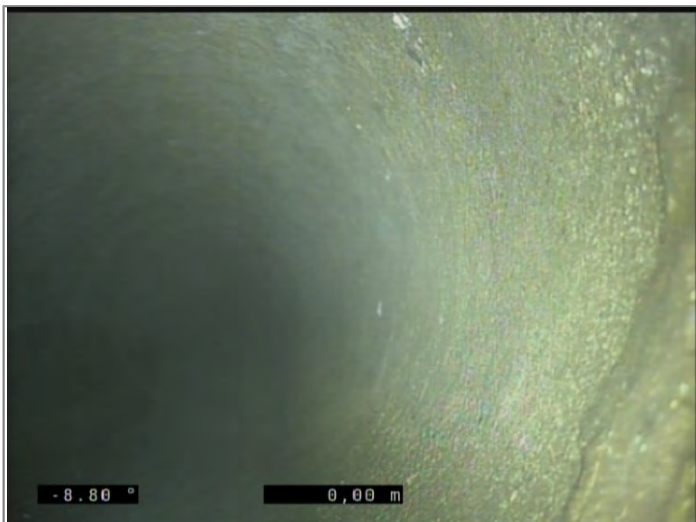
MHF.2 Internal



Start of Survey Length



Start node type, manhole, reference MHS.2



Water level 5% height/diameter



Connection at 2 o'clock, diameter 100mm - Remark: EW

Job Number  
**Q299679 - 002**

Surveyed by (Operator)  
**BRIAN AHERN**

Base Unit  
**N11E42YTAA**

Date  
**01/10/2020**

From: MHS.2 / To: OFF SITE.  
Size: 225mm



Manhole Finish (OFF SITE.)

|   |   |   |                                |  |
|---|---|---|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHF.2.1 X</b>                                    | Date<br><b>01/10/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>4 - Showers</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/0</b>                                      | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>12</b>                            |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details  |                                |  |
| Purpose<br>Duty <b>Foul</b><br>Catchment  | Shape/Size <b>225mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHF.2</b><br>End MH <b>MHF.2.1</b><br>Total length <b>8.29 metres</b> |                                |  |
| Scale <b>1:0.42</b><br>Direction <b>Upstream</b>  |   |   |                                |  |

M/H Ref:MHF.2 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade  |
|----------|------|---|---------|-------------|
| 0.00     | ST   | Start of Survey Length                                    | 4433706 | Comment / 0 |
| 0.00     | MH   | Start node type, manhole, reference MHF.2                 | 4433712 | Comment / 0 |
| 0.00     | WL   | Water level 10% height/diameter                           | 4433765 | Comment / 0 |
|          |      |   |         |             |
| 8.29     | CNI  | Connection at 11 o'clock, diameter 100mm, intrusion 120mm | 4433807 | Comment / 0 |
| 8.29     | SA   | Survey abandoned - Remark: CAMERA WILL NOT PASS INTRUSION | 4433814 | Comment / 0 |

M/H Ref:MHF.2.1 | I/L : metres

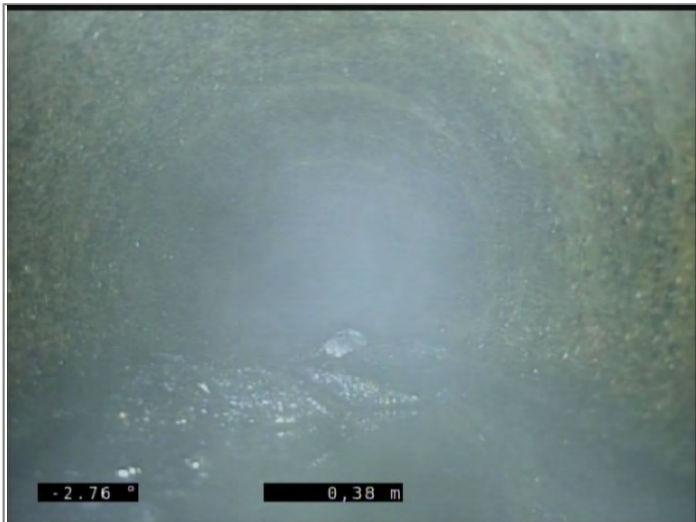
|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>01/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHF.2 Location



