Horganlynch

Consulting Engineers

Youghal Courthouse & Soup Kitchen

Engineering Report Planning Report
In support of part 8 planning submission

DRAFT

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Document Control Sheet

Project Number:	CQ22		
Project Name:	Youghal Courthouse and Soup Kitchen		
Client:	Cork County Council		
Document Title:	Engineering Report		
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Rev.	Date	By	Chk	Description
0	20.03.2024	FS	PB	

Review

Prepared By:	Francesco Silvestri
Date:	20th March 2024
Other Contributors:	
Checked by:	Pat Brady

Contents

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1.0 Introduction

The existing Youghal Courthouse and Soup Kitchen buildings are to be refurbished and redeveloped as a new museum and exhibition facility . The proposed works will entail same repair, restoration, and conversion of the existing buildings as well as new build interventions to provide the proposed new facilities.

The Youghal Courthouse is a detached three-bay, two storey courthouse, built in the mid nineteenth century. The building is protected structures and is of Architectural, Artistic, Historical, Social and Socioeconomic significance for the town of Youghal.

The Quacker Community Soup Kitchen is an earlier structure, likely to be part of the 17th century customs outhouse building.

Both buildings are constructed of solid stone masonry walls with a natural slate roof on the courthouse and asbestos cement sheet roof on the Soup kitchen, supported on purlins and timber trusses.

First floor to the courthouse is built in timber floor boards on timber joists.

This project is being undertaken on behalf of Cork County Council with a design team lead by Cork County Council Architects department.

Horganlynch Consulting Engineers are the Civil & Structural Engineers on the project.

The following report sets out the Engineering inputs, which forms part of the overall project team application for planning. Figure 01 below shows the site location.

Figure 01 – Site location .

The following is an Engineering report in support of planning application for the above development. This report addresses the following engineering issues:

a. Site Services -
   - Water supply
   - Foul drainage
   - Storm drainage

b. Flood Risk Assessment

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2.0 Report

a) Site Services

i. Water Supply –

The existing water main is located to the south side of the Courthouse on the lane between Kent Steet and South Main Street.

A new water connection will be established to the Courthouse building from the mentioned water main line (See figure 2).

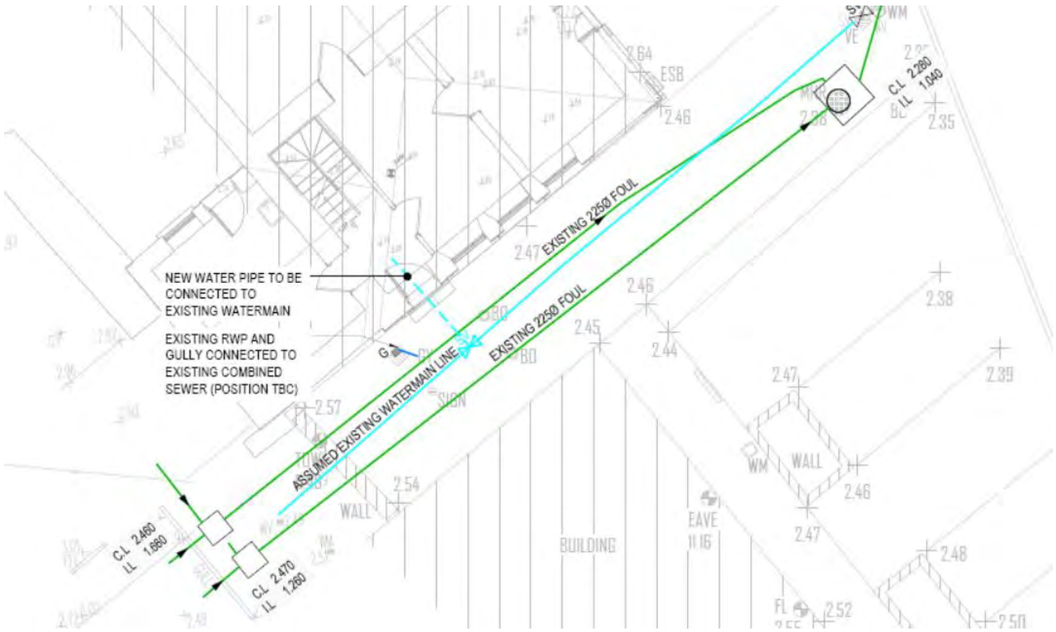

Figure 2 – Water Main

A sluice valve will be located just upstream of the proposed connection point to the existing watermain.

A pre-connection enquiry was submitted to Irish water on 22nd March 2024, in which the above strategy was proposed. See Appendix B: Pre-Connection Enquiry to Irish Water

For details of the above, see Appendix A: Dwg. No. CQ22-V1-XXX-DR-HLCE-CE-003 Existing and proposed service layout.

Watermain installation (mains, sluice valves & hydrants) shall be installed in accordance with the requirements of Irish water and the Water services section of Cork County Council.

ii. Foul Drainage –

The new toilet on ground floor of the courthouse and the two new toilets on ground floor to the soup kitchen will be connected to the existing sewer line on Barry's Lane (see figure 3).

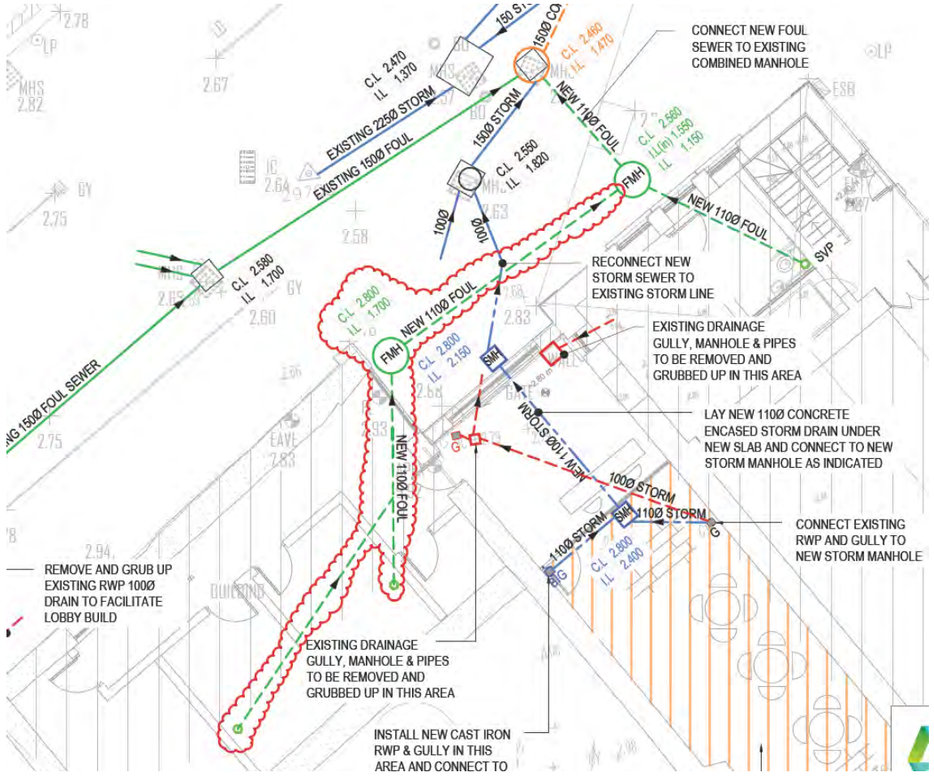

Figure 3 – Proposed foul connection to the Courthouse Building

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The new toilet on first floor south of the courthouse will discharge in the adjacent exiting fould line as per figure 4 below.

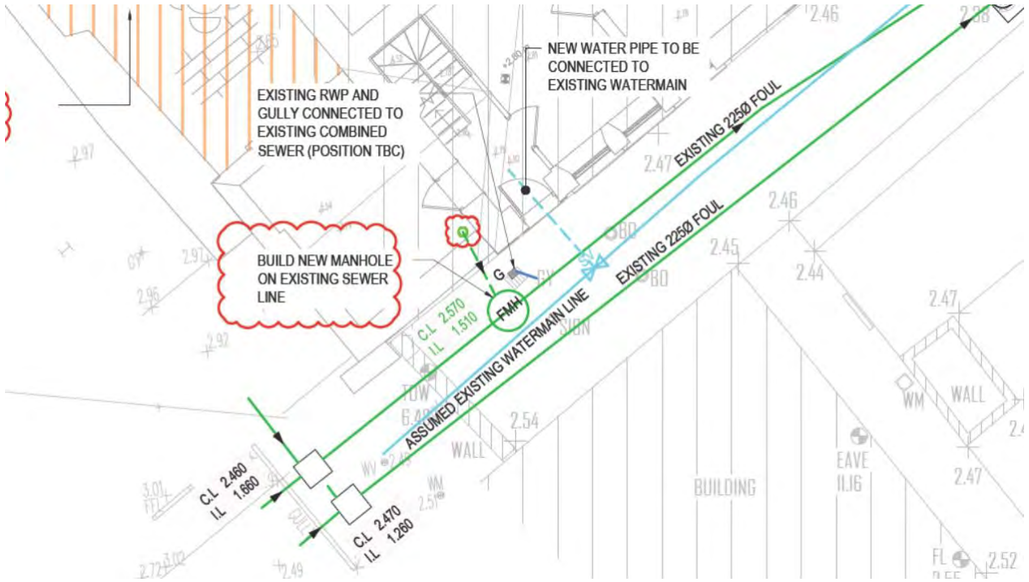

Figure 4 – Proposed foul connection to the Courthouse Building

For details of the above, see Appendix A: Dwg. No. CQ22-V1-XXX-DR-HLCE-CE-003 Existing and proposed service layout.

A pre-connection enquiry was submitted to Irish water on 22nd March 2024, in which the above strategy was proposed. This enquiry included details of final outfall loadings from the developments to the combined sewer on Barry's Lane.

See Appendix B: Pre-Connection Enquiry to Irish Water

iii. Surface Water Drainage –

Storm water from the main roof to the front of the building on the east (Kent Street) is collected via two existing down pipes; discharging into the existing combined drainage line on Kent Street (see figure 5).

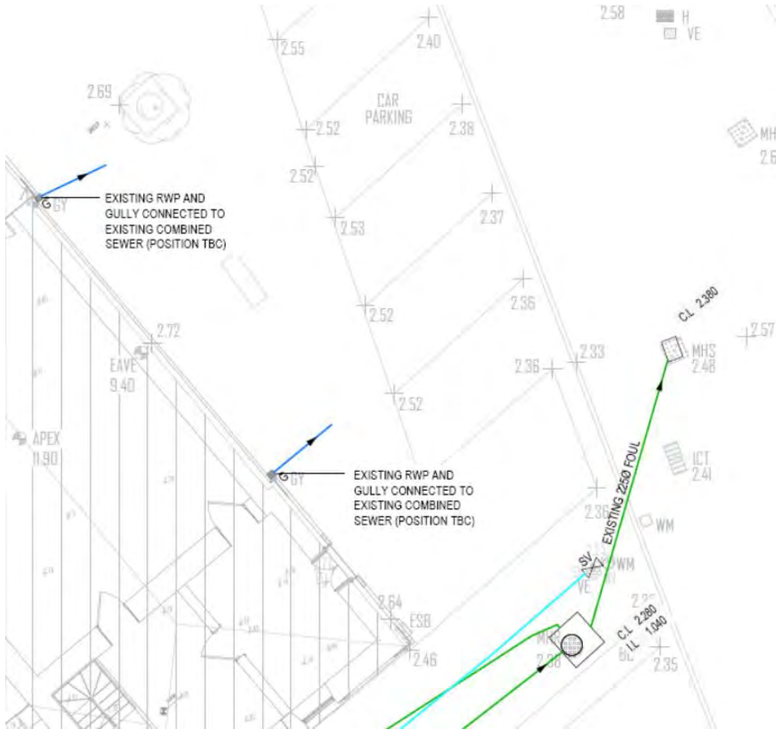

Figure 5 – Downpipes on Kent street

Storm water from the main roof to the south is collected via an existing down pipe. discharging to the adjacent 225mm dia foul line that connects to the main foul line on Kent Street (see figure 6)

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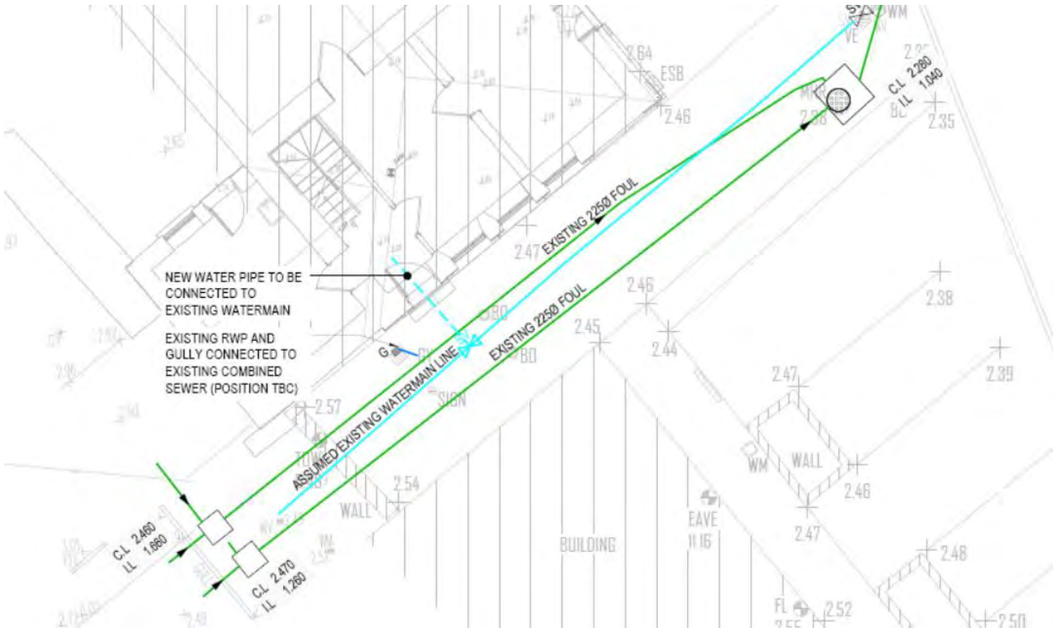

Figure 6– Down pipes to the south of Courthouse Building

The existing rain water pipe the north west of the Soup Kitchen is discharging into the existing foul manhole on Barry's Lane, this will be moved and reconnected to the same existing manhole as shown in figure 7 below.

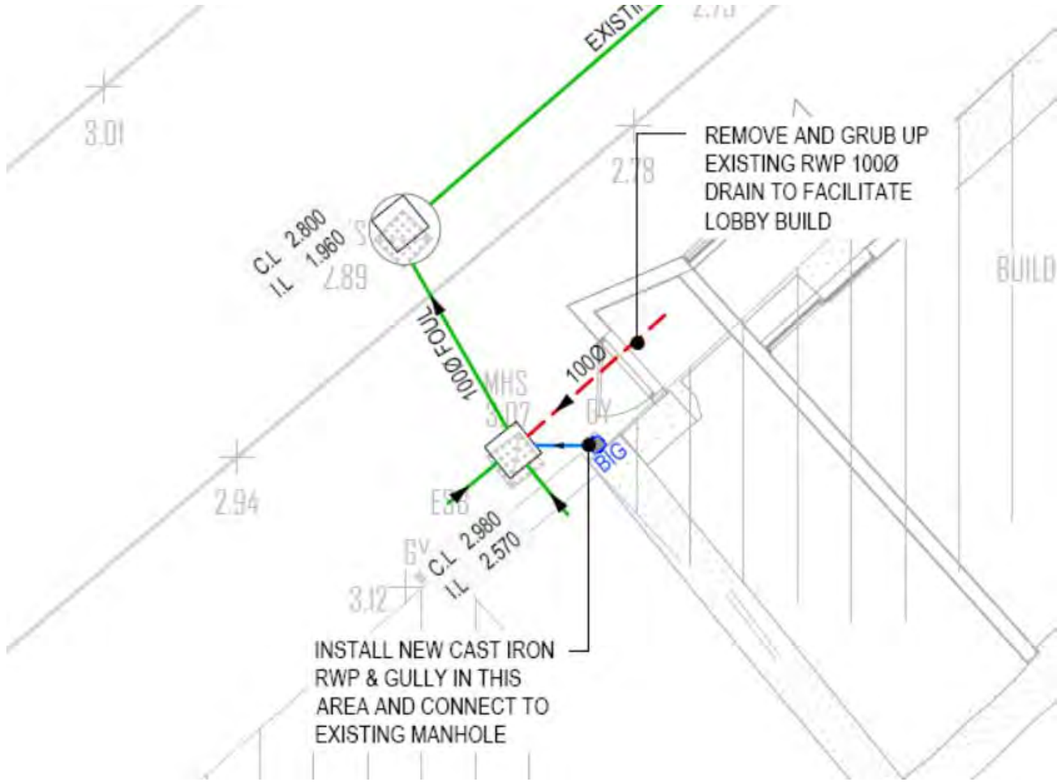

Figure 7 – Down pipe to the front of the Soup Kitchen

The new one storey building, connecting the Soup Kitchen and the Courthouse building, will discharge storm water to the south west corner into a new proposed manhole as per figure 7

It is proposed that also both the down pipes from the soup kitchen to the south east corner and the Courthouse to the east side, are connected to the mentioned new manhole than will than reconnect to the existing sewer line on Barry's Lane through a new proposed manhole on Barry's Lane.(See figure 8).

