

S1186 Proposed Library

Aughrim, Co. Wicklow

Drainage Report for Planning Permission

Client: PK Macann on behalf of
Wicklow County Council

Prepared by	Date	Version	Status
David Moran BA BAI CEng MIEI	10/09/2026	1.0 (original report)	Planning

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 - Irish Water Maps (Foul and Watermain)
 - S1186-010-A (Proposed Site Plan and Surface Water Drainage Layout)
 - S1186-011-A (Proposed Site Plan and Foul Water Drainage Layout)

1. Introduction

- 1.1 This report refers to the Foul and Surface Water drainage associated with the Proposed Library at Aughrim, Co. Wicklow and is to be read in conjunction with architectural drawings. The existing public network has been taken from Uisce Éireann maps of the area.
- 1.2 All surface water from the proposed library will discharge to a new attenuation area to the north of the building.
- 1.3 All proposed drainage is designed and detailed in accordance with 'GSDSDS Regional Drainage Policies Technical Document – Volume 2' and 'The SUDS Manual' – Ciria C697.
- 1.4 All foul water from the site will discharge to the existing foul line on Grove Avenue.

2. Foul Water Drainage

2.1 Design Criteria

The Foul Water Drainage System proposed for the site has been checked using the following assumptions:

- (a) Design peak flow equal to 6 times the Dry Weather Flow (D.W.F.)
- (b) Roughness coefficient for pipes (K_s) = 0.06 mm

2.2 Foul Sewer Layout

The proposed layout for the foul drainage system to serve the site is shown on the enclosed drawings.

2.3 Flow Calculation

The design water consumption for foul flow calculation purposes is assumed to be 50 litres/person/day. For a public library and using rate of 1no. person per 5m² area gives a total of 50no. people, therefore:

- Assume that the total discharge occurs over an 8-hour day.
- Total discharge (50 x 40) = 2000 litres/day
- DWF per 8-hour period = $2000/8/3600 = 0.07$ ltr/sec
- Design for a peak flow of 6 x DWF = $0.07 \times 6 = \underline{0.42 \text{ l/s}}$

The minimum size foul water pipe to be used is 100 mm diameter. For a gradient of 1:80 the design flow is 8.515 l/s. A 100 mm diameter pipe therefore has adequate capacity for the design peak flow of 1.92 l/s.

2.4 Discharge to the Public Sewer

It is proposed to discharge the foul waste from the library to the existing foul sewer on the site as shown on the enclosed drawings.

3. Surface Water Drainage

3.1 Design Criteria

The proposed surface water drainage system for the site has been designed using 'GDSDS Regional Drainage Policies Technical Document - Volume 2'. The Surface Water Drainage System proposed for the site has been designed using the following assumptions:

- (a) Rain intensity and return periods as for Dublin Region
- (b) Impermeability Factor of 1.0
- (c) Peak Flows to BS 8301 (based on rainfall intensity of 50 mm/hr)
- (d) Roughness coefficient for pipes (K_s) equals 0.06 mm

3.2 Storm Drainage Layout

The proposed layout of the storm water drainage is as shown on the enclosed drawings.

3.3 Surface Water Storage

The existing site comprises an area approximately 906m². The proposed library roof area of 212m² whose run-off will be stored using a Stormtech MC-3500 system (or similar approved) before infiltration to the ground.

The required storage volume of the soakaway has been calculated using a 24hr 1:100-year storm allowing for 20% climate change.

The storage volume required is 22.1m³. 6no. Stormtech SC-3500 units are required giving a total storage volume of 52.8m³ (per the enclosed Stormtech Design Tool), and a time for emptying to half volume of less than 24 hours.

A silt trap manhole will be used at the entrances to the water storage layout to prevent silt accumulation in the system.