MHF.2 Internal



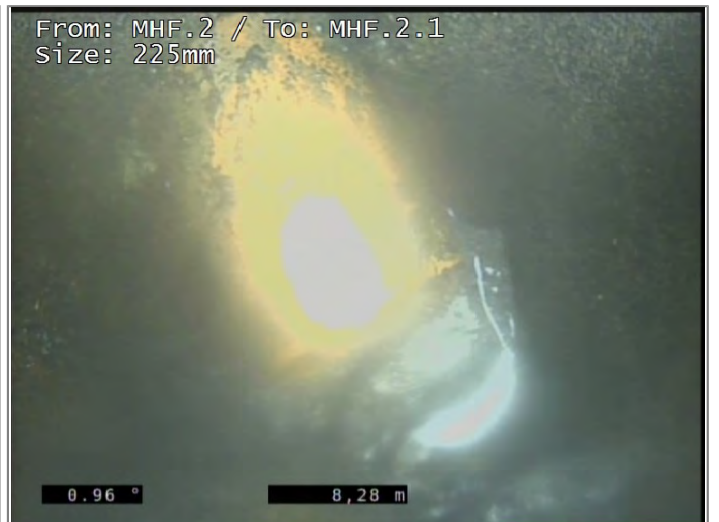
Start of Survey Length



Start node type, manhole, reference MHF.2



Water level 10% height/diameter



Connection at 11 o'clock, diameter 100mm, intrusion 120mm

Job Number  
**Q299679 - 002**

Surveyed by (Operator)  
**BRIAN AHERN**

Base Unit  
**N11E42YTAA**

Date  
**01/10/2020**

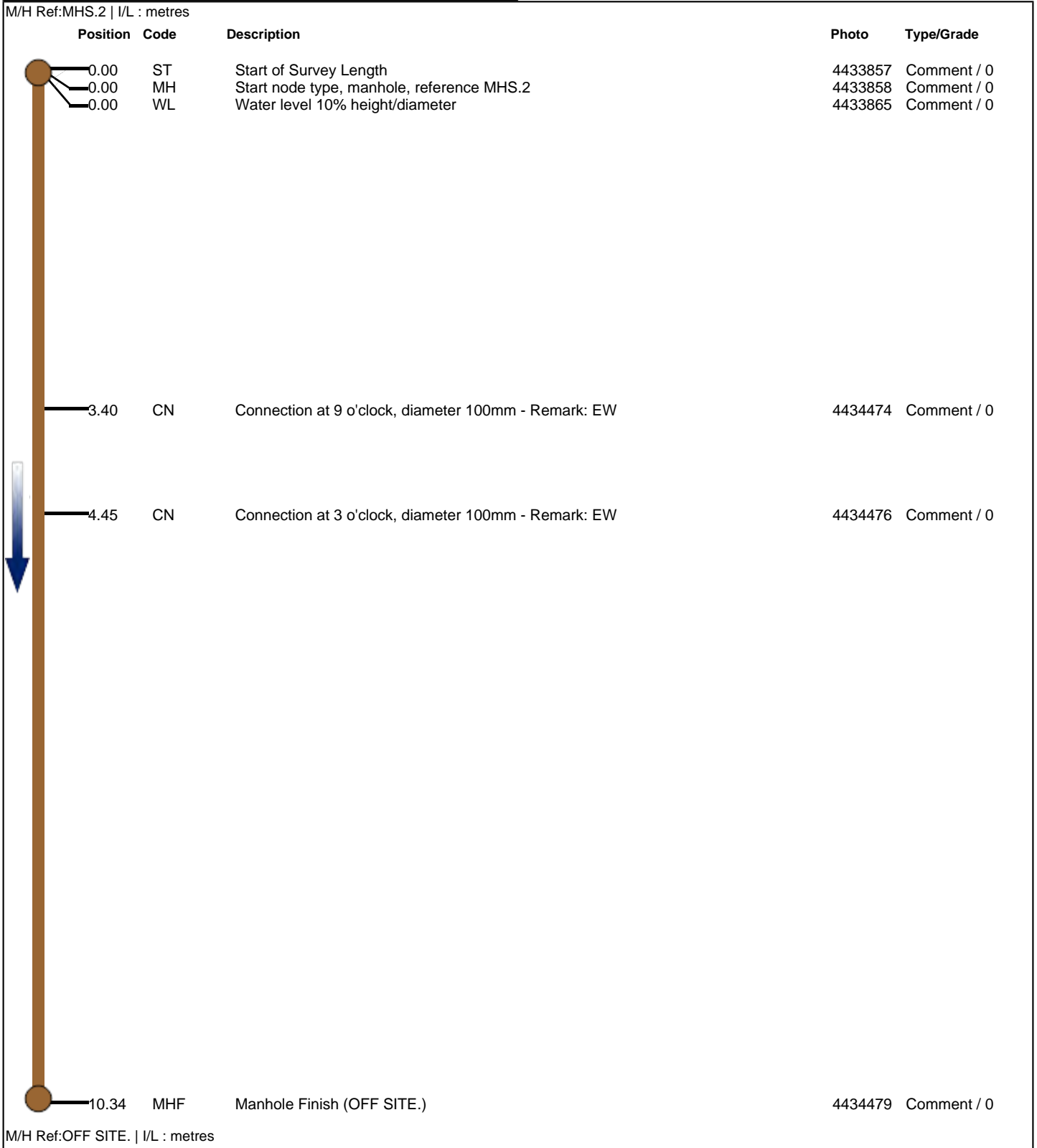
From: MHF.2 / To: MHF.2.1  
Size: 225mm



Survey abandoned - Remark: CAMERA WILL NOT PASS INTRUSION



|  |   |  |                                |  |
|--|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>       | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHS.2 X</b>   | Date<br><b>01/10/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>2 - Heavy Rain</b>                   | Customer Present  | Service Grade/Structural Grade<br><b>0/0</b>   | Base Unit<br><b>N11E42YTAA</b> | Section Number<br><b>13</b>                            |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b> |   | Division   |                                |  |
| Place <b>MAYFIELD,</b>                             |   | District   |                                |  |
| Location <b>CORK.</b>                              |   | Location Details   |                                |  |
| Purpose<br>Duty <b>Surface water</b><br>Catchment  | Shape/Size <b>300mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHS.2</b><br>End MH <b>OFF SITE.</b><br>Total length <b>10.34 metres</b> |                                |  |
| Scale <b>1:0.52</b><br>Direction <b>Downstream</b> |   |  |                                |  |



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>01/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHS.2 Location



MHS.2 Internal



Start of Survey Length



Start node type, manhole, reference MHS.2



Water level 10% height/diameter



From: MHS.2 / To: OFF SITE.  
Size: 300mm  
Connection at 9 o'clock, diameter 100mm - Remark: EW

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>01/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Connection at 3 o'clock, diameter 100mm - Remark: EW



Manhole Finish (OFF SITE.)

|   |   |   |                                |  |
|---|---|---|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHS.3 X</b>                                    | Date<br><b>01/10/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>2 - Heavy Rain</b>  | Customer Present  | Service Grade/Structural Grade<br><b>0/0</b>                                    | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>14</b>                            |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details  |                                |  |
| Purpose<br>Duty <b>Surface water</b><br>Catchment   | Shape/Size <b>300mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHS.2</b><br>End MH <b>MHS.3</b><br>Total length <b>5.21 metres</b> |                                |  |
| Scale <b>1:0.26</b><br>Direction <b>Upstream</b>  |   |   |                                |  |

M/H Ref:MHS.2 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade  |
|----------|------|---|---------|-------------|
| 0.00     | ST   | Start of Survey Length  | 4434537 | Comment / 0 |
| 0.00     | MH   | Start node type, manhole, reference MHS.2   | 4434538 | Comment / 0 |
| 0.00     | WL   | Water level 15% height/diameter   | 4434540 | Comment / 0 |
| 2.37     | WL   | Water level 50% height/diameter   | 4434544 | Comment / 0 |
| 5.21     | SA   | Survey abandoned - Remark: CAMERA WILL NOT TRAVEL.. SILT + DEBRIS IN LINE. DRAIN NEEDS TO BE JETTED WITH A VACTOR UNIT. | 4434577 | Comment / 0 |

M/H Ref:MHS.3 | I/L : metres

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>01/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHS.2 Location