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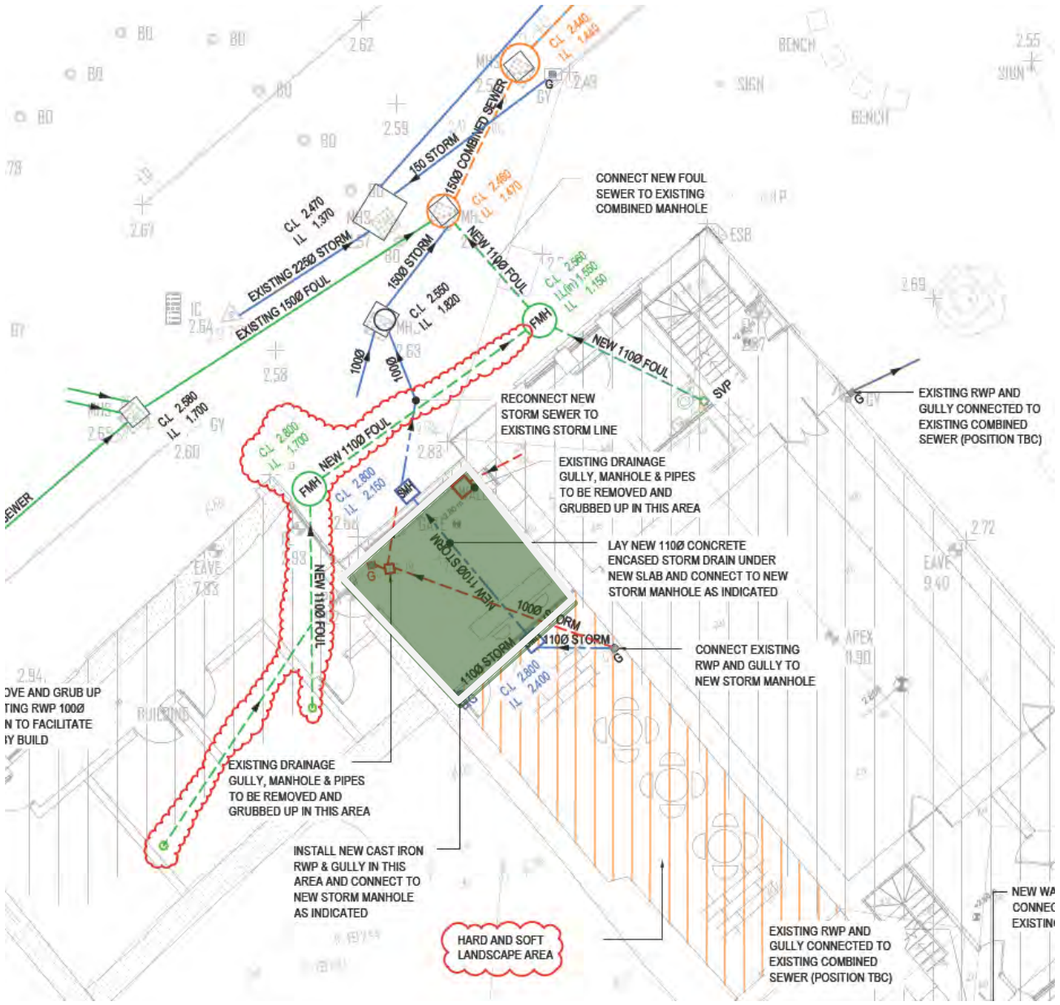

Figure 8 – Proposed new manholes to the west side of the Courthouse building

The area shown in green is an existing hard paved impermeable are therefore, with the new roof cover, there will be no increase in the storm water flow rate currently discharged from this area prior to the refurbishment.

The option of incorporating SUDs features (Sustainable Drainage Systems) was investigated although as the site is currently hard paved and roofed, and there will be no increase in the re developed site. The internal courtyard will be transformed into hard and soft landscape are with a 40% of the total courtyard area being permeable, reducing the total volume of storm water generated.

For details of the above, see Appendix A: Dwg. No. CQ22-V1-XXX-DR-HLCE-CE-003 Existing and proposed service layout.

b) Flood Risk Assessment

Refer to JBA Consulting Flood Risk Assessment (see Appendix C).

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3.0 Appendix A - Existing and proposed service layout

Dwg. No. CQ22-V1-XXX-DR-HLCE-CE-003 Existing and proposed service layout.

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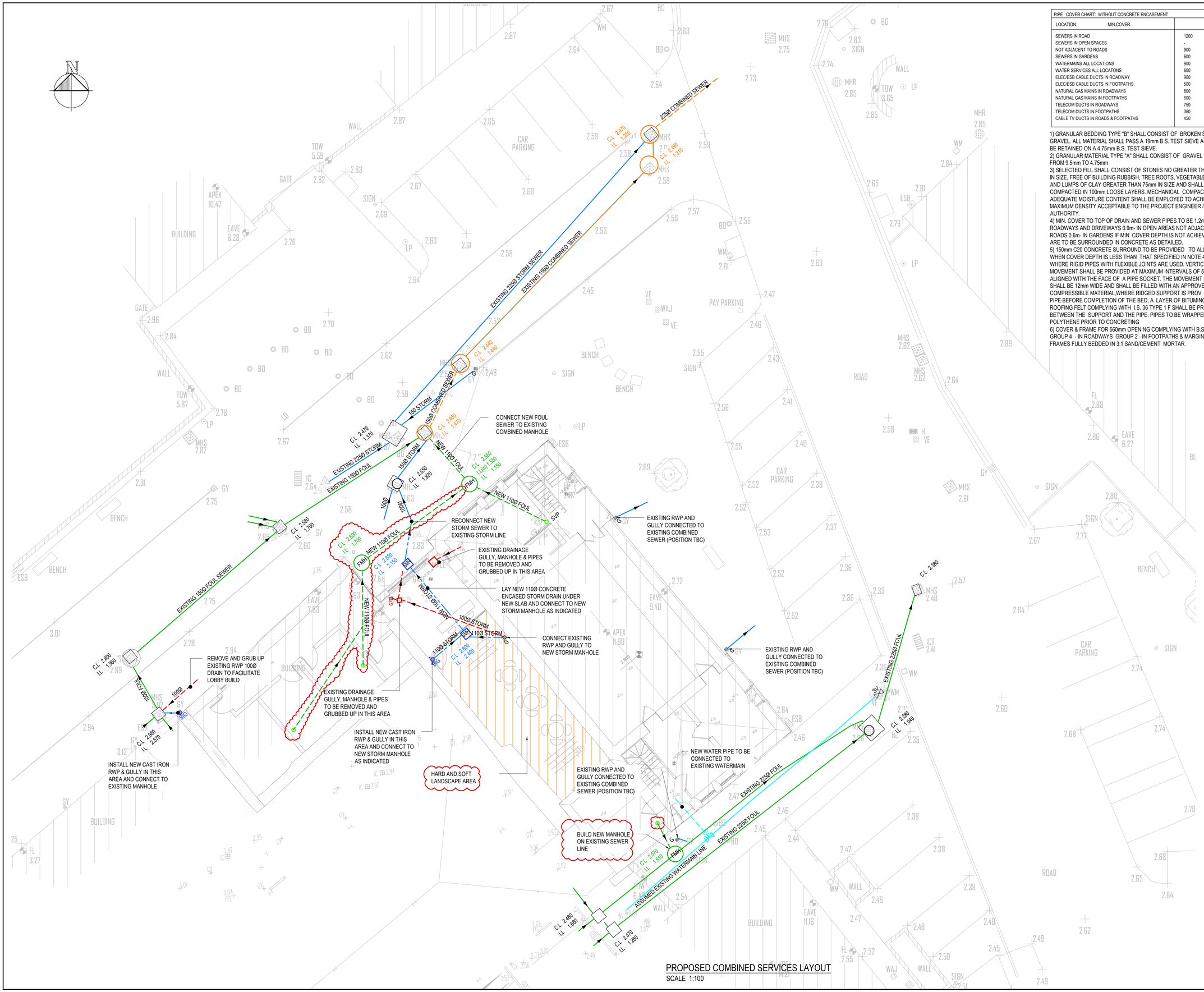

PROPOSED COMBINED SERVICES LAYOUT

SCALE 1:100

PIPE COVER CHART: WITHOUT CONCRETE ENCASEMENT	
LOCATION:	MIN.COVER.
SEWERS IN ROAD	1200
SEWERS IN OPEN SPACES	-
NOT ADJACENT TO ROADS	900
SEWERS IN GARDENS	600
WATERMAINS ALL LOCATIONS	900
WATER SERVICES ALL LOCATONS	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

1) GRANULAR BEDDING TYPE "B" SHALL CONSIST OF BROKEN STONE OR GRAVEL. ALL MATERIAL SHALL PASS A 19mm B.S. TEST SIEVE AND SHALL BE RETAINED ON A 4.75mm B.S. TEST SIEVE.
2) GRANULAR MATERIAL TYPE "A" SHALL CONSIST OF GRAVEL GRADED FROM 9.5mm TO 4.75mm
3) SELECTED FILL SHALL CONSIST OF STONES NO GREATER THAN 25mm IN SIZE, FREE OF BUILDING RUBBISH, TREE ROOTS, VEGETABLE MATTER AND LUMPS OF CLAY GREATER THAN 75mm IN SIZE AND SHALL BE COMPACTED IN 100mm LOOSE LAYERS. MECHANICAL COMPACTION WITH ADEQUATE MOISTURE CONTENT SHALL BE EMPLOYED TO ACHIEVE A MAXIMUM DENSITY ACCEPTABLE TO THE PROJECT ENGINEER / LOCAL AUTHORITY.
4) MIN. COVER TO TOP OF DRAIN AND SEWER PIPES TO BE 1.2m- ROADWAYS AND DRIVEWAYS 0.9m- IN OPEN AREAS NOT ADJACENT TO ROADS 0.6m- IN GARDENS IF MIN. COVER DEPTH IS NOT ACHIEVED PIPES ARE TO BE SURROUNDED IN CONCRETE AS DETAILED.
5) 150mm C20 CONCRETE SURROUND TO BE PROVIDED TO ALL PIPES WHEN COVER DEPTH IS LESS THAN THAT SPECIFIED IN NOTE 4 ABOVE. WHERE RIGID PIPES WITH FLEXIBLE JOINTS ARE USED. VERTICAL MOVEMENT SHALL BE PROVIDED AT MAXIMUM INTERVALS OF 5m AND ALIGNED WITH THE FACE OF A PIPE SOCKET. THE MOVEMENT JOINTS SHALL BE 12mm WIDE AND SHALL BE FILLED WITH AN APPROVED COMPRESSIBLE MATERIAL,WHERE RIDGED SUPPORT IS PROV. FOR THE PIPE BEFORE COMPLETION OF THE BED, A LAYER OF BITUMINOUS ROOFING FELT COMPLYING WITH I.S. 36 TYPE 1 F SHALL BE PROVIDED BETWEEN THE SUPPORT AND THE PIPE. PIPES TO BE WRAPPED IN POLYTHENE PRIOR TO CONCRETING
6) COVER & FRAME FOR 560mm OPENING COMPLYING WITH B.S. E.N. 124 GROUP 4 - IN ROADWAYS GROUP 2 - IN FOOTPATHS & MARGINS COVER FRAMES FULLY BEDDED IN 3:1 SAND/CEMENT MORTAR.

LEGEND

- EXISTING COMBINED SEWER
- EXISTING FOUL SEWER
- EXISTING SEWER TO BE REMOVED
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPOSED STORM SEWER
- PROPOSED FOUL SEWER
- PROPOSED WATERMAIN
- FMH — DENOTES PROPOSED FOUL MANHOLE
- SMH — DENOTES PROPOSED STORM MANHOLE
- DENOTES EXISTING COMBINED MANHOLE
- SV — DENOTES PROPOSED SLUICE VALVE

ALL WASTERWATER 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

ALL WATER-SUPPLY DETAILS & LAYOUT ARE TO COMPLY WITH AND BE ADOPTED FROM THE IRISH WATER - CONNECTION AND DEVELOPER SERVICES DOCUMENT FOR WATER INFRASTRUCTURE STANDARD DETAILS. REF TO IRISH WATER DOCUMENT No IW-CDS-5020 AND CODE OF PRACTICE DOCUMENT IW-CDS-5020

REV	BY	CKD	DATE	DESCRIPTION
0	SP	FS	21.03.24	ISSUED FOR PLANNING
1	SP	FS	03.04.24	REVISED AS CLOUDED ISSUED FOR PLANNING

PROJECT
YOUGHAL COURTHOUSE,
YOUGHAL, Co. CORK.

DRG. TITLE
EXISTING AND PROPOSED SERVICES LAYOUT

SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS SHOWN (@ A1)	SP	FS	PB

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DWG	CQ22-V1-XXX-DR-HLCE-CE-0003		
HL PROJECT REF.	STATUS	REVISION
CQ22	P3	1

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4.0 Appendix B - Irish Water – Pre-connection Enquiry

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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 Uisce Éireann 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): Cork County Council

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: William Smyth

*Postal address: Cork County Council

| Floor 9 County Hall Cork

*Eircode: T12R2NC

Please provide either a landline or a mobile number

Landline: 0214285439

*Mobile: 0862086333

*Email: billy.smyth@corkcoco.ie

2 Agent details (if applicable):

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

*Contact name: Francesco Silvestri

Company name (if applicable): Horganlynch LTD

*Postal address: Tellengana, Blackrock Road, Cork

*Eircode: T12HP7R

Please provide either a landline or a mobile number

Landline:

*Mobile 0214936100

*Email: francesco.silvestri@horganlynch.ie

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):

Courthouse and Soup Kitchen

***Address 2** Market Square, Youghal

***Address 3**

***City/Town** Youghal

***County** Cork **Eircode** P36V126

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

Eastings (X) 210639 Northings (Y) 077833

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:

Cork County Council

7 *Has full planning permission been granted? Yes | No ✔

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

8 ***Is this development affiliated with a government body/agency?** Yes ✔ No

If 'Yes', please specify the body/agency:

Cork County Council

Eg. IDA, HSE, LDA, etc.

Section C | Development details

9 ***Please outline the domestic and/or industry/business use proposed:**

Domestic:

Property type	Number of units	Property type	Number of units
House		Apartments	
Duplex		Number of Apartment Blocks	

Industry/business:

Property type	Number of units	Property type	Number of units
Agricultural		Brewery / Distillery	
Restaurant / Café / Pub		Car Wash / Valeting	
Creche		Data Centre	
Fire Hydrant		Fire Station	
Food Processing		Hotel Accommodation	
Industrial / Manufacturing		Laundry / Laundrette	
Office		Primary Care Centre	
Residential / Nursing Care Home		Retail	
School		Sports Facility	
Student Accommodation		Warehouse	

Other (please specify type)	Museum	No. of Units	1

9.1 Please provide additional details if your proposed business use are in the Food Processing, Industrial unit/ Manufacturing, Sports Facility or Other Categories.