Appendix A



MOCA
consulting engineers

Project New Library, Aughrim, Co. Wicklow				Job no. S1186	
Calcs for Soakaway design (BRE Digest 365 SUDS)				Start page no./Revision 1	
Calcs by DAM	Calcs date 10/09/2026	Checked by COC	Checked date 10/09/2026	Approved by COC	Approved date 10/09/2026

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.07

Design rainfall intensity

Location of catchment area	Other
Impermeable area drained to the system	A = 282.0 m ²
Return period	Period = 100 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.212
5-year return period rainfall of 60 minutes duration	M5_60min = 16.9 mm
Increase of rainfall intensity due to global warming	p _{climate} = 20 %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = 1680 mm
Width of pit	w = 5000 mm
Length of pit	l = 9000 mm
Percentage free volume	V _{free} = 70 %
Soil infiltration rate	f = 5.56 × 10 ⁻⁶ m/s
Wetted area of pit 50% full	a _{s50} = l × d + w × d = 23520000 mm ²

Table equations

Inflow (cl.3.3.1)	I = M100 × A
Outflow (cl.3.3.2)	O = a _{s50} × f × D
Storage (cl.3.3.3)	S = I - O

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	100 year rainfall, M100 (mm)	Inflow (m ³)	Outflow (m ³)	Storage required (m ³)
5	0.29;	5.9;	1.88;	11.1;	3.13;	0.04;	3.09
10	0.43;	8.8;	1.94;	17.0;	4.80;	0.08;	4.72
15	0.54;	11.0;	1.97;	21.6;	6.10;	0.12;	5.99
30	0.73;	14.8;	1.98;	29.4;	8.28;	0.24;	8.04
60	1.00;	20.3;	1.93;	39.1;	11.02;	0.47;	10.55
120	1.33;	26.9;	1.87;	50.5;	14.24;	0.94;	13.30
240	1.77;	35.8;	1.80;	64.6;	18.21;	1.88;	16.33
360	2.20;	44.5;	1.75;	77.8;	21.94;	2.82;	19.12
600	2.61;	52.8;	1.71;	90.3;	25.46;	4.70;	20.76
1440	3.58;	72.7;	1.63;	118.4;	33.39;	11.29;	22.10

Required storage volume S_{req} = **22.10** m³

Soakaway storage volume S_{act} = l × d × w × V_{free} = **52.92** m³

PASS - Soakaway storage volume

Time for emptying soakaway to half volume t_{s50} = S_{req} × 0.5 / (a_{s50} × f) = 23hr 29min 35s

PASS - Soakaway discharge time less than or equal to 24 hours

STORMTECH Stormwater Management System Design Tool

ver: Jan18

PROJECT REF: S1186
 LOCATION: Proposed Library, Aughrim, Co. Wicklow
 DATE: 10-Sep-26
 CREATED BY: DAM

SYSTEM PARAMETERS

Required Total Storage	23 m ³
Stormtech chamber model	MC3500
Filtration Permeable Geo or Impermeable Geo	HDPE Liner
Number of Isolator Rows (IR)	1

SITE PARAMETERS

Stone Porosity	40%	
Excavation Batter Angle (degrees)	60°	Minimum Requirement
Stone Above Chambers	0.3 m	0.30
Stone Below Chambers	0.23 m	0.23
In-between Row Spacing	0.23 m	0.23
Additional Storage outside Excavation. E.g manholes, Header Pipe	0 m ³	

HEADER PIPE

Is Header pipe required within excavation	No
Orientation of Header Pipe	Parrallel to IR
Diameter of Header Pipe	0.225 m
Length of Header Pipe	0 m

CHAMBER SYSTEM DIMENSIONS

	Calculated	Adopted
Number of Rows		2 ea
Number of units per Row		3 ea
System Installed Storage Depth (effective storage depth)	1.675	m
Tank overall installed Width at base	4.74	5 m
Tank overall installed Length at Base	8.28	9 m
Total Effective System Storage	48.3	52.8 m ³

STORMTECH SYSTEM DETAIL

StormTech Chamber Model	MC3500
Unit Width	1.955 m
Unit Length	2.18 m
Unit Height	1.145 m
Min Cover Over System	0.3 m
Max Cover Over Chamber (see StormTech for greater cove	2.4 m
Chamber Internal Storage Vol.	3.11 m ³
Header Pipe Internal Storage Vol in Excavation	0.0 m ³

STONE AND EXCAVATION DETAIL

Volume of Dig for System	101 m ³
Width at base	5.00 m
Width at top	6.93 m
Length at base	9.00 m
Length at top	10.93 m
Depth Of System	1.68 m
Area of Dig at Base of System	45 m ²
Area of Dig at Top of System	76 m ²
Void Ratio	52%
Stone Requirement - m3	79 m ³
Stone Requirement - tonne	130 tonne

StormTech® MC-3500 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

Nominal Chamber Specifications (not to scale)

Size (L x W x H)

90" x 77" x 45"

2286 mm x 1956 mm x 1143 mm

Chamber Storage

109.9 ft³ (3.11 m³)

Min. Installed Storage*

175.0 ft³ (4.96 m³)

Weight

134 lbs (60.8 kg)

Shipping

15 chambers/pallet

7 end caps/pallet

7 pallets/truck

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below chambers, 6" (150 mm) of stone between chambers/end caps and 40% stone porosity.