MHS.2 Internal



Start of Survey Length



Start node type, manhole, reference MHS.2



Water level 15% height/diameter



Water level 50% height/diameter

Job Number  
**Q299679 - 002**

Surveyed by (Operator)  
**BRIAN AHERN**

Base Unit  
**N11E42YTAA**

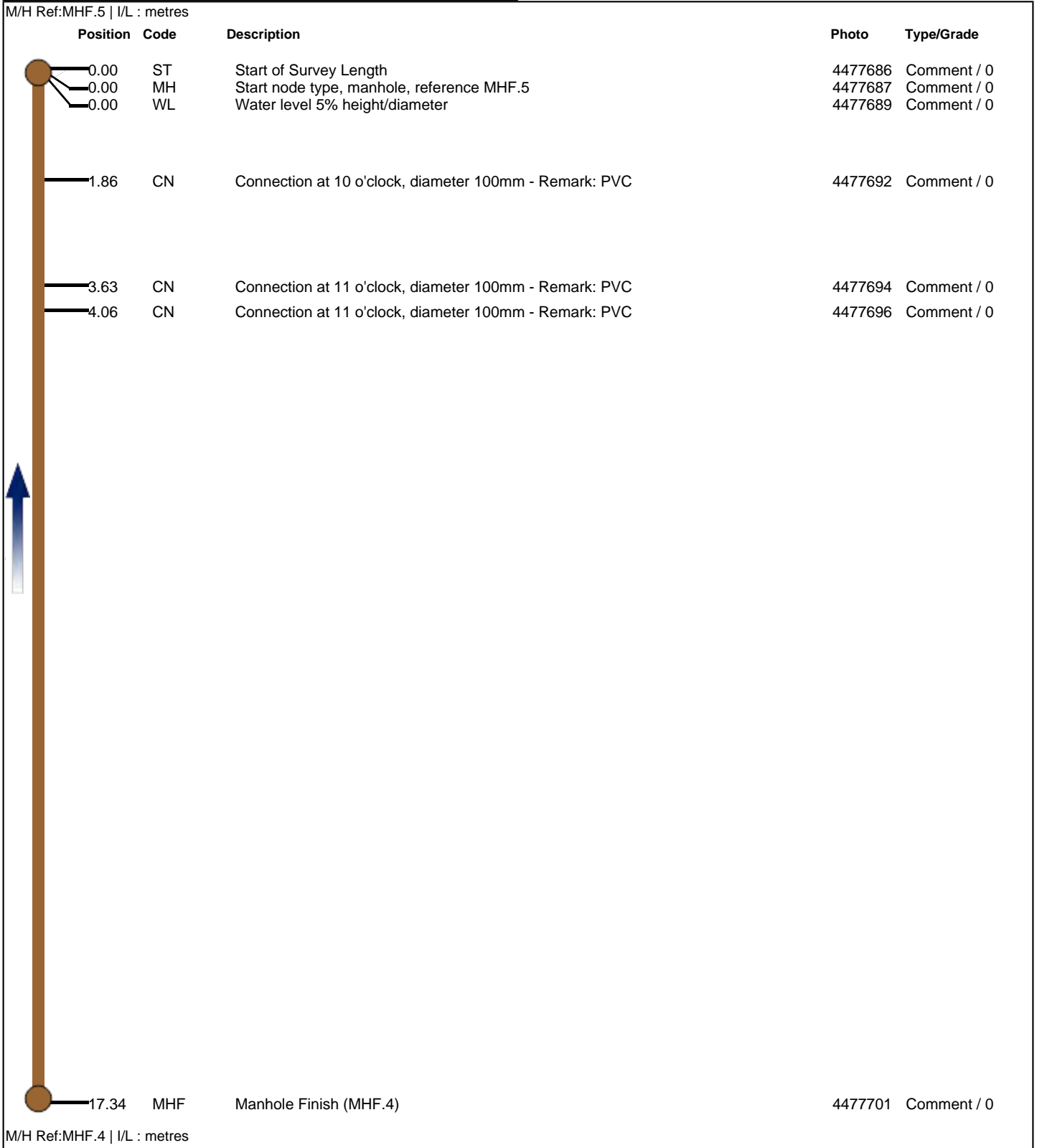
Date  
**01/10/2020**

From: MHS.2 / To: MHS.3  
Size: 300mm



Survey abandoned - Remark: CAMERA WILL NOT TRAVEL.. SILT +  
DEBRIS IN LINE. DRAIN NEEDS TO BE JETTED WITH A VACTOR  
UNIT.

|   |   |  |                                |  |
|---|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHF.4 X</b>                                     | Date<br><b>15/10/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>1 - Dry</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/0</b>                                     | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>15</b>                            |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Foul</b><br>Catchment  | Shape/Size <b>225mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHF.5</b><br>End MH <b>MHF.4</b><br>Total length <b>17.34 metres</b> |                                |  |
| Scale <b>1:0.89</b><br>Direction <b>Upstream</b>  |   |  |                                |  |



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>15/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHF.5 Location



MHF.5 Internal



Start of Survey Length



Start node type, manhole, reference MHF.5



Water level 5% height/diameter



Connection at 10 o'clock, diameter 100mm - Remark: PVC



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>15/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Connection at 11 o'clock, diameter 100mm - Remark: PVC



Connection at 11 o'clock, diameter 100mm - Remark: PVC



Manhole Finish (MHF.4)



MHF.4 Location

|   |   |   |                                |  |
|---|---|---|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MH X</b>                                     | Date<br><b>15/10/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>1 - Dry</b>   | Customer Present  | Service Grade/Structural Grade<br><b>0/0</b>                                  | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>16</b>                            |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details                                      |                                |  |
| Purpose<br>Duty <b>Foul</b><br>Catchment  | Shape/Size <b>225mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHF.5</b><br>End MH <b>MH</b><br>Total length <b>23.04 metres</b> |                                |  |
| Scale <b>1:1.21</b><br>Direction <b>Upstream</b>  |   |   |                                |  |

M/H Ref:MHF.5 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade  |
|----------|------|---|---------|-------------|
| 0.00     | ST   | Start of Survey Length                                | 4477711 | Comment / 0 |
| 0.00     | MH   | Start node type, manhole, reference MHF.5             | 4477713 | Comment / 0 |
| 0.00     | WL   | Water level 0% height/diameter                        | 4477714 | Comment / 0 |
| 0.83     | CN   | Connection at 1 o'clock, diameter 100mm - Remark: PVC | 4477716 | Comment / 0 |
| 14.63    | CN   | Connection at 3 o'clock, diameter 100mm - Remark: EW  | 4477721 | Comment / 0 |
| 23.04    | SA   | Survey abandoned - Remark: CAMERA WILL NOT TRAVEL.    | 4477791 | Comment / 0 |

M/H Ref:MH | I/L : metres

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>15/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHF.5 Location



MHF.5 Internal



Start of Survey Length



Start node type, manhole, reference MHF.5



Water level 0% height/diameter



Connection at 1 o'clock, diameter 100mm - Remark: PVC

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>15/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Connection at 3 o'clock, diameter 100mm - Remark: EW



Survey abandoned - Remark: CAMERA WILL NOT TRAVEL.

|   |   |  |                                |  |
|---|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHF.5 X</b>                                       | Date<br><b>15/10/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>1 - Dry</b>   | Customer Present  | Service Grade/Structural Grade<br><b>4/0</b>                                       | Base Unit<br><b>N1IE42YTAA</b> | Section Number<br><b>17</b>                            |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Foul</b><br>Catchment  | Shape/Size <b>225mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHF.5</b><br>End MH <b>MHF.2.1</b><br>Total length <b>33.24 metres</b> |                                |  |
| Scale <b>1:1.73</b><br>Direction <b>Downstream</b>  |   |  |                                |  |

M/H Ref:MHF.5 | I/L : metres

| Position | Code | Description   | Photo   | Type/Grade  |
|----------|------|---|---------|-------------|
| 0.00     | ST   | Start of Survey Length  | 4477824 | Comment / 0 |
| 0.00     | MH   | Start node type, manhole, reference MHF.5   | 4477825 | Comment / 0 |
| 0.00     | WL   | Water level 5% height/diameter  | 4477826 | Comment / 0 |
| 15.51    | WL   | Water level 10% height/diameter   | 4477831 | Comment / 0 |
| 23.19    | WL   | Water level 5% height/diameter  | 4477837 | Comment / 0 |
| 31.02    | LL   | Line of sewer deviates left   | 4477841 | Comment / 0 |
| 33.24    | DE   | Debris 40% cross-sectional area loss - Remark: LINE WOULD NEED TO BE HIGH JETTED AND DEBRIS REMOVED FROM DRAIN TO CARRY OUT THE REST OF THE SURVEY. | 4477867 | Service / 4 |

M/H Ref:MHF.2.1 | I/L : metres

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>15/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHF.5 Location



MHF.5 Internal



Start of Survey Length



Start node type, manhole, reference MHF.5



Water level 5% height/diameter



Water level 10% height/diameter

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>15/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Water level 5% height/diameter



Line of sewer deviates left



Debris 40% cross-sectional area loss - Remark: LINE WOULD NEED TO BE HIGH JETTED AND DEBRIS REMOVED FROM DRAIN TO CARRY OUT THE REST OF THE SURVEY.