Museum and exhibition facility

9.2 Please provide the maximum expected occupancy in number of people, according to the proposed development you selected, e.g. Number of office workers, number of nursing home residents, maximum pub occupancy, number of hotel beds, number of retail workers:

0	0	0	0	6	5

10 ***Approximate start date of proposed development:**

		/	0	3	/	2	0	2	5

11 ***Is the development multi-phased?** Yes No ✔

If 'Yes', application must include a master-plan identifying the development phases and the current phase number.

If 'Yes', please provide details of variations in water demand volumes and wastewater discharge loads due to phasing requirements.

12 ***Please indicate the type of connection required by ticking the appropriate box below:**

Both Water and Wastewater	✔	Please complete both Sections D and E
Water only		Please go to Section D
Wastewater only		Please go to Section E

Reason for only applying for one service (if applicable):

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:** ☐☐ / 0 3 / 2 0 2 5

15 ***What diameter of water connection is required to service the development?** 1 0 0 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	0.0825	**l/s**
Post-development average hour water demand	0.0165	**l/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	N/A	**l/s**
Post-development average hour water demand	N/A	**l/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?**

0 2 . 4 7 m

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

0 0 0 0 6 m

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

Please include calculations on the attached sheet provided.

22 **Are there fire flow requirements?** Yes ☐ No ✔

Additional fire flow requirements over and above those identified in Q17-18		**l/s**

Please include calculations on the attached sheet provided, and include confirmation of requirements from the Fire Authority.

23 **Do you propose to supplement your potable water supply from other sources?** Yes ☐ No ✔

If 'Yes', please indicate how you propose to supplement your potable water supply from other sources (see **Guide to completing the application form** on page 15 of this document for further details):

Section E | Wastewater connection and discharge details

24 ***Is there an existing connection to a public sewer at the site?** Yes ☐ No ✔

24.1 If yes, is this enquiry for an additional connection to the one already installed? Yes ☐ No ☐

24.2 If yes, is this enquiry to increase the size of an existing connection? Yes ☐ No ☐

25 ***Approximate date that wastewater connection is required:** ☐☐ / 0 3 / 2 0 2 5

26 ***What diameter of wastewater connection is required to service the development?** 1 0 0 mm

27 ***Is more than one connection required to the public infrastructure to service this development?** Yes ✔ No ☐

If 'Yes', how many? 0 2

28 **Please indicate the commercial wastewater hydraulic load (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak discharge	0.114	**l/s**
Post-development average discharge	0.019	**l/s**

Please include calculations on the attached sheet provided.

29 **Please indicate the industrial wastewater hydraulic load (industry-specific discharge requirements):**

Post-development peak discharge	N/A	**l/s**
Post-development average discharge	N/A	**l/s**

Please include calculations on the attached sheet provided.

30 Wastewater organic load:

Characteristic	Max concentration (mg/l)	Average concentration (mg/l)	Maximum daily load (kg/day)
Biochemical oxygen demand (BOD)		470	
Chemical oxygen demand (COD)		888	
Suspended solids (SS)		293	
Total nitrogen (N)		55	
Total phosphorus (P)		8.21	
Other			

Temperature range	
pH range	

31 *Storm water run-off will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer. In the case of such brownfield sites, please indicate if the development intends discharging surface water to the combined wastewater collection system:

Yes ✔ No

If 'Yes', please give reason for discharge and comment on adequacy of SUDS/attenuation measures proposed.

See Foul Wastewater discharg

NOTES

Please submit detailed calculations on discharge volumes, peak flows and attenuation volumes with this application

32 *Do you propose to pump the wastewater? Yes No ✔

If 'Yes', please include justification for your pumped solution with this application.

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

2.6 m

34 What is the lowest finished floor level on site above Malin Head Ordnance Datum? 2.8 m

35 What is the proposed invert level of the pipe exiting the property to the public road?

1.1 m

Section F | Supporting documentation

Please provide the following additional information (all mandatory):

> Site location map: A site location map to a scale of 1:1000, which clearly identifies the land or structure to which the enquiry relates. The map shall include the following details: ✓

i. The scale shall be clearly indicated on the map. ✓

ii. The boundaries shall be delineated in red. ✓

iii. The site co-ordinates shall be marked on the site location map. ✓

> Details of planning and development exemptions (if applicable). ✓

> Calculations (calculation sheets provided below). ✓

> Site layout map to a scale of 1:500 showing layout of proposed development, water network and wastewater network layouts, additional water/wastewater infrastructure if proposed, connection points to Uisce Éireann infrastructure. ✓

> Conceptual design of the connection asset from the proposed development to the existing Uisce Éireann infrastructure, including service conflicts, gradients, pipe sizes and invert levels. ✓

> Any other information that might help Uisce Éireann assess this pre-connection enquiry. ✓

Section G | Declaration

I/We hereby make this application to Uisce Éireann for a water and/or wastewater connection as detailed on this form.

I/We understand that any alterations made to this application must be declared to Uisce Éireann.

The details that I/we have given with this application are accurate.

I/We have enclosed all the necessary supporting documentation.

Any personal data you provide will be stored and processed by Uisce Éireann and may be transferred to third parties for the purposes of the water and/or wastewater connection process. I hereby give consent to Uisce Éireann to store and process my personal data and to transfer my personal data to third parties, if required, for the purposes of the connection process.

If you wish to revoke consent at any time or wish to see Uisce Éireann's full Data Protection Notice, please see **https://www.water.ie/privacy-notice/**

Signature: 

Date: 0 4 / 0 4 / 2 0 2 4

Your full name (in BLOCK CAPITALS):

F	R	A	N	C	O	S	C	O		S	I	L	V	E	S	T	R	I												

Uisce Éireann will carry out a formal assessment based on the information provided on this form. Any future connection offer made by Uisce Éireann will be based on the information that has been provided here.

Please submit the completed form to **newconnections@water.ie** or alternatively, post to:

Uisce Éireann
PO Box 860
South City Delivery Office
Cork City

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.

Uisce Éireann 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. Uisce Éireann accepts no responsibility for any loss or damage arising as a result of its processing of freedom of information requests.

Calculations

Water demand

The following is the on-site storage demand for the proposed Development:
Occupancy -

Personnel - 5 persons
Guests - 60persons

Post Development Average Hour Water Demand -

Personnel: 45 litres/day/person
Guests : 20litres/day/person

5x45=225litres/day
60x20=1200litres/day

Total Water Demand = 1425 litres/day

Average Water Demand = 1425/ 24 / 60 / 60 = 0.0165 litres/sec

Post Development Peak Hour Water Demand

Peak Water Demand = 5.0 * 0.0165 litres/sec = 0.0825 litres/sec

On-site storage

N/A

Fire flow requirements

N/A - Existing Hydrants on public street

The following is the on-site storage demand for the proposed Development:
Occupancy -

Personnel - 5 persons
Guests - 60 persons

Post Development Average Hour Water Demand -

Personnel: 45 litres/day/person
Guests : 20 litres/day/person

5x45=225litres/day
60x20=1200litres/day

Average Foul Discharge = 11425/24/60/60=0.0165 litres/day

Post Development Peak Hour Foul Discharge

Peak Foul Discharge = 6DWF = 6 * 0.0165litres/sec = 0.1 litres/sec

NOTE:

The existing drainage system for all the storm water exiting the site is maintained.
Impermeable surface areas will not be increased after the refurbishment.
A Sustainable Drainage System feature will be implemented changing the internal courtyard into hard and soft landscape with 40% of total courtyard area being permeable.
This will reduce the total volume of storm water currently discharged prior the development.

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 Uisce Éireann infrastructure.

The Uisce Éireann Codes of Practice are available at **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. Uisce Éireann 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 Uisce Éireann 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 Uisce Éireann 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 Uisce Éireann network and could be utilised in the event of a fire, Uisce Éireann 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. Uisce Éireann 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 Uisce Éireann 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 Uisce Éireann 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, Uisce Éireann 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 Uisce Éireann 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

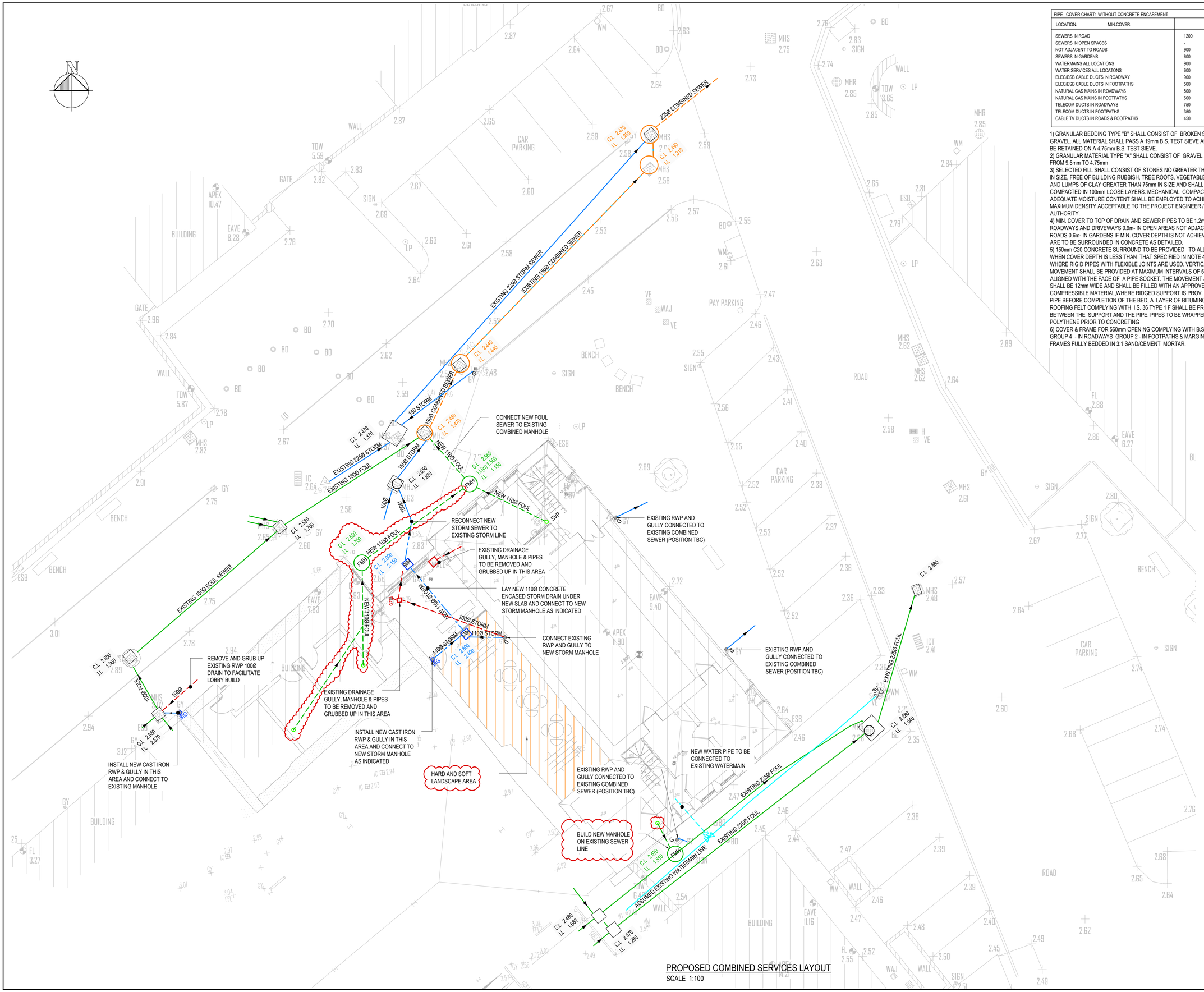
Please provide additional information as listed.

Section G | Declaration

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

Notes

Notes



PROPOSED COMBINED SERVICES LAYOUT

SCALE 1:100

PIPE COVER CHART: WITHOUT CONCRETE ENCASEMENT	
LOCATION:	MIN.COVER.
SEWERS IN ROAD	1200
SEWERS IN OPEN SPACES	-
NOT ADJACENT TO ROADS	900
SEWERS IN GARDENS	600
WATERMAINS ALL LOCATIONS	900
WATER SERVICES ALL LOCATONS	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

1) GRANULAR BEDDING TYPE "B" SHALL CONSIST OF BROKEN STONE OR GRAVEL. ALL MATERIAL SHALL PASS A 19mm B.S. TEST SIEVE AND SHALL BE RETAINED ON A 4.75mm B.S. TEST SIEVE.
2) GRANULAR MATERIAL TYPE "A" SHALL CONSIST OF GRAVEL GRADED FROM 9.5mm TO 4.75mm
3) SELECTED FILL SHALL CONSIST OF STONES NO GREATER THAN 25mm IN SIZE, FREE OF BUILDING RUBBISH, TREE ROOTS, VEGETABLE MATTER AND LUMPS OF CLAY GREATER THAN 75mm IN SIZE AND SHALL BE COMPACTED IN 100mm LOOSE LAYERS. MECHANICAL COMPACTION WITH ADEQUATE MOISTURE CONTENT SHALL BE EMPLOYED TO ACHIEVE A MAXIMUM DENSITY ACCEPTABLE TO THE PROJECT ENGINEER / LOCAL AUTHORITY.
4) MIN. COVER TO TOP OF DRAIN AND SEWER PIPES TO BE 1.2m- ROADWAYS AND DRIVEWAYS 0.9m- IN OPEN AREAS NOT ADJACENT TO ROADS 0.6m- IN GARDENS IF MIN. COVER DEPTH IS NOT ACHIEVED PIPES ARE TO BE SURROUNDED IN CONCRETE AS DETAILED.
5) 150mm C20 CONCRETE SURROUND TO BE PROVIDED TO ALL PIPES WHEN COVER DEPTH IS LESS THAN THAT SPECIFIED IN NOTE 4 ABOVE. WHERE RIGID PIPES WITH FLEXIBLE JOINTS ARE USED. VERTICAL MOVEMENT SHALL BE PROVIDED AT MAXIMUM INTERVALS OF 5m AND ALIGNED WITH THE FACE OF A PIPE SOCKET. THE MOVEMENT JOINTS SHALL BE 12mm WIDE AND SHALL BE FILLED WITH AN APPROVED COMPRESSIBLE MATERIAL,WHERE RIDGED SUPPORT IS PROV. FOR THE PIPE BEFORE COMPLETION OF THE BED, A LAYER OF BITUMINOUS ROOFING FELT COMPLYING WITH I.S. 36 TYPE 1 F SHALL BE PROVIDED BETWEEN THE SUPPORT AND THE PIPE. PIPES TO BE WRAPPED IN POLYTHENE PRIOR TO CONCRETING
6) COVER & FRAME FOR 560mm OPENING COMPLYING WITH B.S. E.N. 124 GROUP 4 - IN ROADWAYS GROUP 2 - IN FOOTPATHS & MARGINS COVER FRAMES FULLY BEDDED IN 3:1 SAND/CEMENT MORTAR.

LEGEND

- EXISTING COMBINED SEWER
- EXISTING FOUL SEWER
- EXISTING SEWER TO BE REMOVED
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPOSED STORM SEWER
- PROPOSED FOUL SEWER
- PROPOSED WATERMAIN
- FMH — DENOTES PROPOSED FOUL MANHOLE
- SMH — DENOTES PROPOSED STORM MANHOLE
- DENOTES EXISTING COMBINED MANHOLE
- SV — DENOTES PROPOSED SLUICE VALVE

ALL WASTERWATER 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

ALL WATER-SUPPLY DETAILS & LAYOUT ARE TO COMPLY WITH AND BE ADOPTED FROM THE IRISH WATER - CONNECTION AND DEVELOPER SERVICES DOCUMENT FOR WATER INFRASTRUCTURE STANDARD DETAILS. REF TO IRISH WATER DOCUMENT No IW-CDS-5020 AND CODE OF PRACTICE DOCUMENT IW-CDS-5020

REV	BY	CKD	DATE	DESCRIPTION
0	SP	FS	21.03.24	ISSUED FOR PLANNING
1	SP	FS	03.04.24	REVISED AS CLOUDED ISSUED FOR PLANNING

PROJECT
YOUGHAL COURTHOUSE,
YOUGHAL, Co. CORK.