Nominal End Cap Specifications (not to scale)

Size (L x W x H)

26.5" x 71" x 45.1"

673 mm x 1803 mm x 1145 mm

End Cap Storage

14.9 ft³ (0.42 m³)

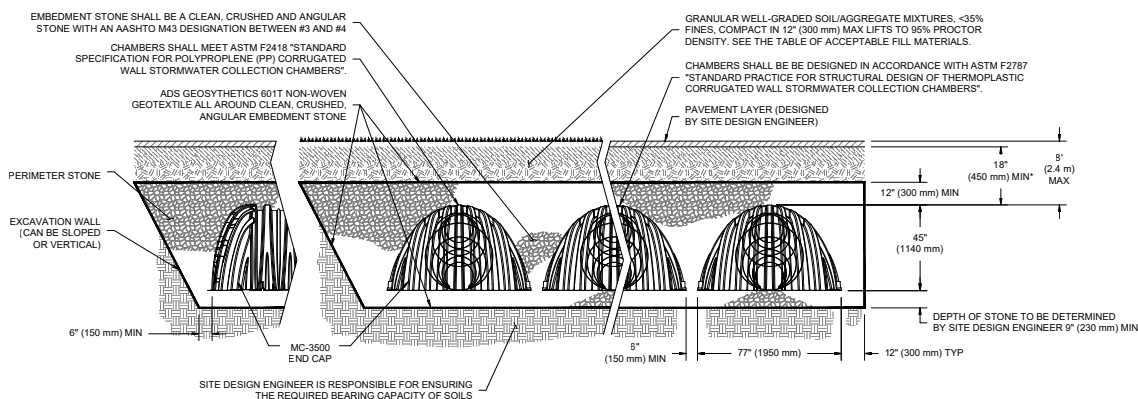
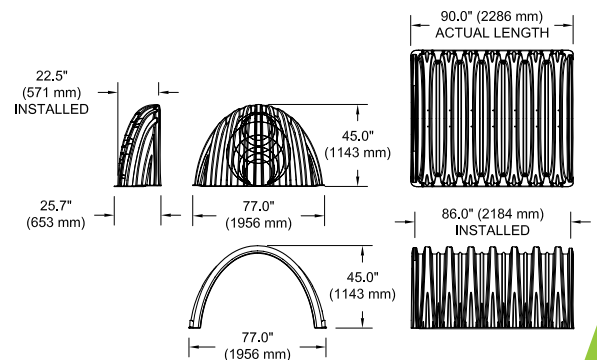
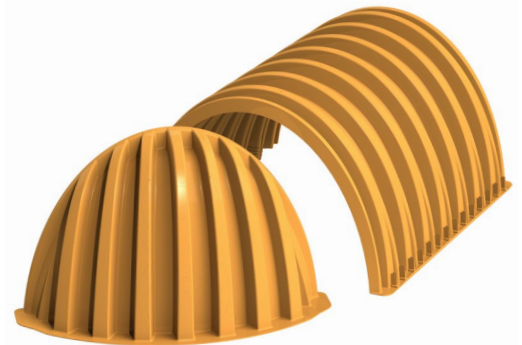
Min. Installed Storage*

45.1 ft³ (1.28 m³)

Weight

49 lbs (22.2 kg)

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 6" (150 mm) of stone between chambers/end caps and 40% stone porosity.



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

StormTech MC-3500 Specifications

Storage Volume Per Chamber

	Bare Chamber Storage ft ³ (m ³)	Chamber and Stone Foundation Depth in. (mm)			
		9 in (230 mm)	12 in (300 mm)	15 in (375 mm)	18 in (450 mm)
Chamber	109.9 (3.11)	175.0 (4.96)	179.9 (5.09)	184.9 (5.24)	189.9 (5.38)
End Cap	14.9 (0.42)	45.1 (1.28)	46.6 (1.32)	48.3 (1.37)	49.9 (1.41)

Note: Assumes 6" (150 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume.