|   |   |  |                                |  |
|---|---|--|--------------------------------|--|
| Surveyed by (Operator)<br><b>BRIAN AHERN</b>  | Job Number<br><b>Q299679 - 002</b>                              | Pipe Length Reference(PLR)<br><b>MHF.5 X</b>                                       | Date<br><b>15/10/2020</b>      | Pre Cleaned<br><b>Flushed through to enable survey</b> |
| Weather<br><b>1 - Dry</b>   | Customer Present  | Service Grade/Structural Grade<br><b>3/0</b>                                       | Base Unit<br><b>N11E42YTAA</b> | Section Number<br><b>18</b>                            |
| Road <b>MAYFIELD LIBRARY AND ST.JOSEPHS CENTRE</b><br>Place <b>MAYFIELD,</b><br>Location <b>CORK.</b> |   | Division<br>District<br>Location Details   |                                |  |
| Purpose<br>Duty <b>Foul</b><br>Catchment  | Shape/Size <b>225mm</b><br>Material <b>Concrete</b><br>Category | Start MH <b>MHF.5</b><br>End MH <b>MHS.3.1</b><br>Total length <b>28.71 metres</b> |                                |  |
| Scale <b>1:1.47</b><br>Direction <b>Downstream</b>  |   |  |                                |  |

M/H Ref:MHF.5 | I/L : metres

| Position | Code | Description  | Photo   | Type/Grade  |
|----------|------|--|---------|-------------|
| 0.00     | ST   | Start of Survey Length   | 4477995 | Comment / 0 |
| 0.00     | MH   | Start node type, manhole, reference MHF.5  | 4477997 | Comment / 0 |
| 0.00     | WL   | Water level 5% height/diameter   | 4477999 | Comment / 0 |
| 0.86     | REM  | FOUL IN STORM DRAIN.   | 4478016 | Comment / 0 |
| 2.67     | DE   | Debris 10% cross-sectional area loss   | 4478019 | Service / 3 |
| 4.63     | WL   | Water level 5% height/diameter   | 4478022 | Comment / 0 |
| 4.64     | DE   | Debris 0% cross-sectional area loss  | 4478020 | Comment / 0 |
| 25.97    | CU   | Camera under water   | 4478032 | Comment / 0 |
| 28.71    | SA   | Survey abandoned - Remark: CAMERA WILL NOT TRAVEL.. DEBRIS / SILT 30%.. LINE WOULD NEED TO BE HIGH JETTED AND DEBRIS REMOVED FROM DRAIN TO CARRY OUT THE REST OF THE SURVEY. | 4478054 | Comment / 0 |

M/H Ref:MHS.3.1 | I/L : metres



|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>15/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



MHF.5 Location



MHF.5 Internal



Start of Survey Length



Start node type, manhole, reference MHF.5



Water level 5% height/diameter



From: MHF.5 / To: MHS.3.1  
Size: 225mm  
FOUL IN STORM DRAIN.

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>15/10/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|



Debris 10% cross-sectional area loss



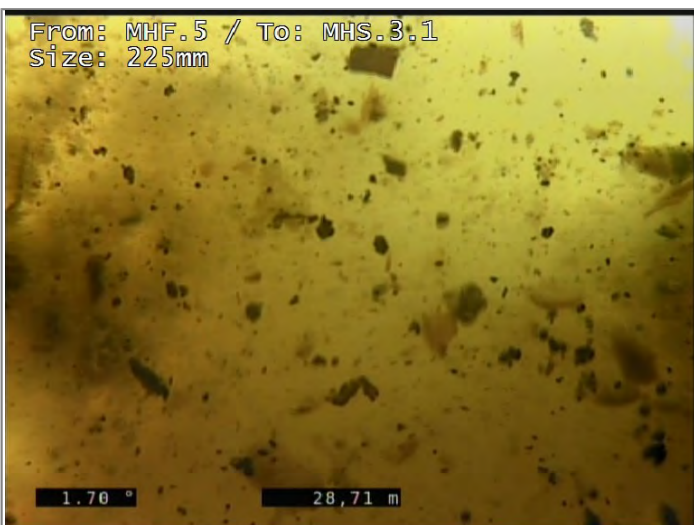
Water level 5% height/diameter



Debris 0% cross-sectional area loss



Camera under water



Survey abandoned - Remark: CAMERA WILL NOT TRAVEL.. DEBRIS / SILT 30%.. LINE WOULD NEED TO BE HIGH JETTED AND DEBRIS REMOVED FROM DRAIN TO CARRY OUT THE REST OF THE SURVEY.

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

**Job Information**

Total Distance Surveyed: **370.97 metres**  
 Engineer: **BRIAN AHERN**  
 Number of Surveys: **18**  
 Number of Surveys grade 4 or above: **1**

**Section 1 Overview (30/09/2020)**

Manholes: **MHC.1 to ROAD GULLY**  
 Pipe Length: **14.55 metres**  
 Structural Grade: **1**  
 Service Grade: **0**  
 Material: **EW**  
 Pipe Size: **100mm**  
 Use: **Combined**

**Section 2 Overview (30/09/2020)**

Manholes: **MHC.1 to ROAD GULLY.2**  
 Pipe Length: **5.93 metres**  
 Structural Grade: **0**  
 Service Grade: **0**  
 Material: **PVC**  
 Pipe Size: **100mm**  
 Use: **Combined**

ROAD GULLIES, 1,2,3 ARE LOCATED IN THE CAR PARK AREA.

**Section 3 Overview (30/09/2020)**

Manholes: **MHC.1 to ROAD GULLY.4**  
 Pipe Length: **0.13 metres**  
 Structural Grade: **0**  
 Service Grade: **0**  
 Material: **PVC**  
 Pipe Size: **100mm**  
 Use: **Combined**

**Section 4 Overview (30/09/2020)**

Manholes: **MHC.1 to MHC.2**  
 Pipe Length: **13.27 metres**  
 Structural Grade: **4**  
 Service Grade: **0**  
 Material: **EW**  
 Pipe Size: **100mm**  
 Use: **Combined**

**Section 5 Overview (30/09/2020)**

Manholes: **MHC.2 to MHC.3**  
 Pipe Length: **25.63 metres**  
 Structural Grade: **1**  
 Service Grade: **0**  
 Material: **Concrete**  
 Pipe Size: **300mm**  
 Use: **Combined**

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

**Section 6 Overview (30/09/2020)**

Manholes: **MHC.3 to MHC.4**  
Pipe Length: **30.43 metres**  
Structural Grade: **0**  
Service Grade: **3**  
Material: **Concrete**  
Pipe Size: **300mm**  
Use: **Combined**

**Section 7 Overview (30/09/2020)**

Manholes: **MHC.2 to SOURCE**  
Pipe Length: **41.62 metres**  
Structural Grade: **0**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **300mm**  
Use: **Combined**

**Section 8 Overview (30/09/2020)**

Manholes: **MHF.1 to MHF.2**  
Pipe Length: **31.88 metres**  
Structural Grade: **1**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **225mm**  
Use: **Foul**

**Section 9 Overview (30/09/2020)**

Manholes: **MHS.1 to MHS.2**  
Pipe Length: **33.4 metres**  
Structural Grade: **1**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **225mm**  
Use: **Surface water**

**Section 10 Overview (30/09/2020)**

Manholes: **MHF.3 to MHF.4**  
Pipe Length: **37.65 metres**  
Structural Grade: **1**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **225mm**  
Use: **Foul**