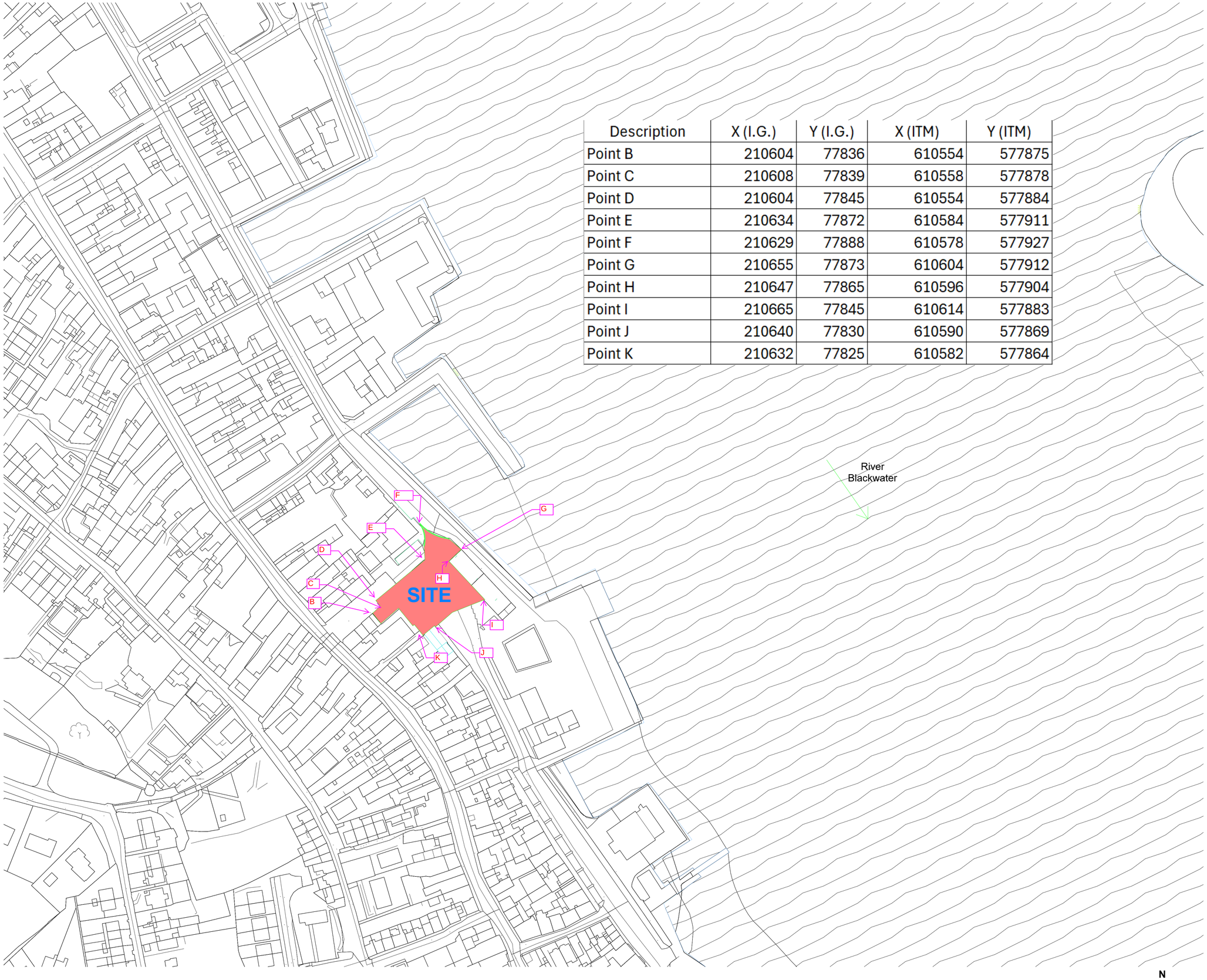
DRG. TITLE
EXISTING AND PROPOSED SERVICES LAYOUT

SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS SHOWN (@ A1)	SP	FS	PB

Horganlynch
Consulting Engineers
Tellengana, Blackrock Road,Cork.
t: +353 21 4936100
e: cork@horganlynch.ie
www.horganlynch.ie

DWG	CQ22-V1-XXX-DR-HLCE-CE-0003		
HL PROJECT REF.	STATUS	REVISION
CQ22	P3	1

Description	X (I.G.)	Y (I.G.)	X (ITM)	Y (ITM)
Point B	210604	77836	610554	577875
Point C	210608	77839	610558	577878
Point D	210604	77845	610554	577884
Point E	210634	77872	610584	577911
Point F	210629	77888	610578	577927
Point G	210655	77873	610604	577912
Point H	210647	77865	610596	577904
Point I	210665	77845	610614	577883
Point J	210640	77830	610590	577869
Point K	210632	77825	610582	577864



1 Site Location Map

Scale 1 : 1000 @A1

10m 20m 50m 100m

GRAPHIC SCALE: 1:1000

N

Horganlynch

Consulting Engineers

5.0 Appendix C - Flood risk assessment

Cork Office (Registered Office):
Tellengana,
Blackrock Road,
Cork T12 HP7R
Ireland

t: +353 21 4936100
e: info@horganlynch.ie

Dublin Office:
The Tara Building.
11-15 Tara Street,
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P. Brady BEng MScEng CEng MIEI
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K. Murphy BEng CEng MIStructE MIEI FConsEI
M. Shortall BScEng CEng MIStructE MIEI DipProjMan H&GEng

Youghal Courthouse
Co. Cork
FRA

March 2024

Prepared for:
Horgan Lynch

www.jbaconsulting.ie

Document Status

Issue date	March 2024
Issued to	Horgan Lynch
BIM reference	MLM
Revision	S3-P03
Prepared by	Fiona Byrne BSc MSc Analyst
Reviewed by	Ross Bryant BSc MSc CEnv MCIWEM C.WEM Associate Director
Authorised by	Ross Bryant BSc MSc CEnv MCIWEM C.WEM Associate Director

Carbon Footprint

JBA is committed to championing sustainability and has made The Ten Principles of the UN Global Compact part of its culture and operations. We have a Group-wide objective to be a Net Zero carbon emissions business.

The format of this report is optimised for reading digitally in pdf format; duplex printing in B&W on 100% post-consumer recycled A4 will result in a carbon footprint of 50g CO2. This will increase to 63g CO2 if primary-source paper is used. Please consider the environment before printing.

Contract

JBA Project Manager	Ross Bryant
Address	Corbally, Limerick
JBA Project Code	2024s0265

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of Horgan Lynch. and its appointed agents in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to Horgan Lynch for the purposes for which it was originally commissioned and prepared.

No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by JBA. This Report cannot be relied upon by any other party without the prior and express written agreement of JBA.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by JBA has not been independently verified by JBA, unless otherwise stated in the Report.

JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. JBA specifically does not guarantee or warrant any estimates or projections contained in this Report.

Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

Where field investigations are carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results of any

measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in issuing this Report.

Contents

List of Figures

List of Tables

Abbreviations

AEP	Annual Exceedance Probability
CDP	County Development Plan
CFRAM	Catchment Flood Risk Assessment and Management
DoEHLG	Department of the Environment, Heritage and Local Government
FB	Freeboard
FFL	Finish Floor Levels
FRA	Flood Risk Assessment
GSI	Geological Survey of Ireland
ICPSS	Irish Coastal Protection Strategy Study
ICWWS	Irish Coastal Wave and Water Level Modelling Study
NCFHM	National Coastal Flood Hazard Mapping
OPW	Office of Public Works
PFRA	Preliminary Flood Risk Assessment
SFRA	Strategic Flood Risk Assessment
SW CFRAM	South Western Catchment Flood Risk Assessment and Management

1 Introduction

Under the Planning System and Flood Risk Management Guidelines for Planning Authorities (DoEHLG & OPW, 2009) the proposed development must undergo a Flood Risk Assessment to ensure sustainability and effective management of risk.

1.1 Terms of reference and scope

JBA Consulting was appointed by Horgan Lynch to prepare a Flood Risk Review (FRR) that reviews the flood risk of a site for a Courthouse located in Youghal, Co. Cork. The report was requested as part of a Part 8 planning submission.

1.2 Flood Risk Assessment; Aims and Objectives

This study is being completed to inform the future development of the site as it relates to flood risk. It aims to identify, quantify, and communicate to Planning Authority officials and other stakeholders the risk of flooding to land, property and people and the measures that would be recommended to manage the risk.

The objectives of this FRA are to:

- Identify potential sources of flood risk;
- Confirm the level of flood risk and identify key hydraulic features;
- Assess potential flood risk management measures that may be appropriate;
- Prepare a report summarising the summarising the findings and outlining the design constraints facing the site.

Recommendations for development have been provided in the context of the OPW / DoECLG planning guidance, "The Planning System and Flood Risk Management". A review of the likely effects of climate change, and the long-term impacts this may have on any development has also been undertaken.

For general information on flooding, the definition of flood risk, flood zones and other terms see 'Understanding Flood Risk' in Appendix A.

1.3 Proposed Development

Refer to Figure 1-1 for the site layout. The proposed development is a museum and exhibition facility on the site of the existing Youghal Courthouse and Soup Kitchen buildings. Works at the site involve structural repair and refurbishment to the building including:

- New single story extension link between soup kitchen and courthouse
- New walkway bridge on first floor
- Partial demolition of the existing fireplace and chimney shaft
- New internal floor slabs to fourth house and soup kitchen buildings
- New foundation slab
- New canopy structure

Figure 1-1: Site layout

2 Site Background

2.1 Site Location and Watercourses

The site is located in Youghal town centre along the River Blackwater estuary and Youghal Harbour. The site is bounded on all sides by a mixture of commercial and residential properties. The area is zoned "Town Centre/Neighbourhood Centres" on the current Cork County Development Plan.

The main watercourses in the area are Youghal harbour which the estuary of the River Blackwater flows into, located c. 40m to the northeast of the site, and a tributary of the River Blackwater which flows in to the Blackwater c. 1480m to the north of the site. Refer to Figure 2-1 for watercourse and site locations. The tributary of the River Blackwater flows in an easterly direction until it reaches the River Blackwater. The River Blackwater flows in a southerly direction towards Youghal Harbour.

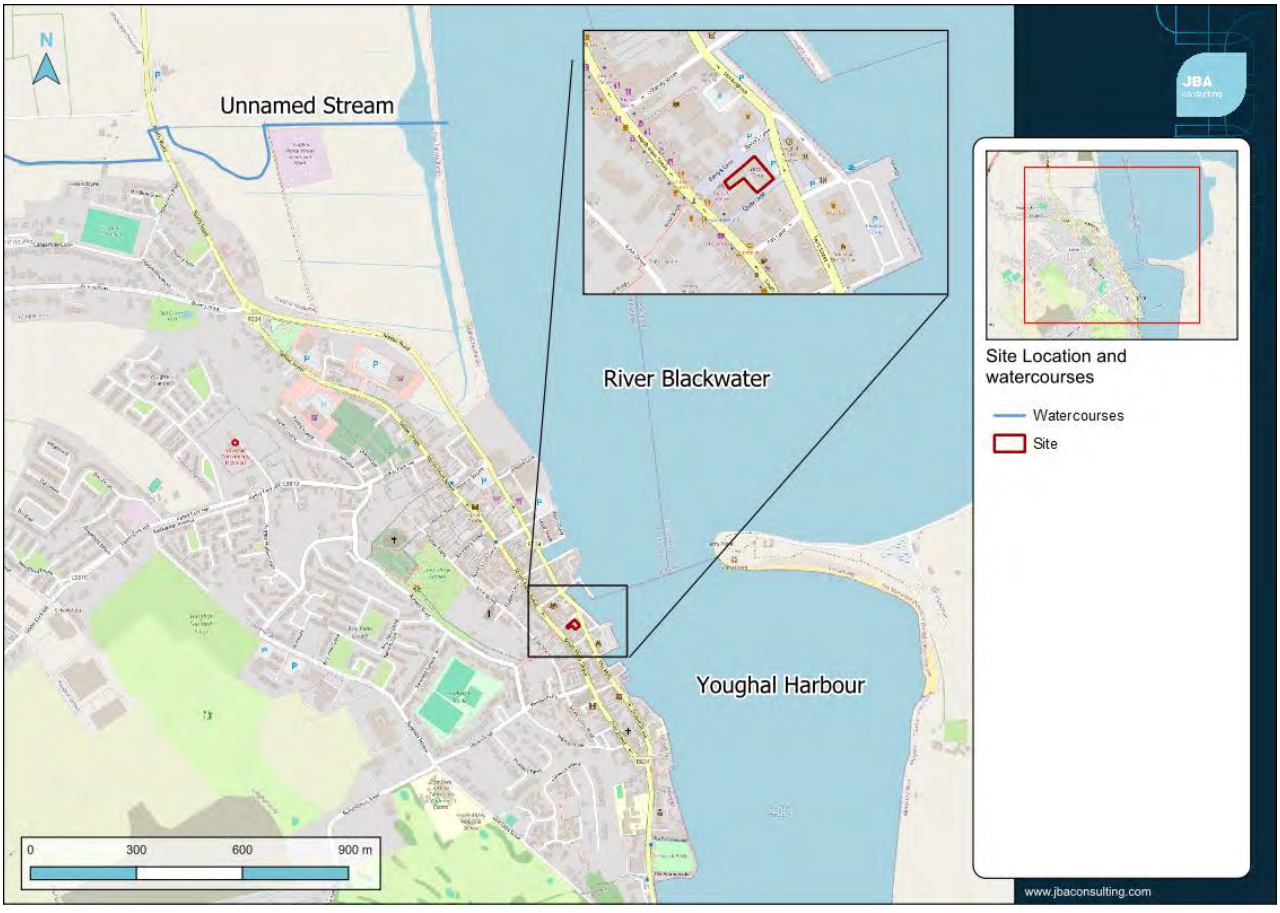


Figure 2-1: Site Location and Watercourses

2.2 Site Geology

The Geological Survey of Ireland (GSI) groundwater and geological maps were reviewed. The underlying bedrock at the site location is Gyleen Formation which consists of sandstone with mudstone & siltstone (see Figure 2-2). The underlying soil at the site is 'made ground' which is of low permeability, (see Figure 2-3).

The associated groundwater vulnerability, which is a measure of the likelihood of groundwater contamination and is an indicator of groundwater interaction is classified as 'High'. The 'High' classification indicates a depth to bedrock of between 3-4m. there are no karst features, also frequently linked to groundwater interaction, at the site or in the surrounding area.