Amount of Stone Per Chamber

English Tons (yds ³)	Stone Foundation Depth			
	9 in	12 in	15 in	18 in
Chamber	8.5 (6.0)	9.1 (6.5)	9.7 (6.9)	10.4 (7.4)
End Cap	3.9 (2.8)	4.1 (2.9)	4.3 (3.1)	4.5 (3.2)
Metric Kilograms (m ³)	230 mm	300 mm	375 mm	450 mm
Chamber	7711 (4.6)	8255 (5.0)	8800 (5.3)	9435 (5.7)
End Cap	3538 (2.1)	3719 (2.2)	3901 (2.4)	4082 (2.5)

Note: Assumes 12" (300 mm) of stone above and 6" (150 mm) row spacing and 6" (150 mm) of perimeter stone in front of end caps.

Volume Excavation Per Chamber yd³ (m³)

	Stone Foundation Depth			
	9 in (230 mm)	12 in (300 mm)	15 in (375mm)	18 in (450 mm)
Chamber	11.9 (9.1)	12.4 (9.5)	12.8 (9.8)	13.3 (10.2)
End Cap	4.0 (3.1)	4.1 (3.3)	4.3 (3.3)	4.4 (3.4)

Note: Assumes 6" (150 mm) of separation between chamber rows and 24" (600 mm) of cover. The volume of excavation will vary as depth of cover increases.

Working on a project?

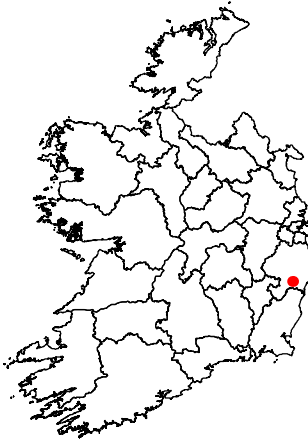
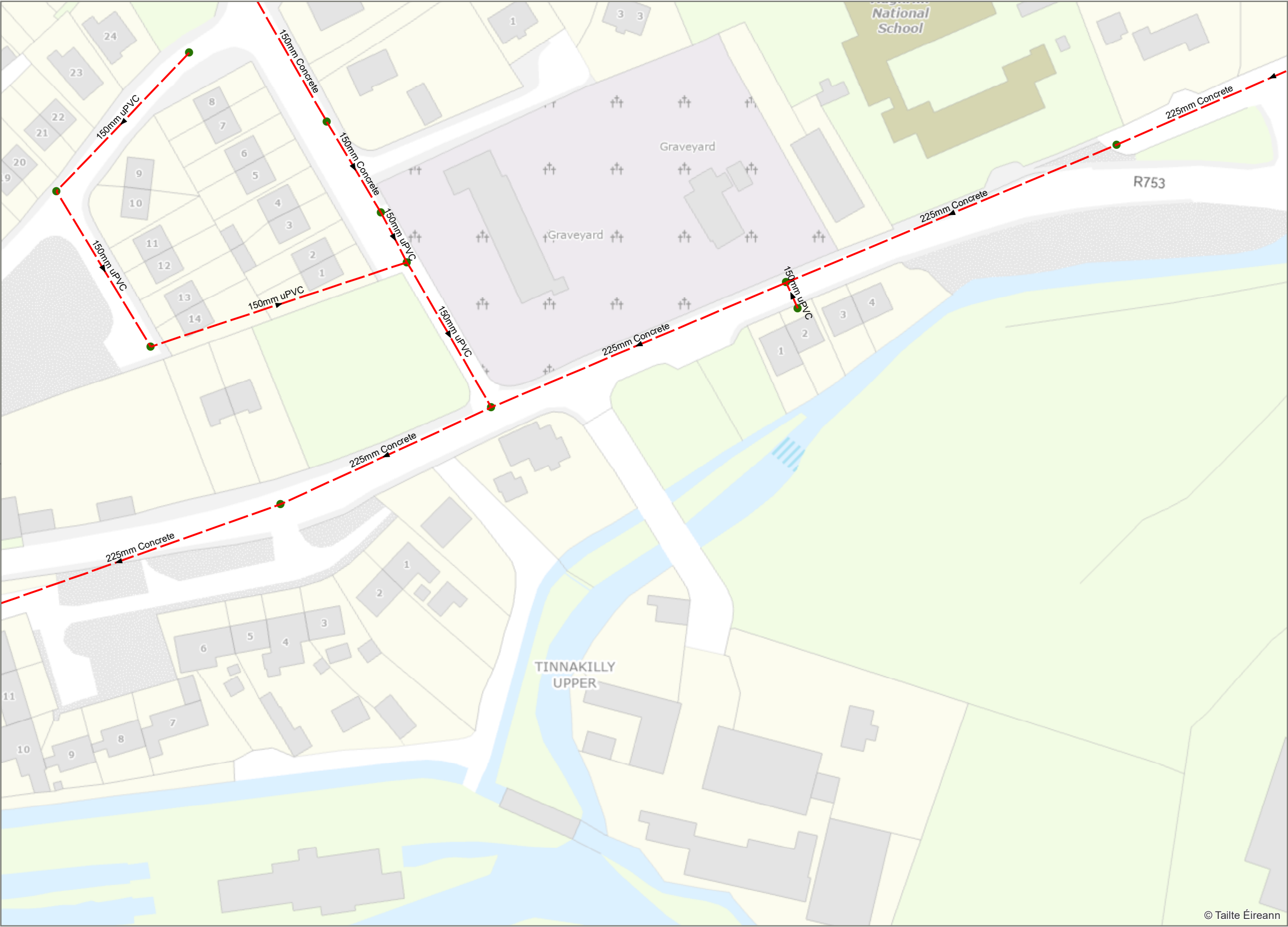
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Legend