**Section 11 Overview (01/10/2020)**

Manholes: **MHF.2 to OFF SITE.**  
Pipe Length: **10.31 metres**  
Structural Grade: **0**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **225mm**  
Use: **Foul**

|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

**Section 12 Overview (01/10/2020)**

Manholes: **MHF.2 to MHF.2.1**  
Pipe Length: **8.29 metres**  
Structural Grade: **0**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **225mm**  
Use: **Foul**

**Section 13 Overview (01/10/2020)**

Manholes: **MHS.2 to OFF SITE.**  
Pipe Length: **10.34 metres**  
Structural Grade: **0**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **300mm**  
Use: **Surface water**

**Section 14 Overview (01/10/2020)**

Manholes: **MHS.2 to MHS.3**  
Pipe Length: **5.21 metres**  
Structural Grade: **0**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **300mm**  
Use: **Surface water**

**Section 15 Overview (15/10/2020)**

Manholes: **MHF.5 to MHF.4**  
Pipe Length: **17.34 metres**  
Structural Grade: **0**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **225mm**  
Use: **Foul**

**Section 16 Overview (15/10/2020)**

Manholes: **MHF.5 to MH**  
Pipe Length: **23.04 metres**  
Structural Grade: **0**  
Service Grade: **0**  
Material: **Concrete**  
Pipe Size: **225mm**  
Use: **Foul**

**Section 17 Overview (15/10/2020)**


Manholes: **MHF.5 to MHF.2.1**  
Pipe Length: **33.24 metres**  
Structural Grade: **0**  
Service Grade: **4**  
Material: **Concrete**  
Pipe Size: **225mm**  
Use: **Foul**

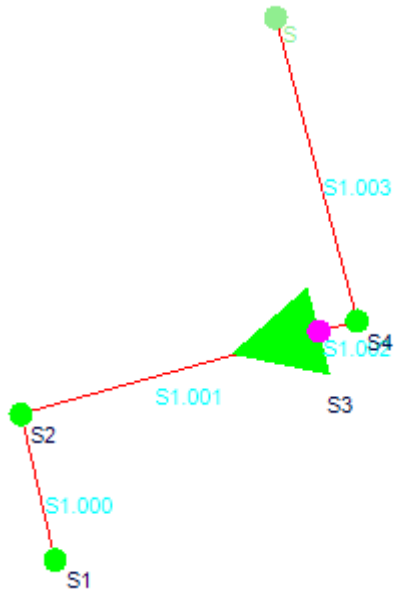
|                                    |  |                                |                           |
|------------------------------------|--|--------------------------------|---------------------------|
| Job Number<br><b>Q299679 - 002</b> | Surveyed by (Operator)<br><b>BRIAN AHERN</b> | Base Unit<br><b>N11E42YTAA</b> | Date<br><b>30/09/2020</b> |
|------------------------------------|--|--------------------------------|---------------------------|

Section 18 Overview (15/10/2020)


Manholes: **MHF.5 to MHS.3.1**  
 Pipe Length: **28.71 metres**  
 Structural Grade: **0**  
 Service Grade: **3**  
 Material: **Concrete**  
 Pipe Size: **225mm**  
 Use: **Foul**

# Appendix C WinDes Attenuation Calculations

|   |                              |   |
|---|------------------------------|---|
| Horganlynch Consulting Engineers                              |                              | Page 1  |
| Tellengana<br>Blackrock Road<br>Cork                          |                              |  |
| Date 17/07/2023 10:52<br>File STORM DRAINAGE CALCULATIONS.MDX | Designed by kl<br>Checked by |   |
| Innovyze  | Network 2020.1.3             |   |





|  |                                 |   |
|--|---------------------------------|---|
| Horganlynch Consulting Engineers                   |                                 | Page 1  |
| Tellengana<br>Blackrock Road<br>Cork               | MR72<br>MAYFIELD LIBRARY        |  |
| Date 17/07/2023<br>File STORM DRAINAGE CALCULAT... | Designed by KL<br>Checked by KC |   |
| Innovyze   | Network 2020.1.3                |   |

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm





Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

|                                      |        |                                       |       |
|--------------------------------------|--------|---------------------------------------|-------|
| Return Period (years)                | 100    | PIMP (%)                              | 100   |
| M5-60 (mm)                           | 18.800 | Add Flow / Climate Change (%)         | 0     |
| Ratio R                              | 0.250  | 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.             | 0.750  | Min Slope for Optimisation (1:X)      | 250   |

Designed with Level Inverts

Network Design Table for Storm

| PN     | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design  |
|--------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---|
| S1.000 | 8.193         | 0.102       | 80.0           | 0.014          | 5.00           | 0.0                | 0.600     | o           | 100         | Pipe/Conduit |  |
| S1.001 | 14.531        | 0.132       | 110.0          | 0.037          | 0.00           | 0.0                | 0.600     | o           | 150         | Pipe/Conduit |  |
| S1.002 | 4.678         | 0.047       | 100.0          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 150         | Pipe/Conduit |  |
| S1.003 | 17.203        | 0.215       | 80.0           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 150         | Pipe/Conduit |  |

Network Results Table

| PN     | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|--------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| S1.000 | 50.00           | 5.16           | 98.250       | 0.014            | 0.0                  | 0.0           | 0.0               | 0.86         | 6.8          | 1.9           |
| S1.001 | 50.00           | 5.41           | 98.148       | 0.051            | 0.0                  | 0.0           | 0.0               | 0.96         | 16.9         | 7.0           |
| S1.002 | 50.00           | 5.49           | 98.015       | 0.051            | 0.0                  | 0.0           | 0.0               | 1.00         | 17.8         | 7.0           |
| S1.003 | 50.00           | 5.74           | 97.969       | 0.051            | 0.0                  | 0.0           | 0.0               | 1.12         | 19.9         | 7.0           |


|  |  |                                 |
|--|--|---------------------------------|
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Manhole Schedules for Storm

| MH Name | MH CL (m) | MH Depth (m) | MH Connection | MH Diam. L*W (mm) | PN     | Pipe Out Invert Level (m) | Pipe Out Diameter (mm) | PN     | Pipes In Invert Level (m) | Pipes In Diameter (mm) | Backdrop (mm) |
|---------|-----------|--------------|---------------|-------------------|--------|---------------------------|------------------------|--------|---------------------------|------------------------|---------------|
| S1      | 99.300    | 1.050        | Open Manhole  | 1200              | S1.000 | 98.250                    | 100                    |        |                           |                        |               |
| S2      | 99.890    | 1.742        | Open Manhole  | 1200              | S1.001 | 98.148                    | 150                    | S1.000 | 98.148                    | 100                    |               |
| S3      | 100.000   | 1.985        | Open Manhole  | 1200              | S1.002 | 98.015                    | 150                    | S1.001 | 98.015                    | 150                    |               |
| S4      | 99.950    | 1.981        | Open Manhole  | 1200              | S1.003 | 97.969                    | 150                    | S1.002 | 97.969                    | 150                    |               |
| S       | 99.800    | 2.046        | Open Manhole  | 0                 |        | OUTFALL                   |                        | S1.003 | 97.754                    | 150                    |               |