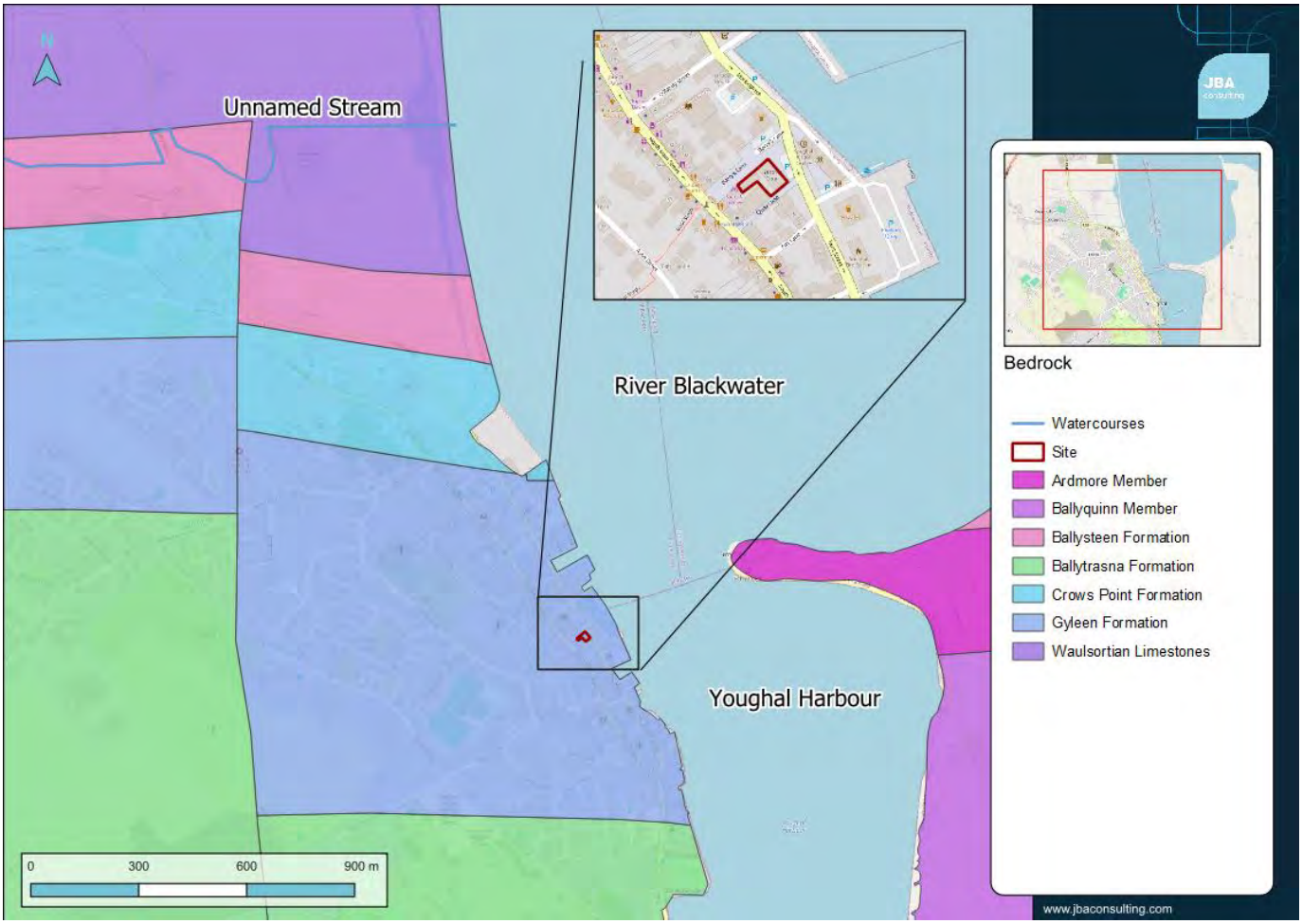


Figure 2-2: Underlying Bedrock (GSI)

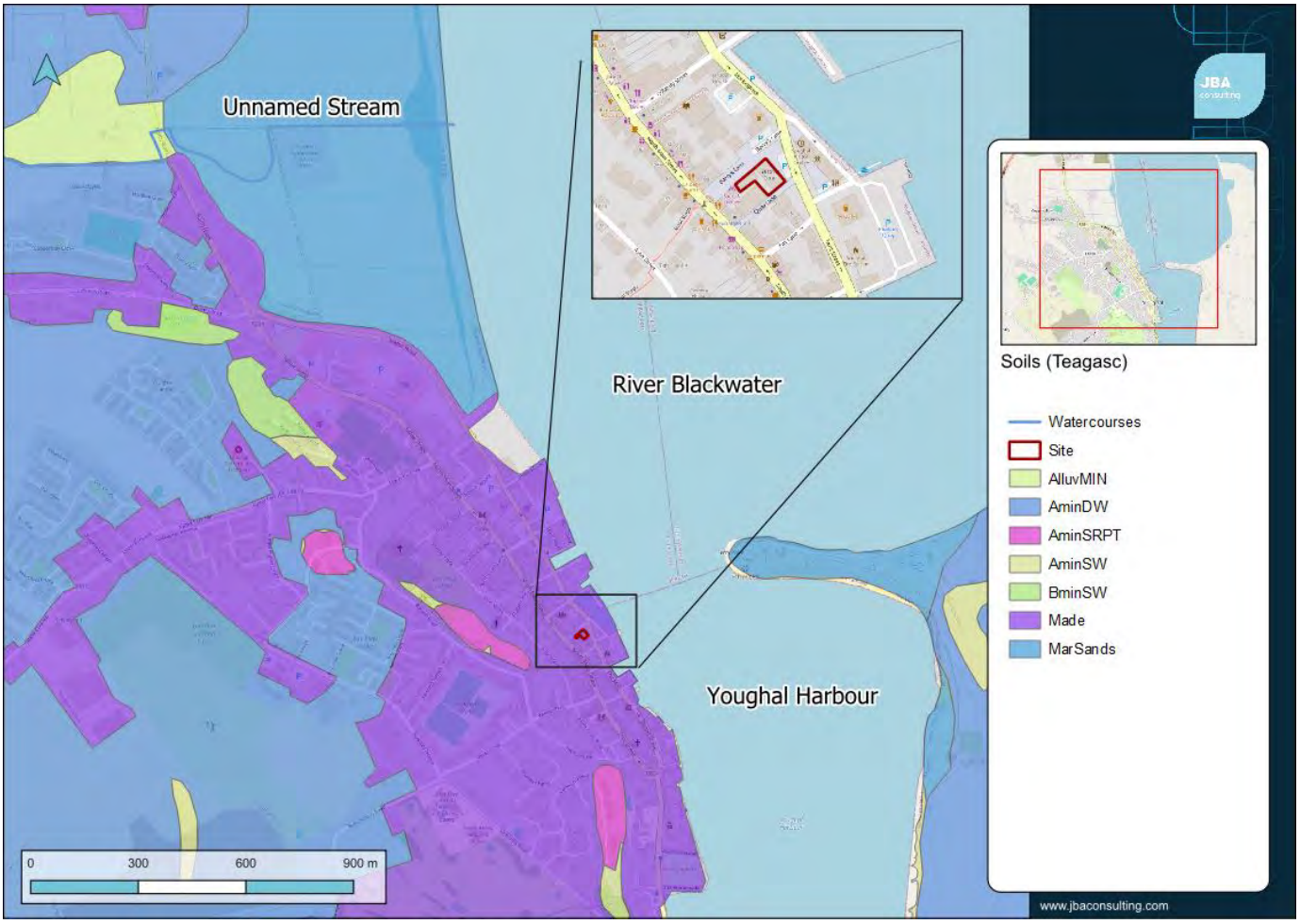


Figure 2-3 Underlying soils (Teagasc)

2.3 Local Topography

The site is generally flat with a gradual fall from north west to south east with local topography falling towards Youghal harbour. It has a high point of 2.88mOD at the south west of the courthouse site and a low point of 2.4 at the north east of the site. Refer to Figure 2-4 for local topography provided by OPW.

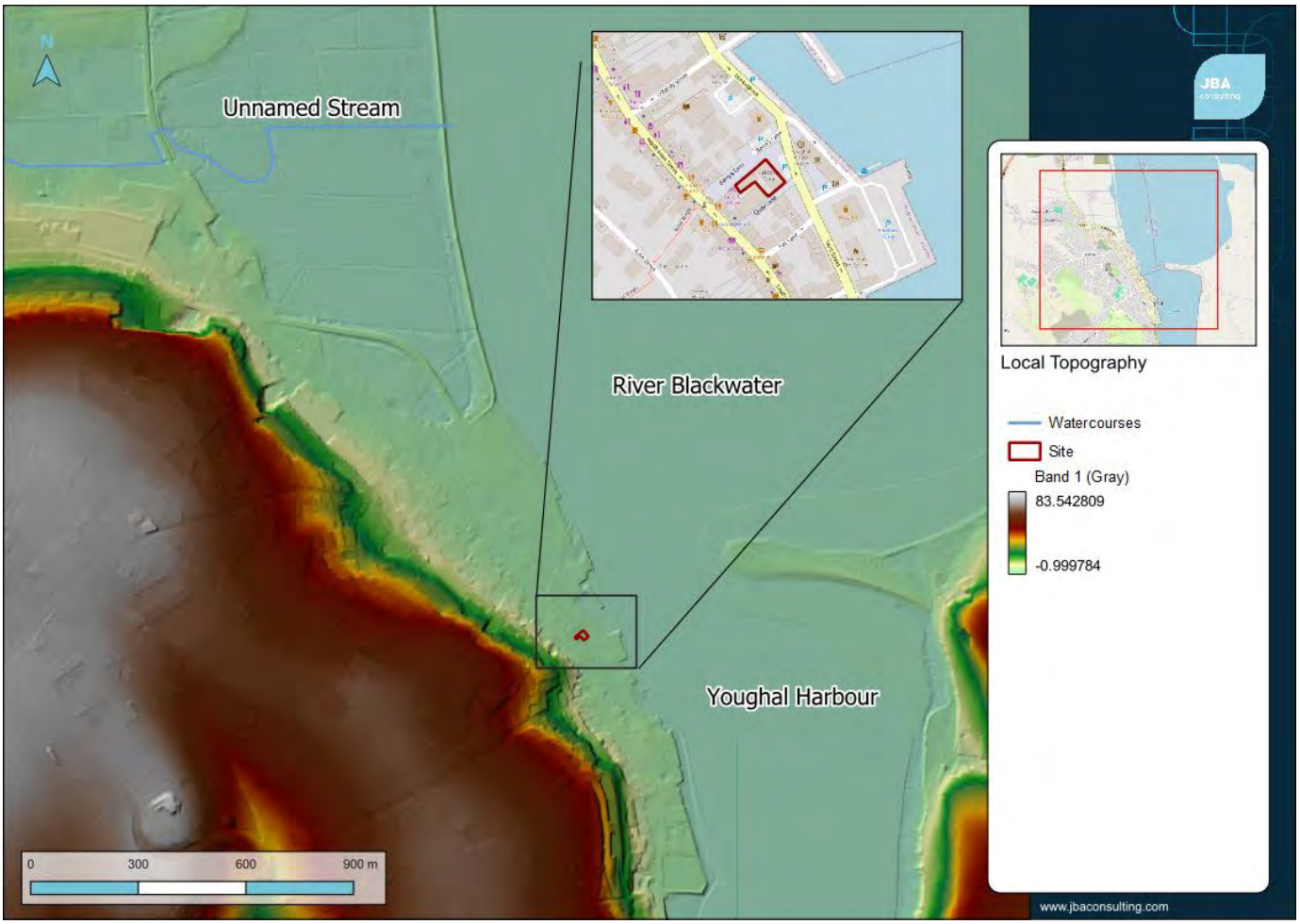


Figure 2-4 Local Topography

3 Flood Risk Identification

An assessment of the potential for and scale of flood risk at the site is conducted using historical and predictive information. This identifies any sources of potential flood risk to the site and reviews historic flood information. The findings from the flood risk identification stage of the assessment are provided in the following sections.

3.1 Flood History

Several sources of flood information were reviewed to establish any recorded flood history at, or near the site. This includes the OPW's website, www.floodinfo.ie and general internet searches.

3.1.1 Floodmaps.ie

The OPW host a national flood hazard mapping website, www.floodinfo.ie, which highlights areas at risk of flooding through the collection of recorded data and observed flood events. The following past flood events in the surrounding area are shown in Figure 3-1.

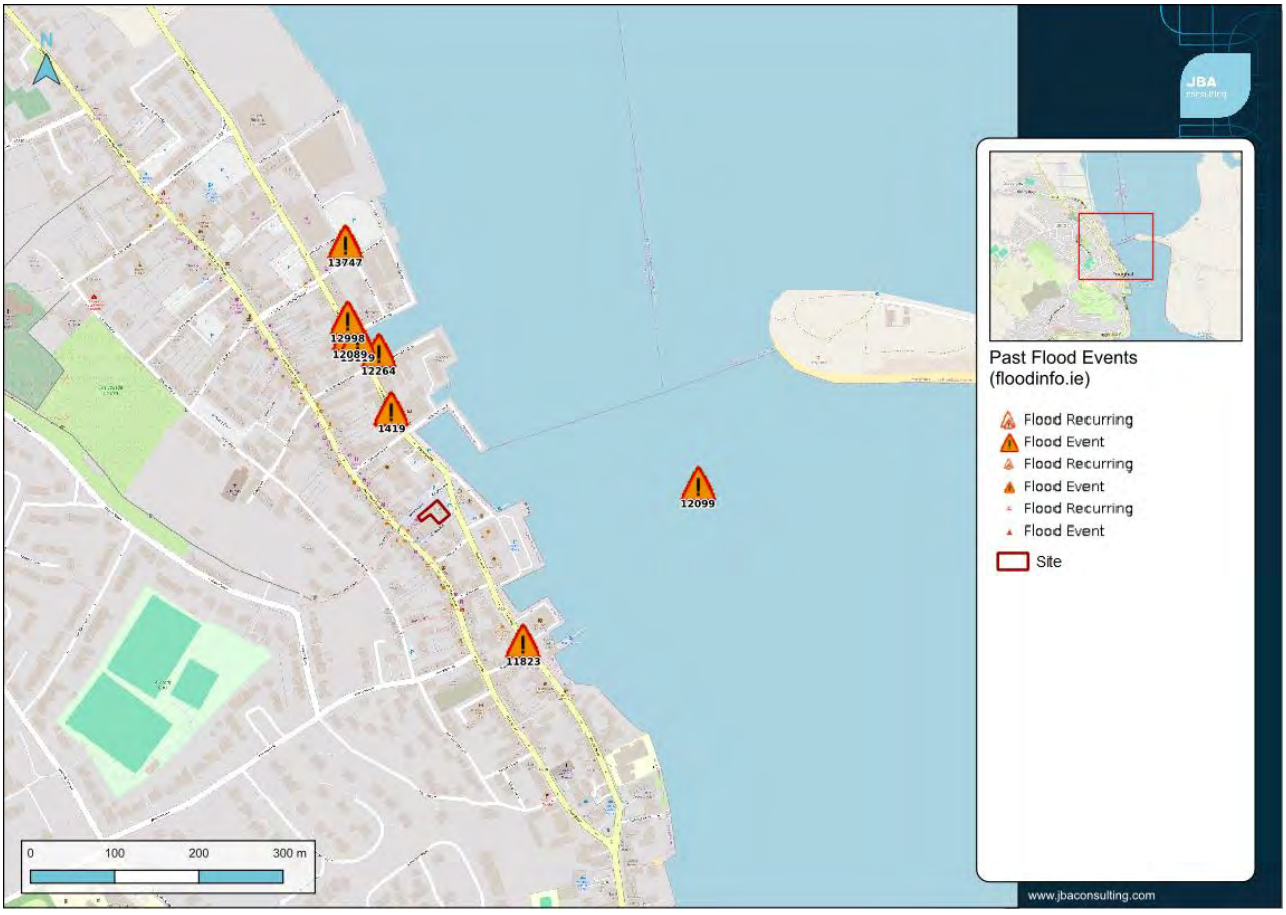


Figure 3-1: Past Flood Event Locations

Review of Figure 3-1 shows several instances of historic flooding within the close to the site, including:

- ID-1419, 13119, 13747 and 12264 - Flooding in Youghal Town Oct 2004: Flooding at Barrys Lane, Youghal Fire Station, Catherine Street, Corner of 42 South Main Street and Mall Lane and Mall house. An extreme storm surge along the south west coast of Ireland inundated parts of Youghal town centre including areas along the quayside and adjacent streets. An elevated water level of 2.6mAOD due to high tide and 0.82m storm surge (as recorded at Ballycotton gauge) spilled over the quayside walls and flowed down the roads.
- ID-12089 and 12998 - Flooding at in Youghal, Co.Cork on 2nd January 2014: Flooding caused by a combination of south-easterly winds and high tides.
- ID-12099 - Flooding at Youghal, Co.Cork on 3rd February 2014: Flooding at The Mall, Kent Street, Market Place, Strand Street, Grafton Street, Catherine Street, Brown Street and North Main Street due to extreme winds and storm surges coupled with high tides. An extract from a map included in the engineer's report for this event is shown in Figure 3-2.

Figure 3-2 Excerpt from Engineer's report - Flooding at Youghal Co. Cork on 3rd. February 2014 (OPW)

The engineer's report provided by the OPW for the 3rd of February event states that the majority of flooding to properties occurred along Brown Street and North Main street. A tide level of 2.765mOD was observed on the morning of 3rd February 2014 at Ballycotton, slightly higher than the 2.605mOD recorded on the 4th. February 2014 with typical flood depths of 0.1m up to a maximum of 0.2m. The site was recorded to have suffered minor flooding during this event.

An internet search was conducted to gather information about whether the site was affected by flooding previously. Youghal was affected by flooding during Storm Babet, however, it is not clear whether the site was affected during this event. No additional information on flooding at or around the site was identified.