Sewer Gravity Mains (Irish Water owned)

Liquid Type

➔ Foul

Sewer Manholes

Manhole Type

● Standard

0 5 10 20
m

Coordinate System: TM65 Irish Grid
Projection: Transverse Mercator

Scale @ A3: 1:1,000

Drawing No.: IW-AGG-2018-000

Drawn By: LM

Checked By: <Add Name>

Approved By: <Add Name>

Drawn Date 29/01/2026

Checked Date: <dd/mm/yyyy>

Approved Date: <dd/mm/yyyy>



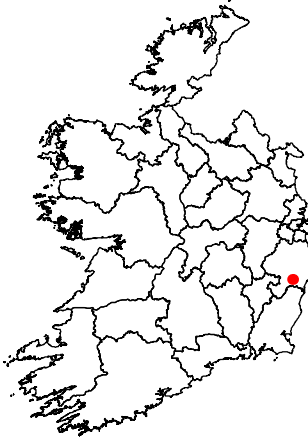
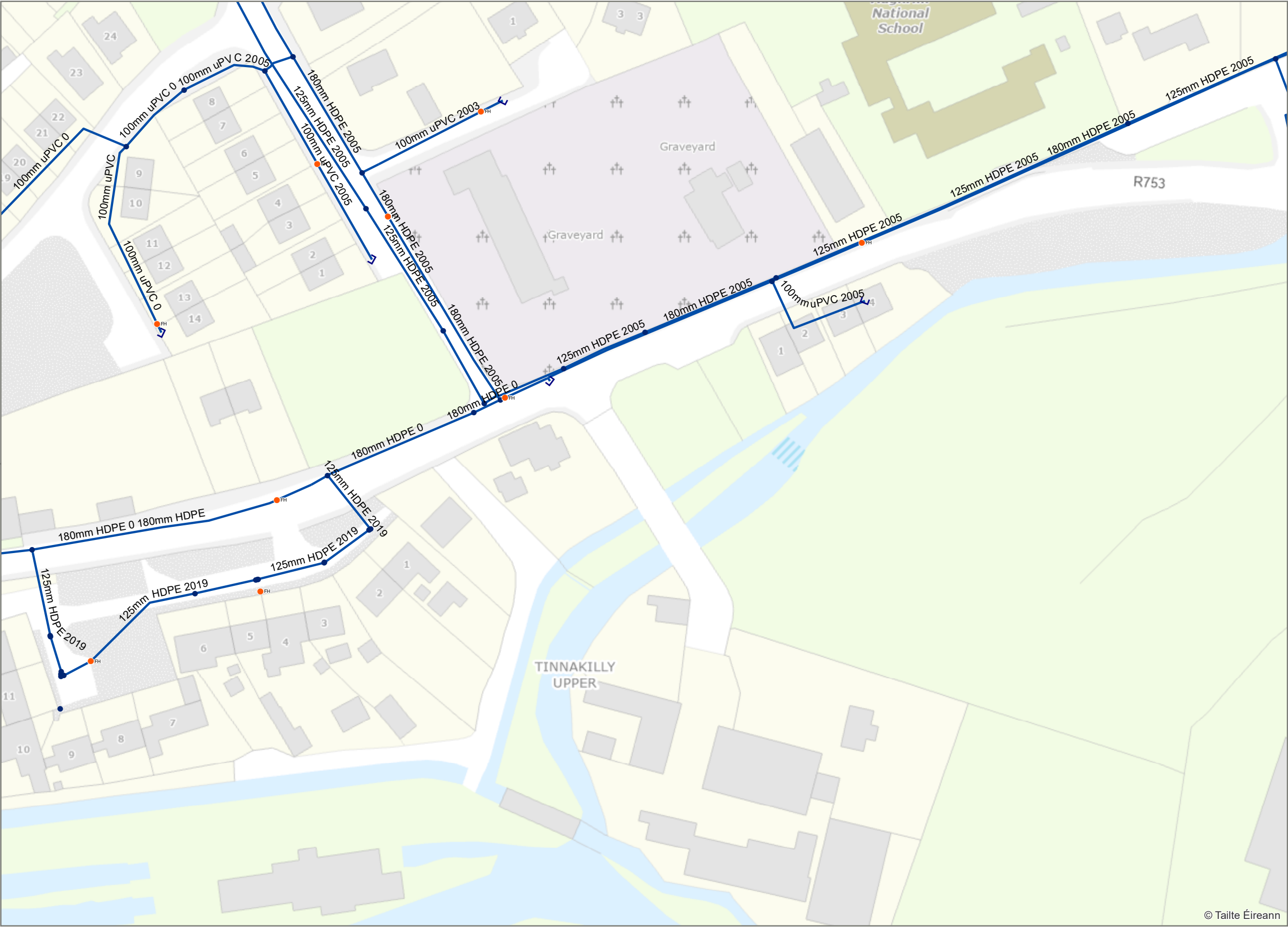
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Sewer Network