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North) |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|----------------|
| S1      | 569458.167          | 573276.934           | 569458.167               | 573276.934                | Required       |                |
| S2      | 569456.270          | 573284.904           | 569456.270               | 573284.904                | Required       |                |
| S3      | 569470.257          | 573288.841           | 569470.257               | 573288.841                | Required       |                |
| S4      | 569474.783          | 573290.026           | 569474.783               | 573290.026                | Required       |                |
| S       | 569470.298          | 573306.633           |                          |                           | No Entry       |                |

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|--|---------------------------------|---|
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PIPELINE SCHEDULES for Storm

Upstream Manhole

| PN     | Hyd Sect | Diam (mm) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|--------|----------|-----------|---------|-------------|-------------|-------------|---------------|--------------------|
| S1.000 | o        | 100       | S1      | 99.300      | 98.250      | 0.950       | Open Manhole  | 1200               |
| S1.001 | o        | 150       | S2      | 99.890      | 98.148      | 1.592       | Open Manhole  | 1200               |
| S1.002 | o        | 150       | S3      | 100.000     | 98.015      | 1.835       | Open Manhole  | 1200               |
| S1.003 | o        | 150       | S4      | 99.950      | 97.969      | 1.831       | Open Manhole  | 1200               |

Downstream Manhole

| PN     | Length (m) | Slope (1:X) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|--------|------------|-------------|---------|-------------|-------------|-------------|---------------|--------------------|
| S1.000 | 8.193      | 80.0        | S2      | 99.890      | 98.148      | 1.642       | Open Manhole  | 1200               |
| S1.001 | 14.531     | 110.0       | S3      | 100.000     | 98.015      | 1.835       | Open Manhole  | 1200               |
| S1.002 | 4.678      | 100.0       | S4      | 99.950      | 97.969      | 1.831       | Open Manhole  | 1200               |
| S1.003 | 17.203     | 80.0        | S       | 99.800      | 97.754      | 1.896       | Open Manhole  | 0                  |

|  |                                 |   |
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Area Summary for Storm

| Pipe Number | PIMP Type      | PIMP Name | PIMP (%) | Gross Area (ha) | Imp. Area (ha) | Pipe Total (ha) |
|-------------|----------------|-----------|----------|-----------------|----------------|-----------------|
| 1.000       | Classification | Roofs     | 95       | 0.015           | 0.014          | 0.014           |
| 1.001       | User           | -         | 100      | 0.022           | 0.022          | 0.022           |
|             | Classification | Roofs     | 95       | 0.015           | 0.015          | 0.037           |
| 1.002       | -              | -         | 100      | 0.000           | 0.000          | 0.000           |
| 1.003       | -              | -         | 100      | 0.000           | 0.000          | 0.000           |
|             |                |           |          | Total           | Total          | Total           |
|             |                |           |          | 0.053           | 0.051          | 0.051           |


Simulation Criteria for Storm

|                                 |       |  |       |
|---------------------------------|-------|--|-------|
| Volumetric Runoff Coeff         | 0.750 | Additional Flow - % of Total Flow          | 0.000 |
| Areal Reduction Factor          | 1.000 | MADD Factor * 10m <sup>3</sup> /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 Storage Structures 1  
Number of Online Controls 1 Number of Time/Area Diagrams 0  
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

|                       |                      |                       |        |
|-----------------------|----------------------|-----------------------|--------|
| Rainfall Model        | FSR                  | Profile Type          | Summer |
| Return Period (years) | 100                  | Cv (Summer)           | 0.750  |
| Region                | Scotland and Ireland | Cv (Winter)           | 0.840  |
| M5-60 (mm)            | 18.800               | Storm Duration (mins) | 30     |
| Ratio R               | 0.250                |                       |        |

|  |                                 |   |
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Online Controls for Storm


Hydro-Brake® Optimum Manhole: S3, DS/PN: S1.002, Volume (m³): 2.5

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0058-2000-1800-2000 |
| Design Head (m)                   | 1.800                      |
| Design Flow (l/s)                 | 2.0                        |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 58                         |
| Invert Level (m)                  | 98.015                     |
| Minimum Outlet Pipe Diameter (mm) | 75                         |
| Suggested Manhole Diameter (mm)   | 1200                       |

| Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|
| Design Point (Calculated) | 1.800    | 2.0        |
| Flush-Flo™                | 0.257    | 1.4        |
| Kick-Flo®                 | 0.521    | 1.1        |
| Mean Flow over Head Range | -        | 1.5        |

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     | 1.2        | 1.200     | 1.7        | 3.000     | 2.5        | 7.000     | 3.7        |
| 0.200     | 1.4        | 1.400     | 1.8        | 3.500     | 2.7        | 7.500     | 3.9        |
| 0.300     | 1.4        | 1.600     | 1.9        | 4.000     | 2.9        | 8.000     | 4.0        |
| 0.400     | 1.3        | 1.800     | 2.0        | 4.500     | 3.1        | 8.500     | 4.1        |
| 0.500     | 1.2        | 2.000     | 2.1        | 5.000     | 3.2        | 9.000     | 4.2        |
| 0.600     | 1.2        | 2.200     | 2.2        | 5.500     | 3.3        | 9.500     | 4.3        |
| 0.800     | 1.4        | 2.400     | 2.3        | 6.000     | 3.5        |           |            |
| 1.000     | 1.5        | 2.600     | 2.4        | 6.500     | 3.6        |           |            |


|  |                                 |   |
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Storage Structures for Storm

Tank or Pond Manhole: S3, DS/PN: S1.002

Invert Level (m) 98.015

| Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) |
|-----------|------------------------|-----------|------------------------|
| 0.000     | 15.0                   | 1.000     | 15.0                   |

|  |                                 |   |
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Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0    MADD Factor \* 10m<sup>3</sup>/ha Storage 2.000  
Hot Start Level (mm) 0    Inlet Coefficient 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 Storage Structures 1  
Number of Online Controls 1    Number of Time/Area Diagrams 0  
Number of Offline Controls 0    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR    Ratio R 0.250  
Region Scotland and Ireland Cv (Summer) 0.750  
M5-60 (mm)    18.800 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 50.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status ON  
DVD Status ON  
Inertia Status ON

Profile(s)    Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440  
Return Period(s) (years) 100  
Climate Change (%) 20

| PN     | US/MH Name | Storm  | Return Period | Climate Change | First (X) Surge | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) |
|--------|------------|--------|---------------|----------------|-----------------|-----------------|--------------------|---------------|-----------------|
| S1.000 | S1 120     | Winter | 100           | +20%           | 100/15          | Summer          |                    |               | 98.880          |
| S1.001 | S2 120     | Winter | 100           | +20%           | 100/15          | Summer          |                    |               | 98.877          |
| S1.002 | S3 120     | Winter | 100           | +20%           | 100/15          | Summer          |                    |               | 98.871          |
| S1.003 | S4 120     | Winter | 100           | +20%           |                 |                 |                    |               | 97.996          |

| PN     | US/MH Name | Surcharged |                          | Flooded           |                | Half Drain  |     | Pipe Flow (l/s) | Status | Level Exceeded |
|--------|------------|------------|--------------------------|-------------------|----------------|-------------|-----|-----------------|--------|----------------|
|        |            | Depth (m)  | Volume (m <sup>3</sup> ) | Flow / Cap. (l/s) | Overflow (l/s) | Time (mins) |     |                 |        |                |
| S1.000 | S1         | 0.530      | 0.000                    | 0.29              |                |             | 1.8 | SURCHARGED      |        |                |
| S1.001 | S2         | 0.579      | 0.000                    | 0.47              |                |             | 7.3 | SURCHARGED      |        |                |
| S1.002 | S3         | 0.706      | 0.000                    | 0.11              |                |             | 1.4 | SURCHARGED      |        |                |
| S1.003 | S4         | -0.123     | 0.000                    | 0.08              |                |             | 1.4 | OK              |        |                |

# Appendix D IW Pre Connection Enquiry Application



# Pre-connection enquiry form

## Business developments, mixed use developments, housing developments



This form is to be filled out by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure. If completing this form by hand, please use BLOCK CAPITALS and black ink. Please note that this is a digital PDF form and can be filled in electronically

Please refer to the **Guide to completing the pre-connection enquiry form** on page 14 of this document when completing the form.