3.2 Predicative Flooding

The area has been a subject of the following predicative flood mapping or modelling studies and other related studies and plans:

- South Western Catchment Flood Risk Assessment and Management (SW CFRAM)
- National Coastal Flood Hazard Mapping
- Irish Coastal Wave and Water Level Modelling Study
- Cork County Development Plan 2022-2028

3.2.1 South Western Catchment Flood Risk Assessment and Management (SW CFRAM)

The SW CFRAM study involves detailed hydraulic modelling of rivers and their tributaries. Finalised flood maps for the 10%, 1% and 0.1% AEP are publicly available through the CFRAM Study website. The SW CFRAM study is the most detailed flood mapping study to be carried out in the area. Both fluvial and coastal flooding were modelled for the River Blackwater and surrounding areas. Figure 3-3 displays an extract from the SW CFRAM fluvial flood maps and Figure 3-4 presents the coastal/tidal flood extents for Youghal. The mapping confirms the site is partially within Flood Zone B for coastal.

The Blackwater Catchment Flood Risk Management Plan (2018) set out the strategy, including a set of proposed flood measures, for the cost-effective and sustainable long-term management of flood risk in Youghal.

It was decided to assess the preliminary flood risk mitigation options for Youghal using the water level for the Mid-Range Future Scenario (MRFS) 0.5% AEP tidal event which is 3.11mOD Malin and to include tidal monitoring and a review of the relationship between near shore and off-shore water levels as part of the initial stage of the proposed options. It was found that the proposed measure was operationally robust but demountable flood barriers at slipways would have to be installed in advance of a flood

event. If these were not installed this could give rise to flooding. Further measures included the Youghal tidal monitoring regime which involved the installation of a tide gauge in Youghal harbour to confirm extreme tidal levels. The final measure was the progression of the Youghal flood relief scheme to project-level development, as well as assessment including environmental assessment as necessary and further public consultation, for refinement and preparation for planning/exhibition and, as appropriate, implementation. As of 2024 the flood relief scheme has not formally commenced, but new quay walls around Market Place have been constructed which would offer some protection to the Courthouse.

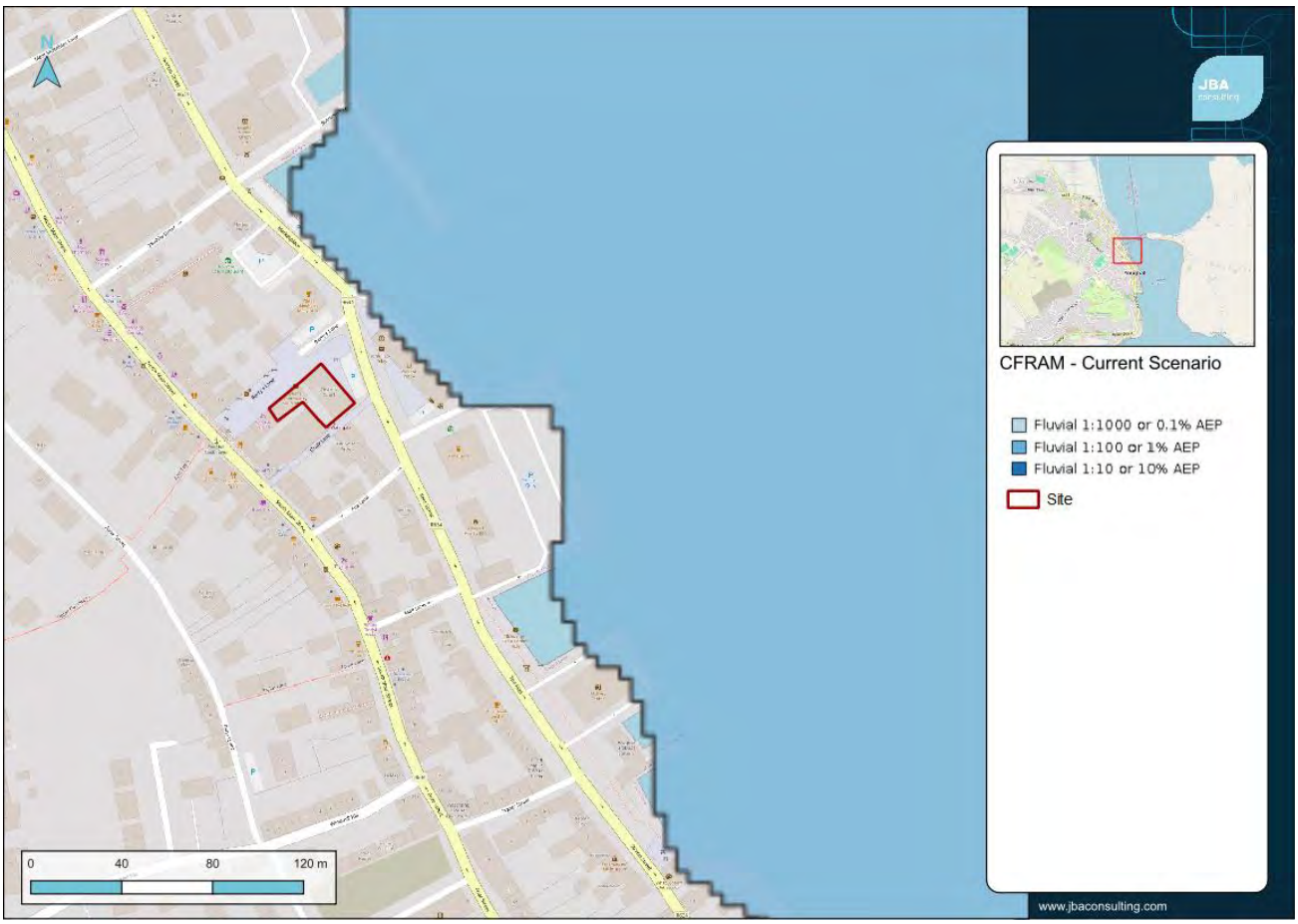


Figure 3-3: SW CFRAM fluvial map

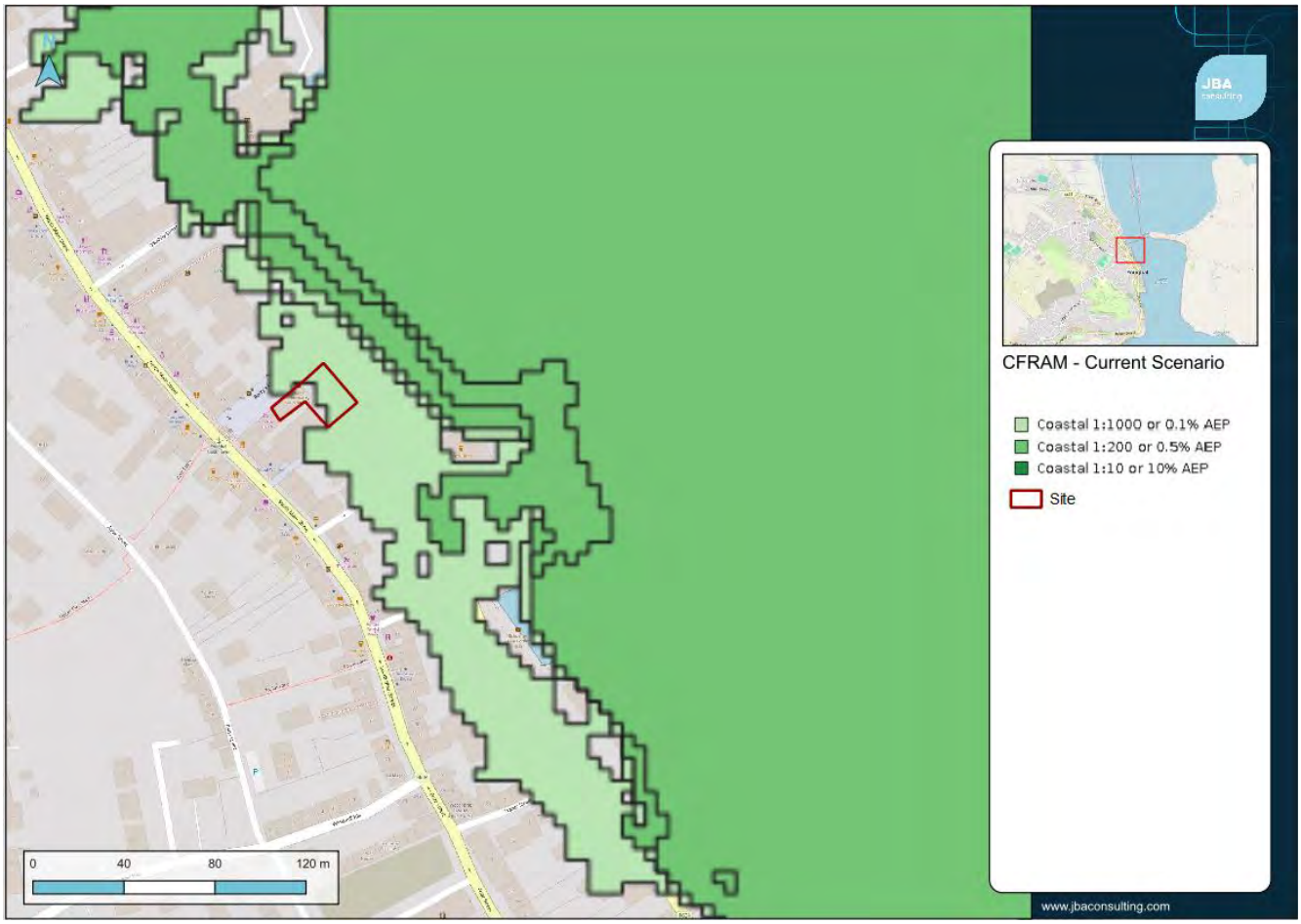


Figure 3-4: SW CFRAM Coastal map

3.2.2 National Coastal Flood Hazard Mapping 2021

The National Coastal Flood Hazard Mapping (NCFHM) was published in 2021 and uses still water sea levels estimated as part of the Irish Coastal Wave and Water Level Modelling Study (ICWWS).

The flood maps are presented in Figure 3-5. Review of Figure 3-5 confirms that the central section of the site is located fully within Flood Zone A/B. The total water level values for the present day scenario for 0.5% AEP and 0.1% AEP are 2.84m and 3.01m respectively. This is higher than the ICPSS values of 2.65m and 2.81m (which were used under the SW CFRAM study).

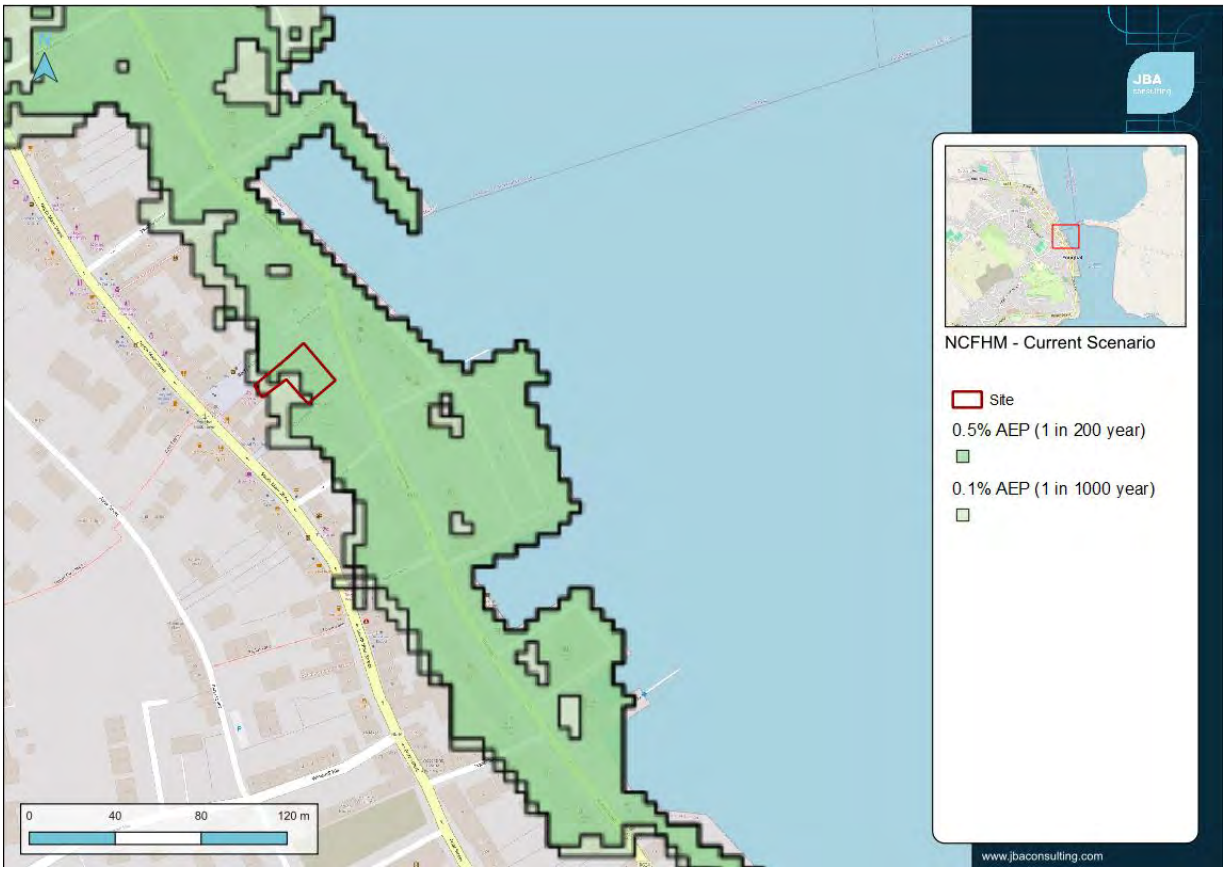


Figure 3-5: NCFHM Flood Extents

Figure 3-6 depicts the depth estimation mapping for current scenario 0.5% AEP events. Depths across the site range from 0-0.25m, with depths of 0.25-0.5m along boundaries to the north, east and south. Depths increase significantly in climate change events with the 0.5% AEP depths ranging from 1-1.5m across the site and >2m along the north, south and eastern boundaries of the site (see Figure 3-7). The quoted depths are in relation to the HEFS event which incorporates a +1m sea level rise.

