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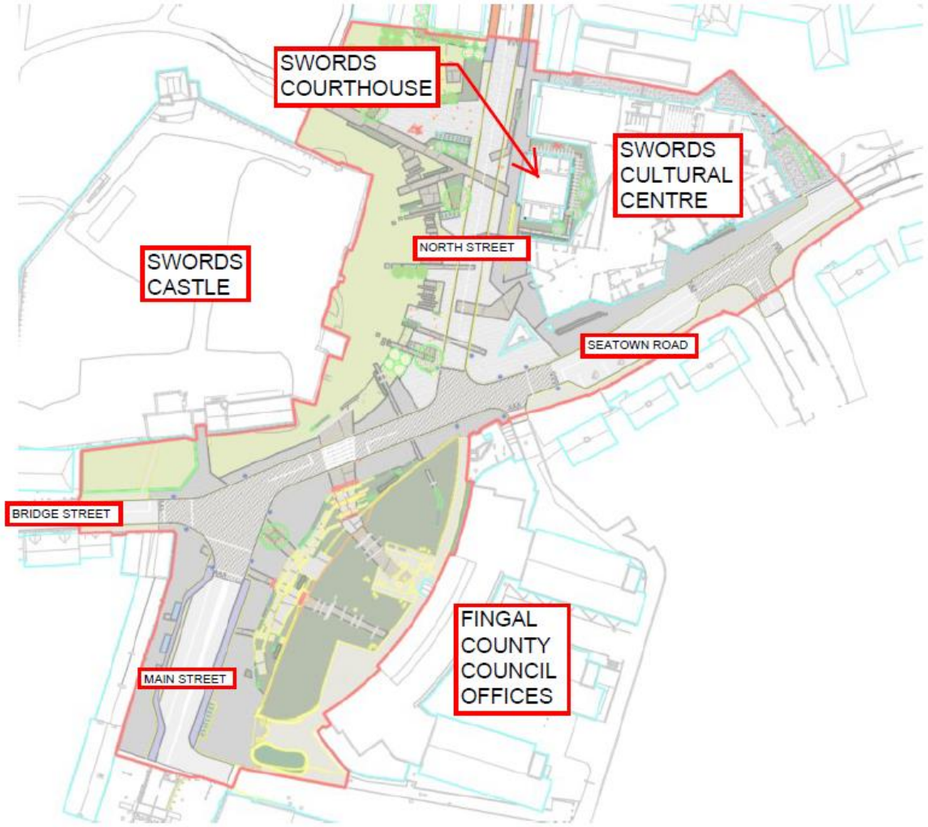
Swords Cultural Quarter

Part 8 Planning Application

- Engineering Report



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Document Control Sheet

Project Number:	OY22		
Project Name:	Swords Cultural Quarter, Swords, Co. Dublin		
Client:	Fingal County Council		
Document Title:	Part 8 Planning Application - Engineering Report		
Document Reference:	SCQ-ZZ-XXX-RP-HLCE-CE-00004-P01 SWORDS CULTURAL QUARTER- ENGINEERIN REPORT FOR PLANNING	Current Revision:	P01

Issue History

Rev.	Date	By	Chk	Description
A	14.03.2022	NF	PB	Issued for Part 8 Planning Application
B	12.04.2022	NF	PB	Issued for Part 8 Planning Application
P01	07.07.2022	NF	PB	Issued for Part 8 Planning Application

Review

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Date:	14th March 2022
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Table of Contents

1.0 Introduction

2.0 Report

a. Site Services

- Water Supply
- Foul Drainage
- Storm Drainage

b. Site Specific Flood Risk Assessment

c. Traffic & Transport

3.0 Appendices

Appendix A: Proposed Foul Drainage Layout

Appendix B: Pre-Connection Enquiry

Appendix C: Landscaping Plan by Dermot Foley Landscape Architects

Appendix D: Proposed Storm Drainage Layout

Appendix E: Storm Water Drainage Attenuation Calculations

1.0 Introduction

Fingal County Council have undertaken to develop a Cultural Quarter in the centre of Swords Village, Co. Dublin and have engaged the services of a design team led by O' Donnell + Tuomey Architects to design such a project.

This project will be located in the Centre of the Village at the junction of Main Street, Bridge Street, North Street and Seatown Road- see figure 1 below.