**\* Denotes mandatory/ required field. Please note, if mandatory fields are not completed the application will be returned.**

### Section A | Applicant details

#### 1 \*Applicant details:

Registered company name (if applicable):

Trading name (if applicable):

Company registration number (if applicable):

Parent company registered company name (if applicable):

Parent company registration number (if applicable):

If you are not a registered company/business, please provide the applicant's name:

\*Contact name:

\*Postal address:

\*Eircode:

Please provide either a landline or a mobile number

Landline:

\*Mobile:

\*Email:

**2 Agent details (if applicable):**

The fields marked with \* in this section are mandatory if using an agent

\*Contact name:

Company name (if applicable):

\*Postal address:

\*Eircode:

Please provide either a landline or a mobile number

Landline:

\*Mobile

\*Email:

**3 \*Please indicate whether it is the applicant or agent who should receive future correspondence in relation to the enquiry:**

Applicant

Agent

**Section B | Site details**

**4 \*Site address 1 (include Site name/Building name/Building number):**

\*Address 2

\*Address 3

\*City/Town

\*County  Eircode

**5 \*Irish Grid co-ordinates (proposed connection point):**

Eastings (X)  Northings (Y)

Note: Values for Eastings must be between 015,900 and 340,000. Northings, between 029,000 and 362,000  
Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

**6 \*Local Authority where proposed development is located:**

**7 \*Has full planning permission been granted?** Yes  No

If 'Yes', please provide the current or previous planning reference number:





## Section D | Water connection and demand details

- 13 **\*Is there an existing connection to public water mains at the site?** Yes  No
- 13.1 If yes, is this enquiry for an additional connection to one already installed? Yes  No
- 13.2 If yes, is this enquiry to increase the size of an existing connection? Yes  No

14 **Approximate date water connection is required:**   /   /

15 **\*What diameter of water connection is required to service the development?**    mm

16 **\*Is more than one connection required to the public infrastructure to service this development?** Yes  No   
 If 'Yes', how many?

17 **Please indicate the business water demand (shops, offices, schools, hotels, restaurants, etc.):**

|  |  |     |
|--|--|-----|
| Post-development peak hour water demand    |  | I/s |
| Post-development average hour water demand |  | I/s |

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

18 **Please indicate the industrial water demand (industry-specific water requirements):**

|  |  |     |
|--|--|-----|
| Post-development peak hour water demand    |  | I/s |
| Post-development average hour water demand |  | I/s |

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

19 **What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?**       m

20 **What is the highest finished floor level of the proposed development above Malin Head Ordnance Datum?**       m

21 **Is on-site water storage being provided?** Yes  No

Please include calculations on the attached sheet provided.









Please note that if you are sending us your application form and any associated documentation by email, the maximum file size that we can receive in any one email is 35MB.

**Please note, if mandatory fields are not completed the application will be returned.**

Irish Water is subject to the provisions of the Freedom of Information Act 2014 ("FOIA") and the codes of practice issued under FOIA as may be amended, updated or replaced from time to time. The FOIA enables members of the public to obtain access to records held by public bodies subject to certain exemptions such as where the requested records may not be released, for example to protect another individual's privacy rights or to protect commercially sensitive information. Please clearly label any document or part thereof which contains commercially sensitive information. Irish Water accepts no responsibility for any loss or damage arising as a result of its processing of freedom of information requests.

## Calculations

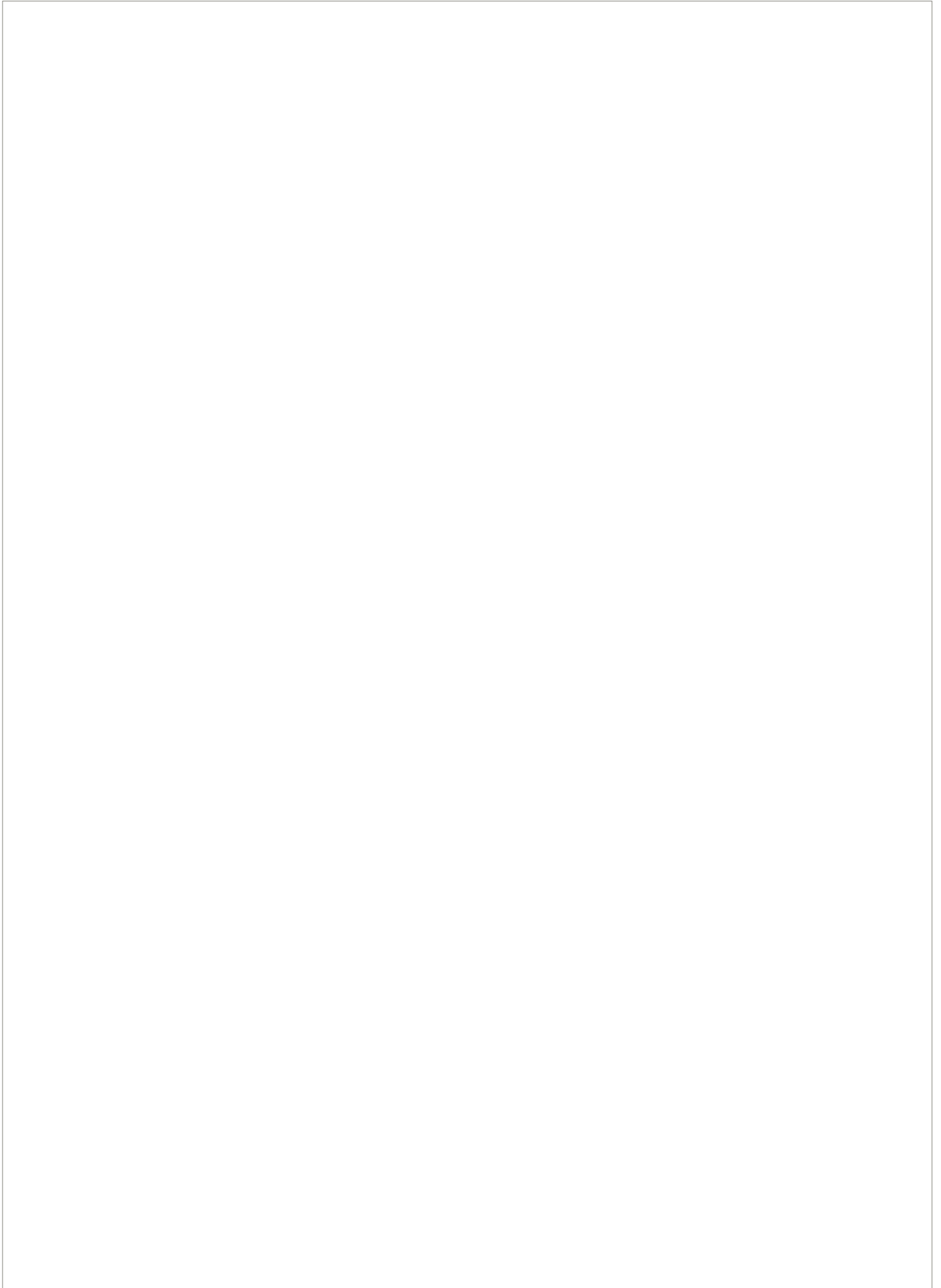
Water demand

## On-site storage



## Fire flow requirements







## Guide to completing the pre-connection enquiry form

This form should be completed by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure.