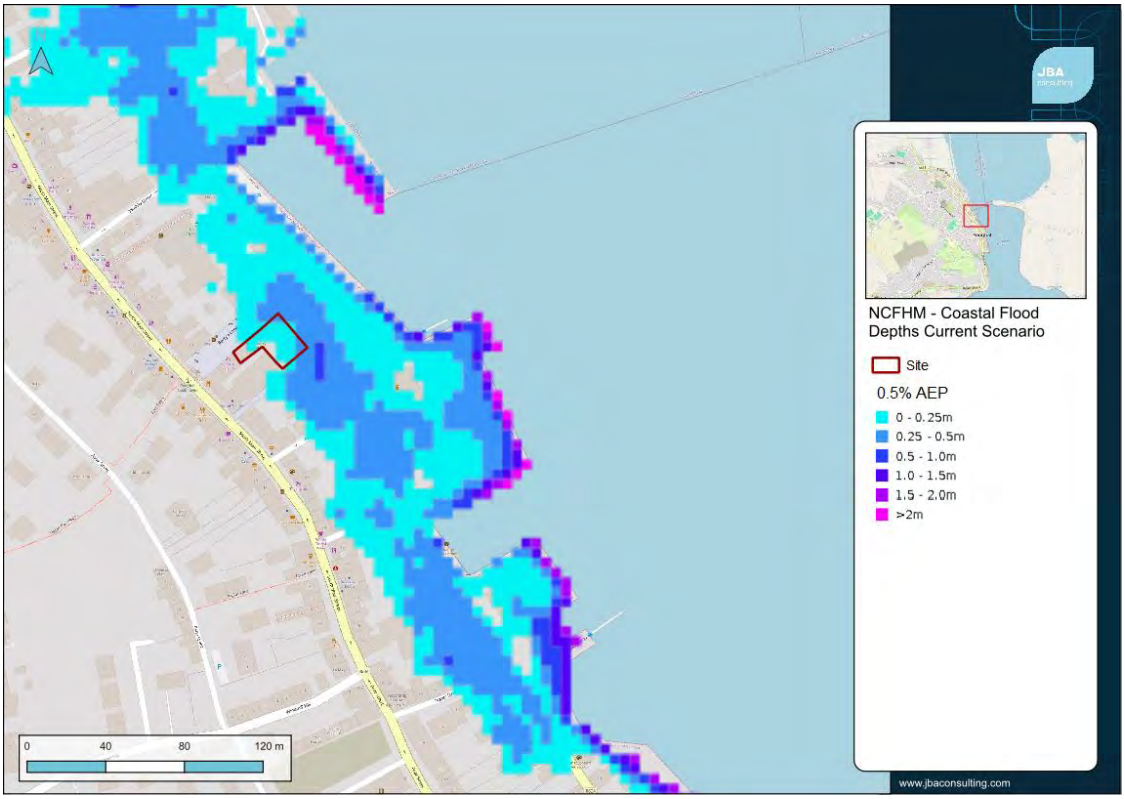


Figure 3-6: NCFHM depths - Current Scenario 0.5% AEP

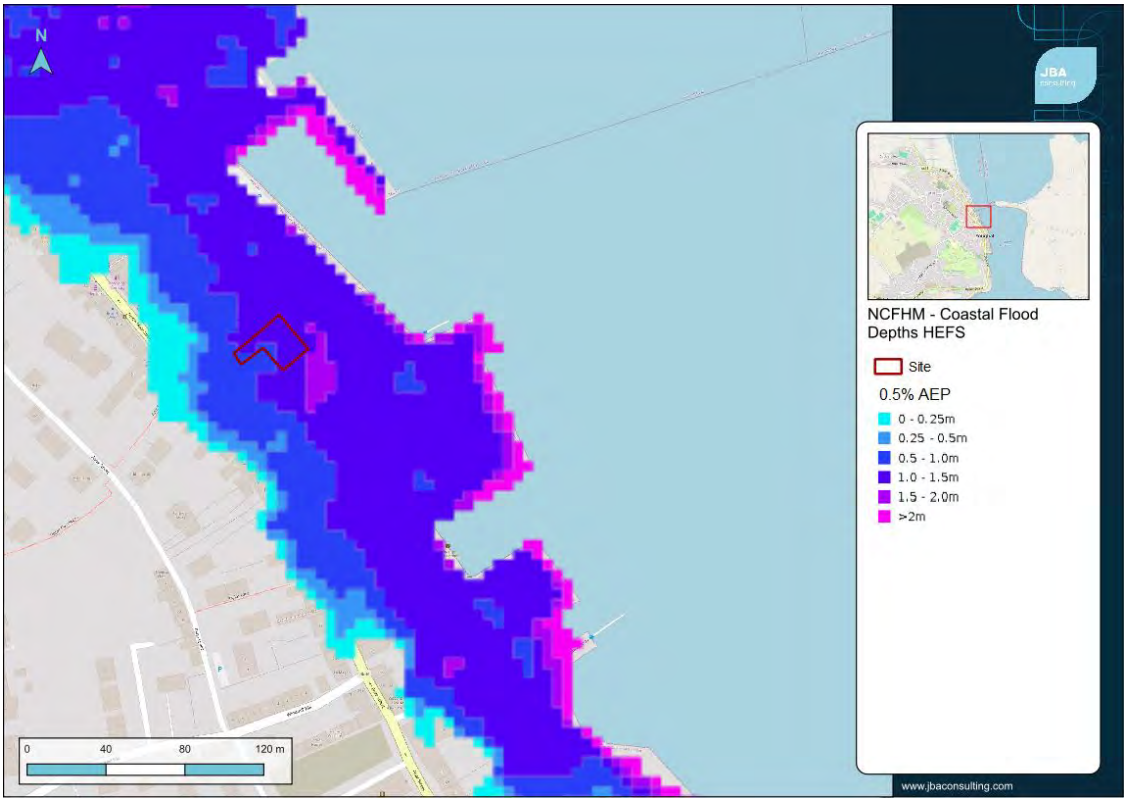


Figure 3-7 NCFHM depths - High End Future Scenario 0.5% AEP

3.2.3 Irish Coastal Wave and Water Level Modelling Study

The Irish Coastal Wave and Water Level Modelling Study (ICWWS) 2018, provides an update to the Extreme Coastal Water Levels for the coast of Ireland, originally presented as output from the Irish Coastal Protection Strategy Study (ICPSS) undertaken between 2004 and 2014, which estimated water levels for a range of Annual Exceedance Probability (AEP) events at a series of points around the coast of Ireland. It allows informed decisions to be made on related coastal risk management schemes and provides information to inform the design of such schemes. The mapping of the ICWWS is undertaken in the NCFHM.

3.2.4 Cork County Development Plan 2022-2028

Section 10 of the Planning and Development Act 2000 requires that development plans comprise objectives for the zoning of lands for particular purposes, in the interest of proper planning and sustainable development. Effective zoning promotes orderly development by integrating land use and transportation, providing a high quality of life for the county's population, eliminating potential conflicts between incompatible land uses, and establishing an efficient basis for investment in public infrastructure and facilities.

In addition, it is important that the Development Plan fulfils the requirements of the document "The Planning System and Flood Risk Management Guidelines for Planning Authorities" (OPW/DoEHLG, 2009), which states that flood risk management should be integrated into spatial planning policies at all levels to enhance certainty and clarity in the overall planning process.

Under the development plan, the site is fully contained within the land zoning 'Town Centre' and within Flood Zones A/B.

A Justification Test was applied and passed for the Town Centre zoning in Youghal in the Cork CDP SFRA. The site is located within the core of Youghal. For Town Centre Zoning the CDP states:

"The T zoning objective that lies within Flood Zone A and B is at risk of tidal flooding and suitable mitigation measures can include raising FFL and allocating water compatible or less vulnerable uses at ground level. Detailed examination of flow paths should also be undertaken to specifically inform flood risk at the identified regeneration sites. Highly vulnerable uses should be avoided at ground flood level in Flood Zone A or B."

The Flood Zones used for the Cork CDP SFRA are a combination of CFRAM flood zones and ICPSS. See Figure 3-8.

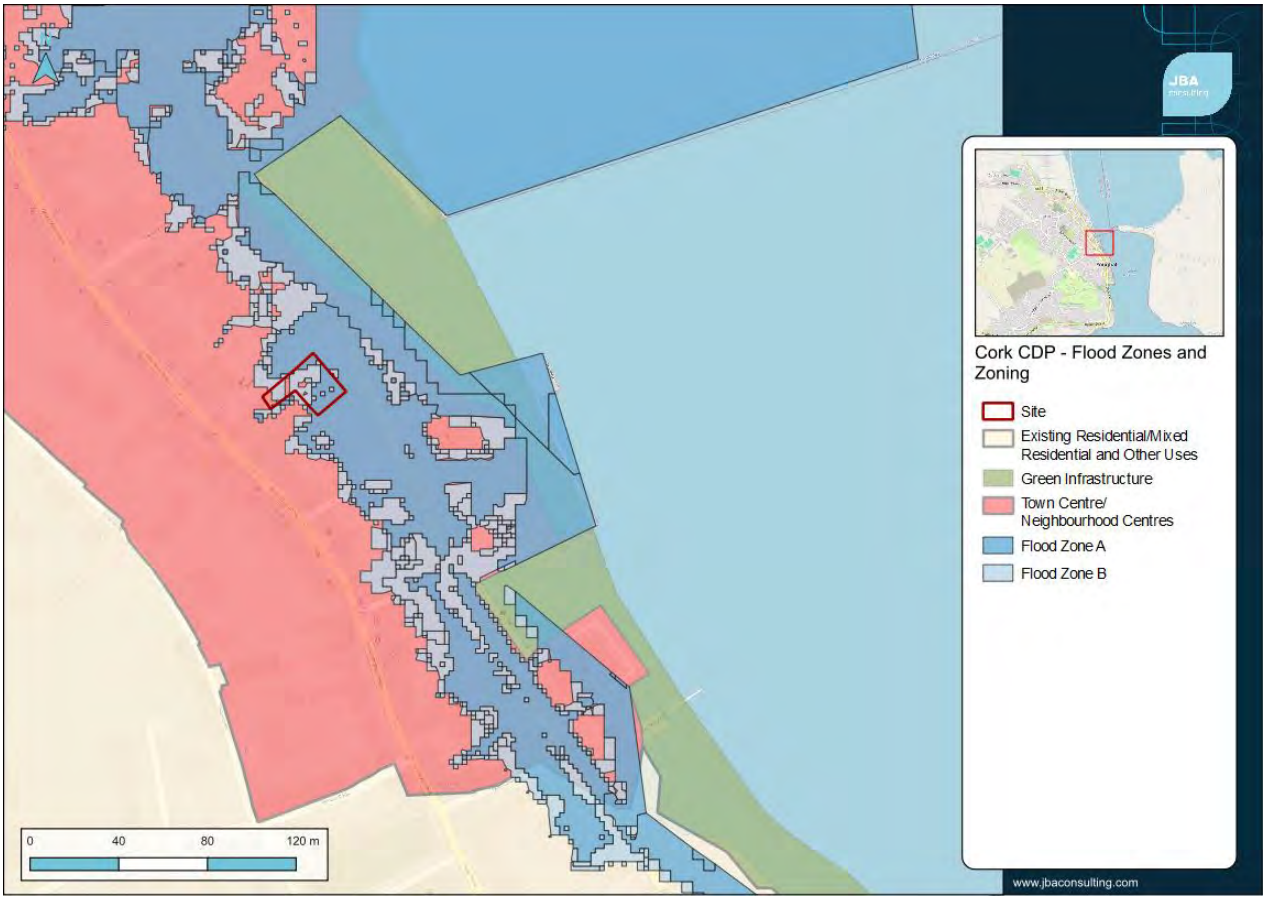


Figure 3-8 Cork CDP Zoning with SFRA flood zones

3.3 Flood Sources

The initial stage of a Flood Risk Assessment requires the identification of and consideration of probable sources of flooding. Following the initial phase of this Flood Risk Assessment, it is possible to summarise the level of potential risk posed by each source of flooding. The flood sources are described below.

3.3.1 Fluvial

The main watercourses in this area are the River Blackwater/Youghal Harbour and an unnamed stream. From viewing the available sources, the site is not at risk of fluvial flooding.

3.3.2 Tidal

Tidal flood risk is the predominant source of flood risk to the site. The site is at risk of flooding from the 200-year (0.5% AEP) and 1000-year (0.1% AEP) flood events.

Regarding the hierarchy of data sources the CFRAM data derives water levels from the Irish Coastal Protection Strategy Study (ICPSS) information which preceded ICWWS (NCFHM). The CFRAM represents more detailed inshore modelling, but is based on

the older ICPSS dataset. The difference between the datasets is circa 190mm in the 0.5% AEP event and 200mm in the 0.1% AEP event with the ICPSS level being lower. The ICWWS (NCFHM) dataset should then be relied upon for the consideration of risk and mitigation at the site.

Table 3-1 Tidal Levels

Study	0.5% AEP (mOD Malin) Flood Zone A	0.1% AEP (mOD Malin) Flood Zone B
ICPSS	2.65	2.81
CFRAM (Youghal Harbour)	2.65	2.81
ICWWS (NCFHM)	2.84	3.01

The site is therefore, located in Flood Zones A/B, however it is noted that the new quay wall around Market Place will reduce risk to the proposed site. Further information on risk and mitigation is included in Section 4.

3.3.3 Pluvial/Surface Water

Pluvial flooding is the result of rainfall-generated overland flows that arise before run-off can enter a watercourse or sewer. It is particularly sensitive to increases in hard-standing ground/urbanised areas and is usually associated with rainfall events of high intensity. Several sources have been researched such as floodmaps.ie. Based on review of the available information, the site is not at risk of pluvial flooding. Appropriate stormwater design for the site is recommended to mitigate any potential risk of increased run off the site may cause.

3.3.4 Groundwater

Groundwater flooding results from high sub-surface water levels that impact upper levels of the soil strata and overland areas that are normally dry. Groundwater flood risk is found to be 'High' by the GSI mapping. Review of the gsi.ie web portal confirms that no karst features are located in the area surrounding the site.

In summary, there is no known risk of groundwater flooding in this area, and it has been screened out at this stage.

4 Flood Risk Review

This section of the report will assess the likelihood of flooding at the site and any additional considerations regarding flood risk.

4.1 Flood Risk

Section 3 of this report confirms that the site is in Flood Zone A/B, but the new quay wall will offer some protection to the site. The main source of risk to the site is coastal flooding. There is a proposed flood relief scheme for the area to progress the project-level development and may include monitoring and extension of the flood defences. These formal flood defences are expected to provide protection against the 0.5% AEP tidal flood event as a minimum (we note current standard may be higher) and may involve the upgrade and/or maintenance of the existing defence line in the future.

Sensitivity to climate change is high, with significant changes in depths across the site in a high end future scenario.

Chapter 11 of the Cork CDP (11.1.21) states:

"Section 5.28 of the Planning Guidelines on Flood Risk Management identifies certain types of development as being 'minor works' and therefore exempt from the Justification Test. Such development relates to works associated with existing developments, such as extensions, renovations and rebuilding of the existing development, small scale infill and changes of use."

The development is a refurbishment with small single story extension. The extension is in the location of a currently blocked off area, and will not impede access to a watercourse, floodplain, or flood protection facilities. Refurbishment works or the extension will not increase risk to adjacent properties or result in a significant loss of floodplain due to the minimal increase in footprint. The development use is low vulnerability and does not introduce significant people into a Flood Zone. As the development complies with section 5.28 of the Planning Guidelines, the justification test will not apply in this case.

4.2 Mitigation

The design FFL of the building is 2.80mOD and therefore is potentially subject to flood depths of up to 0.21m during 0.1% AEP tidal events, assuming the new quay wall is not effective.

It is also the case that access to the site will be restricted during a flood event. Access is along Kent street and Barry's Lane. Kent street lies in Flood Zone A and will experience higher flood levels than Barry's Lane. Lower depths are expected along the

soup kitchen area of the site which is located on Barry's lane which has a link to North Main Street, which is located in Flood Zone C.

Given that the site and local area is likely to be inundated and inaccessible the proposed mitigation options focus on warning/evacuation of the site and ensuring that the building itself is resistant and resilient to the impacts of flooding. This will ensure risk to people and property is appropriately managed.

4.2.1 Flood Resilient Construction

Design for flood resilient construction accepts that floodwater will enter buildings and provides for this in the design and specification of internal buildings and finishes. These measures limit damage caused by floodwater and allow relatively quick recovery.

Flood resilient constriction will be implemented and this will be achieved by using wall and floor materials that can be cleaned and dried relatively easily, provided that the substrate materials are also resilient. New ground floors are proposed at the site as a replacement to existing ground floor and underfloor materials. It is proposed to use a drained cavity membrane system as a means of waterproofing internal walls and floor. The membrane allows any water ingress to filter to a channel which directs the water to a drainage sump pump. The sump pump chamber will remove the water ingress to the drainage system outside. See Figure 4-1 and Figure 4-2 for details. The sump pump system is not designed to be effective during the peak of a tidal flood but will allow water to be quickly pumped out after the tidal levels reduce.

Electronics, appliances, and water sensitive fittings will be kept as high as practicable above FFLs. It is proposed to keep these fittings at 3.3mOD which is c. 300mm above the 0.1% AEP flood event and 500mm above the FFL. Any fuel/oil or hazardous material storage should also be kept at or above this level. Non return valves on the surface water/foul system may also be appropriate.