Legend

Water Hydrants

● FH Fire Hydrant

Water Fittings

└ Cap
● Other Fitting

Water Mains(Irish Water Owned)

— Potable Water

0 5 10 20
m

Coordinate System: TM65 Irish Grid
Projection: Transverse Mercator

Scale @ A3: 1:1,000

Drawing No.: IW-AGG-2018-000

Drawn By: LM

Checked By: <Add Name>

Approved By: <Add Name>

Drawn Date: 29/01/2026

Checked Date: <dd/mm/yyyy>

Approved Date: <dd/mm/yyyy>



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Water Network

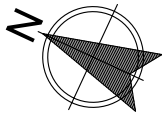
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- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

LEGEND:

- SITE BOUNDARY
- EXISTING IRISH WATER FOUL WATER DRAINAGE LINE
- MH EXISTING IRISH WATER FOUL WATER MANHOLE (FWMH)
- PROPOSED FOUL WATER DRAINAGE (1000 uPVC U.N.O.)
- FWAJ PROPOSED FOUL WATER ACCESS JUNCTION (FWAJ)
- MH PROPOSED FOUL WATER MANHOLE (FWMH)



2250 CONCRETE

MAIN STREET

MILL LANE

PROPOSED SITE PLAN AND FOUL WATER DRAINAGE LAYOUT

SCALE 1:200 @ A3

A	10/09/26	Planning Issue	COC	DAM
rev.	date	description	dm by	chkd by



CLIENT NAME	PK Macann on behalf of Wicklow Co. Co.			
PROJECT TITLE	Proposed New Library at			
LOCATION	Main Street, Aughrim, Co. Wicklow			
DRAWING TITLE	Proposed Site Plan & FW Drainage Layout			
DRAWN BY	COC	CHKD BY	DAM	STATUS Planning
DATE	10/09/26	SCALE	1:200 @ A3	
DRG. No.	S1186-010	REV.	A	

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LEGEND:

- SITE BOUNDARY
- EXISTING SURFACE WATER DRAINAGE
- EXISTING SURFACE WATER MANHOLE
- - - PROPOSED SURFACE WATER DRAINAGE
- ◆ PROPOSED SURFACE WATER ACCESS JUNCTION (SWAJ)

MAIN STREET

MILL LANE

PROPOSED SITE PLAN AND SW DRAINAGE LAYOUT

SCALE 1:200 @ A3

A	10/09/26	Planning Issue	COC	DAM
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