The Irish Water Codes of Practice are available at [www.water.ie](http://www.water.ie) for reference.

### Section A | Applicant Details

- Question 1:** This question requires the applicant or company enquiring about the feasibility of a connection to identify themselves, their postal address, and to provide their contact details.
- Question 2:** If the applicant has employed a consulting engineer or an agent to manage the enquiry on their behalf, the agent's address and contact details should be recorded here.
- Question 3:** Please indicate whether it is the applicant or the agent who should receive future correspondence in relation to the enquiry.

### Section B | Site details

- Question 4:** This is the address of the site requiring the water/wastewater service connection and for which this enquiry is being made.
- Question 5:** Please provide the Irish Grid co-ordinates of the proposed site. Irish grid positions on maps are expressed in two dimensions as Eastings (E or X) and Northings (N or Y) relative to an origin. You will find these coordinates on your Ordnance Survey map which is required to be submitted with an application.
- Question 6:** Please identify the Local Authority that is or will be dealing with your planning application, for example Cork City Council.
- Question 7:** Please indicate if planning permission has been granted for this application, and if so, please provide the planning permission reference number.
- Question 8:** Please indicate if this development is affiliated with a government body/agency, and if so, specify

### Section C | Development details

- Question 9:** Please specify the number of different property/premises types by filling in the tables provided.
- Question 9.1:** Please provide additional details if your proposed business use are in the Food Processing, Industrial unit/ Manufacturing, Sports Facility or Other Categories.
- Question 9.2:** Please indicate the maximum expected occupancy in numbers of people according to the proposed development you selected.
- Question 10:** Please indicate the approximate commencement date of works on the development.
- Question 11:** Please indicate if a phased building approach is to be adopted when developing the site. If so, please provide details of the phase master-plan and the proposed variation in water demand/wastewater discharge as a result of the phasing of the development.
- Question 12:** Please indicate the type of connection required by ticking the appropriate box and proceed to complete the appropriate section or sections.

### Section D | Water connection and demand details

- Question 13:** Please indicate if a water connection already exists for this site.
- Question 13.1:** Please indicate if this enquiry concerns an additional connection to one already installed on the site.
- Question 13.2:** Please indicate if you are proposing to upgrade the water connection to facilitate an increase in water demand. Irish Water will determine what impact this will have on our infrastructure.
- Question 14:** Please indicate the approximate date that the proposed connection to the water infrastructure will be required.
- Question 15:** Please indicate what diameter of water connection is required to service this development.

- Question 16:** Please indicate if more than one connection is required to service this development. Please note that the connection size provided may be used to determine the connection charge.
- Question 17:** If this connection enquiry concerns a business premises, please provide calculations for the water demand and include your calculations on the calculation sheet provided. Business premises include shops, offices, hotels, schools, etc. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.
- Question 18:** If this connection enquiry is for an industrial premises, please calculate the water demand and include your calculations on the calculation sheet provided. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.
- Question 19:** Please specify the ground level at the location where connection to the public water mains will be made. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 20:** Please specify the highest finished floor level on site. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 21:** If storage is required, water storage capacity of 24-hour water demand must usually be provided at the proposed site. In some cases, 24-hour storage capacity may not be required, for example 24-hour storage for a domestic house would be provided in an attic storage tank. Please calculate the 24-hour water storage requirements and include your calculations on the attached sheet provided. Please also confirm that on-site storage is being provided by ticking the appropriate box.
- Question 22:** The water supply system shall be designed and constructed to reliably convey the water flows that are required of the development including fire flow requirements by the Fire Authority. The Fire Authority will provide the requirement for fire flow rates that the water supply system will have to carry. Please note that while flows in excess of your required demand may be achieved in the Irish Water network and could be utilised in the event of a fire, Irish Water cannot guarantee a flow rate to meet your fire flow requirement. To guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development. Please include your calculations on the attached sheet provided, and further provide confirmation of the Fire Authority requirements.
- Question 23:** Please identify proposed additional water supply sources, that is, do you intend to connect to the public water mains or the public mains and supplement from other sources? If supplementing public water supply with a supply from another source, please provide details as to how the potable water supply is to be protected from cross contamination at the premises.

## **Section E | Wastewater connection and discharge details**

- Question 24:** Please indicate if a wastewater connection to a public sewer already exists for this site.
- Question 24.1:** Please indicate if this enquiry relates to an additional wastewater connection to one already installed.
- Question 24.2:** Please indicate if you are proposing to upgrade the wastewater connection to facilitate an increased discharge. Irish Water will determine what impact this will have on our infrastructure.
- Question 25:** Please specify the approximate date that the proposed connection to the wastewater infrastructure will be required.
- Question 26:** Please indicate what diameter of wastewater connection is required to service this development.
- Question 27:** Please indicate if more than one connection is required to service this development. Please indicate number required.
- Question 28:** If this enquiry relates to a business premises, please provide calculations for the wastewater discharge and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

- Question 29:** If this enquiry relates to an industrial premises, please provide calculations for the wastewater discharge and include your calculations on the calculation sheet provided. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.
- Question 30:** Please specify the maximum and average concentrations and the maximum daily load of each of the wastewater characteristics listed in the wastewater organic load table (if not domestic effluent), and also specify if any other significant concentrations are expected in the effluent. Please complete the table and provide additional supporting documentation if relevant. Note that the concentration shall be in mg/l and the load shall be in kg/day. Note that for business premises (shops, offices, schools, hotels, etc.) for which only domestic effluent will be discharged (excluding discharge from canteens/restaurants which would require a Trade Effluent Discharge licence), there is no need to complete this question.
- Question 31:** In exceptional circumstances, such as brownfield sites, where the only practical outlet for storm/surface water is to a combined sewer, Irish Water will consider permitting a restricted attenuated flow to the combined sewer. Storm/surface water will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer and the applicant must demonstrate how the storm/surface water flow from the proposed site is minimised using sustainable urban drainage system (SUDS). This type of connection will only be considered on a case by case basis. Please advise if the proposed development intends discharging surface water to the combined wastewater collection system.
- Question 32:** Please specify if the development needs to pump its wastewater discharge to gain access to Irish Water infrastructure.
- Question 33:** Please specify the ground level at the location where connection to the public sewer will be made. This is required to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 34:** Please specify the lowest floor level of the proposed development. This is required in order to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.
- Question 35:** Please specify the proposed invert level of the pipe exiting the property to the public road.

## **Section F | Supporting documentation**

Please provide additional information as listed.

## **Section G | Declaration**

Please review the declaration, sign, and return the completed application form to Irish Water by email or by post using the contact details provided in Section G.



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