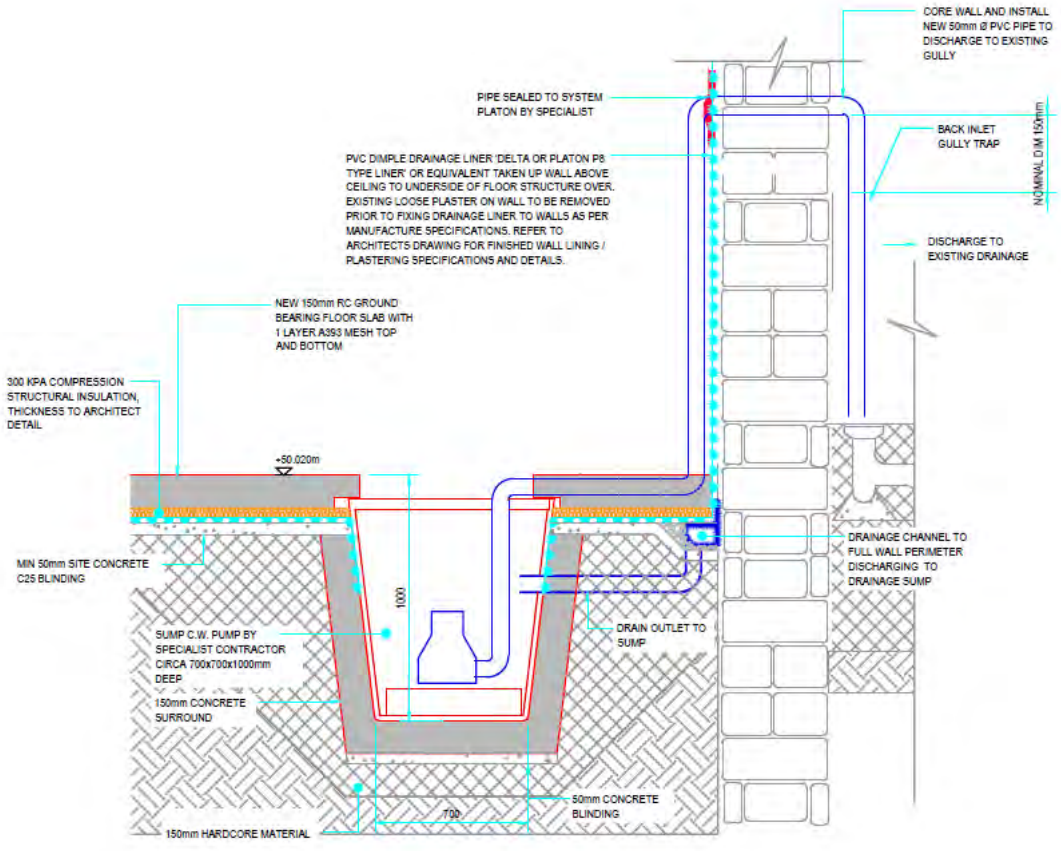


Figure 4-1 Drainage Sump Detail to Internal Flood Resilient Drainage Liner System

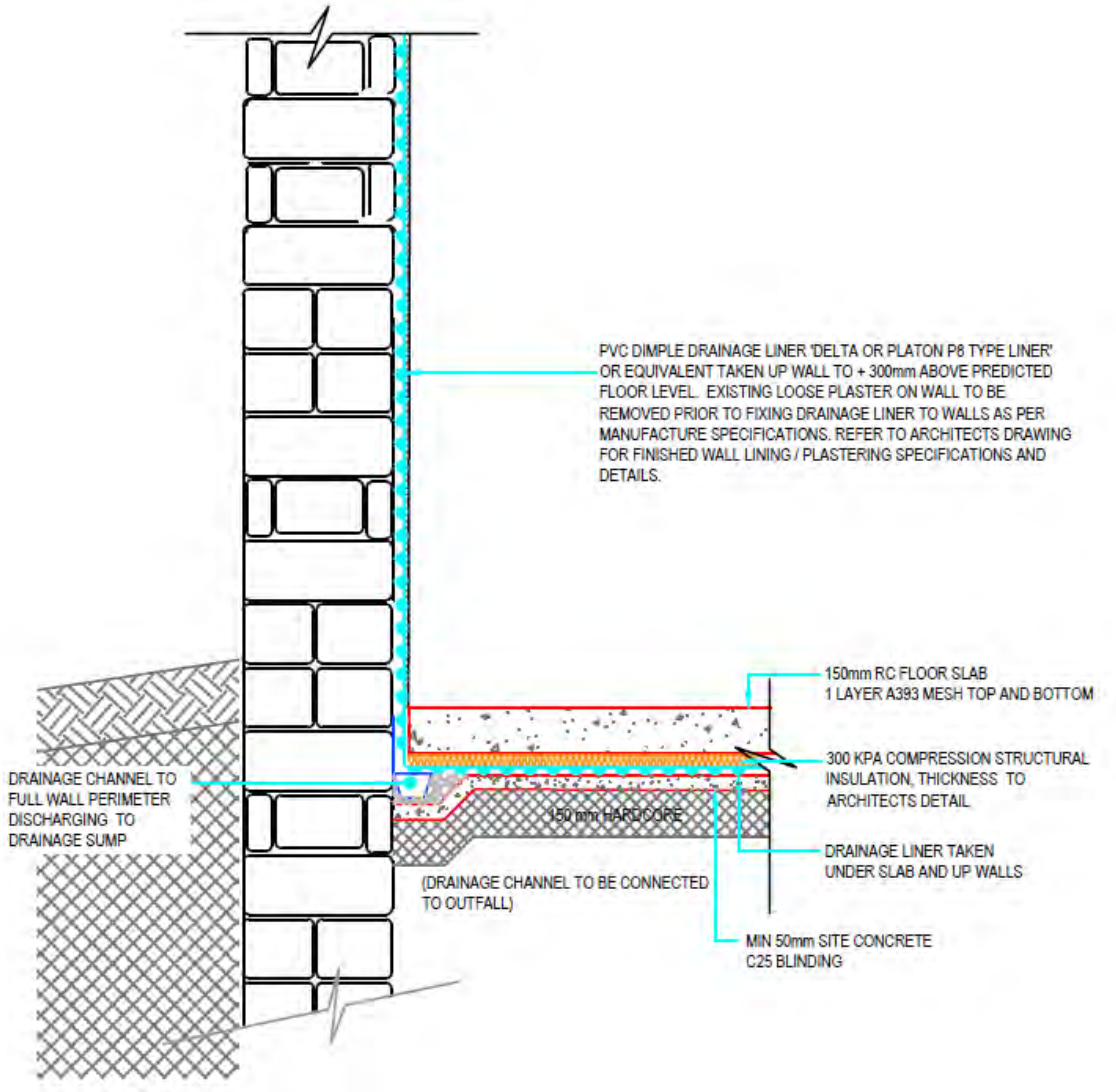


Figure 4-2 Typical Internal Drainage Liner Flood Resilient Detail to External Walls

4.2.2 Emergency Flood Response Plan

Tidal surge is able to be forecast with a significant lead in time to allow adequate provision for evacuation of the site and installation of resistance measures at entrances to the building.

A Flood Emergency Response Plan for the site is recommended to set out the procedure and ensure the safety of site users and staff. The plan should outline contingency measures such as the timely evacuation of the building prior to the onset of flooding. Cork County Council should be consulted in relation to the Plan and how it is implemented. A full plan should be drafted for the site once the planning permission is approved.

4.2.3 Surface Water Management

The site has an existing stormwater drainage system and this will remain in place. The new one storey building, connecting the Soup Kitchen and the Courthouse building is currently hardstanding ground, so will not result in an increase to surface water runoff. Runoff from the new building will discharge storm water to the south west corner into a new proposed manhole as per Figure 4-3. It is proposed that both the down pipes from the soup kitchen to the south east corner, and the Courthouse to the east side, are connected to the mentioned new manhole that will than reconnect to the existing sewer line on Barry's Lane through a new proposed manhole on Barry's Lane.

With regard to SuDS, as this is an existing building on a fully developed urban site, and the redevelopment will not result in an increase in the current surface water generated from the site, there is no plan to incorporate significant SuDS features some of the landscaping may include some permeable elements.

Further details are included in separate engineering report.

Figure 4-3 Proposed drainage works at extension

5 Conclusion

JBA Consulting has undertaken a Flood Risk Review for the renovation of the courthouse and soup kitchen in Youghal, Co. Cork. The main watercourse in the area Youghal Harbour and an unnamed stream to the north. Review of the available data and flood mapping shows that coastal flooding from the harbour is the main source of flood risk to the site.

According to the Cork County Development Plan, the site is zoned as town centre. It is an existing site, undergoing refurbishment and a small extension and so is classed as minor development under Section 5.28 of the Planning System and Flood Risk Management Guidelines.

Flood risk information in the area is provided by the CFRAM (fluvial & coastal) and the NCFHM (coastal) studies. According to the datasets the site is located in Flood Zone A/B, but there may be some protection provided by the new quay wall, however the formal Youghal Flood Relief Scheme is not in place at this stage.

It is not feasible to raise FFLs of the ground floor to the standard of 500mm freeboard above the 0.5% coastal plus climate change event, so risks are manged through resilience measures, as well as warning and preparedness as set out in Section 4.2 of this report.

There is no risk of pluvial (surface water) or fluvial (river) flood risk identified at the site. The new building does not increase surface water risk as it will be built on existing hardstanding ground, and is managed by discharging to the existing local stormwater system which discharges to Youghal Harbour.

The Flood Risk Assessment was undertaken in accordance with 'The Planning System and Flood Risk Management' guidelines and is in agreement with the core principles contained within.

A Understanding Flood Risk

Flood risk is generally accepted to be a combination of the likelihood (or probability) of flooding and the potential consequences arising. Flood risk can be expressed in terms of the following relationship: Flood Risk = Probability of Flooding x Consequences of Flooding

A.1 Probability of Flooding

The likelihood or probability of a flood event (whether tidal or fluvial) is classified by its Annual Exceedance Probability (AEP) or return period (in years). A 1% AEP flood has a 1 in 100 chance of occurring in any given year.

In this report, flood frequency will primarily be expressed in terms of AEP, which is the inverse of the return period, as shown in the table below and explained above. This can be helpful when presenting results to members of the public who may associate the concept of return period with a regular occurrence rather than an average recurrence interval and is the terminology which will be used throughout this report.

Table A-1: Conversion between return periods and annual exceedance probabilities

Return period (years)	Annual exceedance probability (%)
2	50
10	10
50	2
100	1
200	0.5
1000	0.1

A.2 Flood Zones

Flood Zones are geographical areas illustrating the probability of flooding. For the purposes of the Planning Guidelines, there are 3 types or levels of flood zones, A, B and C.

Table A-2: Flood Zones

Zone	Description
Flood Zone A	Where the probability of flooding is highest; greater than 1% (1 in 100) from river flooding or 0.5% (1 in 200) for coastal/tidal flooding.
Flood Zone B	Moderate probability of flooding; between 1% and 0.1% from rivers and between 0.5% and 0.1% from coastal/tidal.
Flood Zone C	Lowest probability of flooding; less than 0.1% from both rivers and coastal/tidal.

It is important to note that the definition of the flood zones is based on an undefended scenario and does not take into account the presence of flood protection structures such as flood walls or embankments. This is to allow for the fact that there is a residual risk of flooding behind the defences due to overtopping or breach and that there may be no guarantee that the defences will be maintained in perpetuity.

A.3 Consequence of Flooding

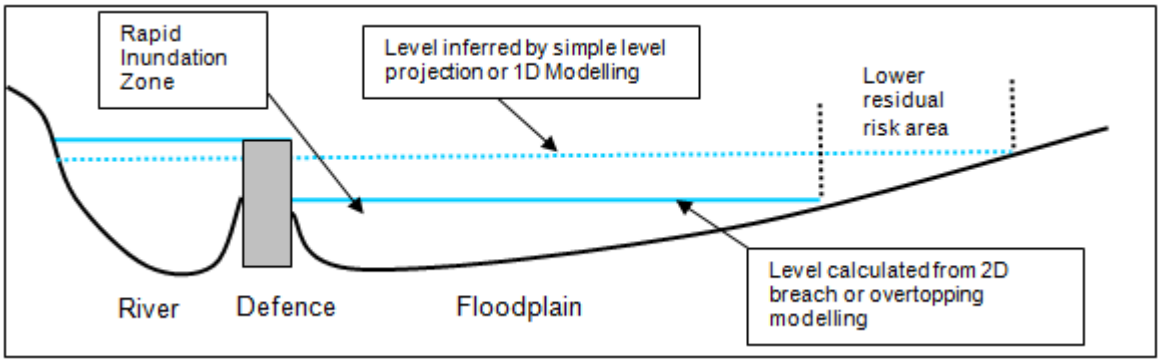
Consequences of flooding depend on the hazards caused by flooding (depth of water, speed of flow, rate of onset, duration, wave-action effects, water quality) and the vulnerability of receptors (type of development, nature, e.g. age-structure, of the population, presence and reliability of mitigation measures etc.).

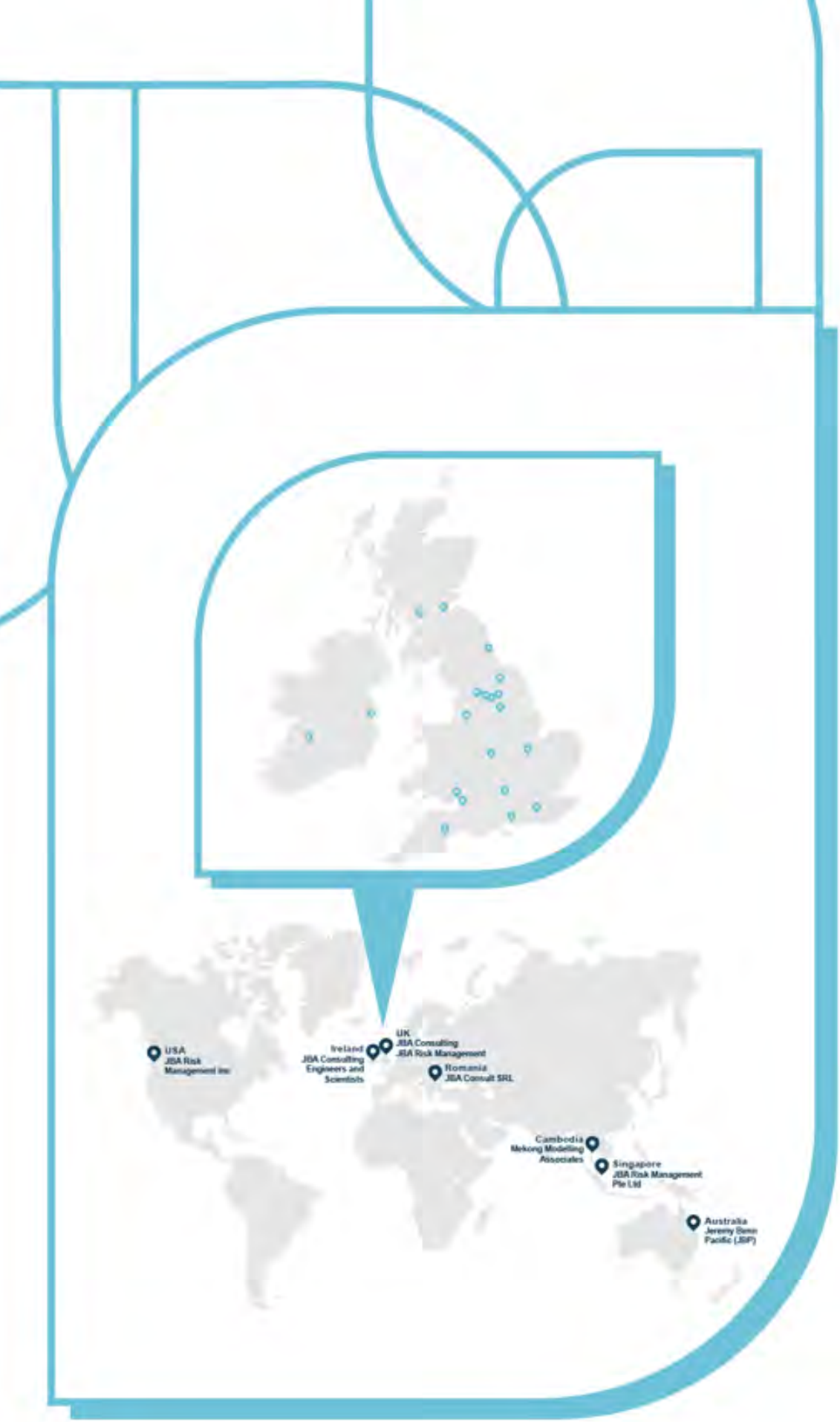
The 'Planning System and Flood Risk Management' provides three vulnerability categories, based on the type of development, which are detailed in Table 3.1 of the Guidelines, and are summarised as:

- Highly vulnerable, including residential properties, essential infrastructure and emergency service facilities;
- Less vulnerable, such as retail and commercial and local transport infrastructure;
- Water compatible, including open space, outdoor recreation and associated essential infrastructure, such as changing rooms.

A.4 Residual Risk

The presence of flood defences, by their very nature, hinder the movement of flood water across the floodplain and prevent flooding unless river levels rise above the defence crest level, or a breach occurs. This is known as residual risk.





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