Figure 1 – Sword Cultural Quarter Site Area

The scope of the development as outlined by Fingal County Council is to comprise of the following projects:

- Swords Cultural Centre

  This Building is to be situated on the site of the existing Fingal County Council Carpark immediately north of Seatown Road and east of the Main Street/ North Street/Seatown Road junction

- Public Realm Project

  The public realm upgrade is to encompass the Main Street/Bridge Street/North Street/Seatown Road junction and partially extends up each of the streets from the junction

  See Figure 2 – Proposed Swords Cultural Quarter Development.

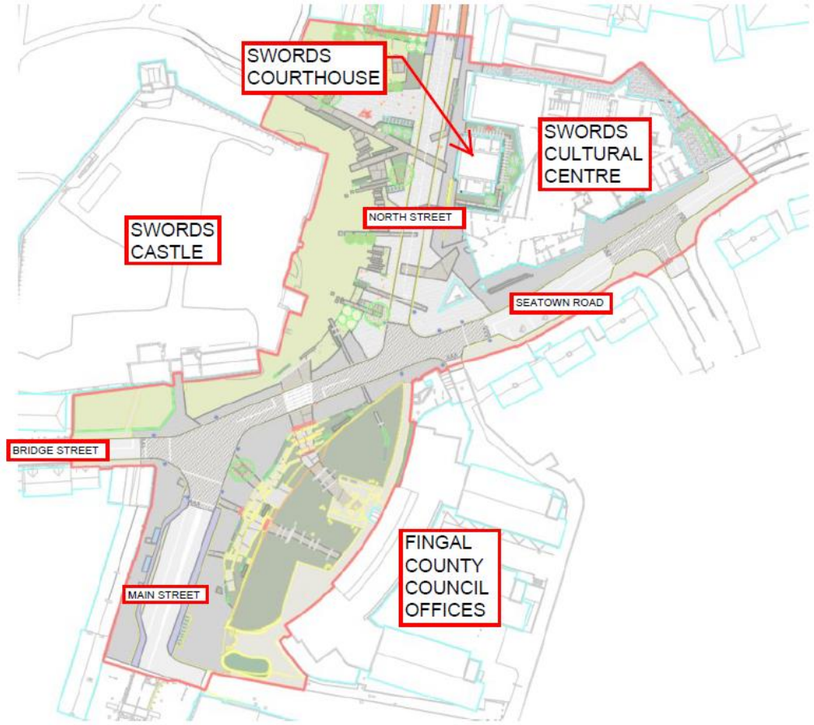

Figure 2 – Proposed Swords Cultural Quarter Development

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The following is an Engineering report in support of a Part 8 Planning for the above development. This report addresses the following engineering issues:

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

b. Site Specific Flood Risk Assessment

c. Traffic & Transport

2.0 Report

a. Site Services –

i. Water Supply –

For details of the proposed water supply to the development, refer to Mechanical & Electrical Report as prepared by Max Fordham LLP.

ii. Foul Drainage –

Record drawings as Issued by Fingal County Council during preliminary discussions identify the following services at the proposed development:

- a 225 dia. foul main running along Seatown Road
- a 150mm dia. & 525mm dia. foul main running along North Street

See Figure 3 – Existing Foul Drainage Layout

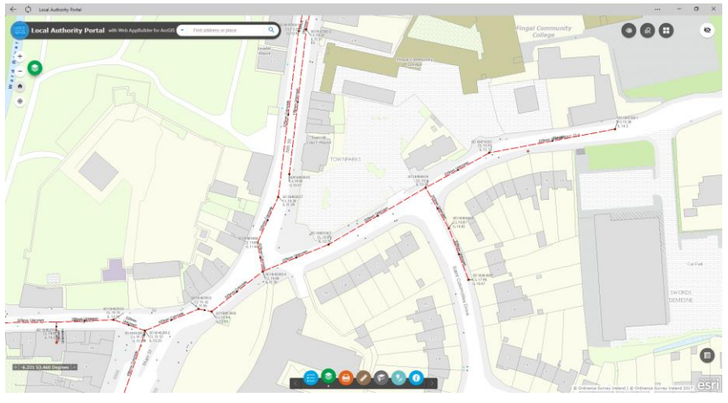


Figure 3 – Existing Foul Drainage Layout (as forwarded by Fingal County Council)

All foul generated by the proposed development (i.e., Cultural Centre Building) is to be collected by a gravity foul sewerage system, which will envelope the perimeter of the building. This foul sewerage system will discharge to a new foul manhole to the north-west of the site of the proposed building from which it will discharge to the existing 525mm dia. foul drainage sewer on North Street.

For details of the above, see Appendix A: Drg. No. SCQ-CC-XXX-DR-HLCE-CE-0005 Proposed Foul Drainage Layout

A pre-connection enquiry was made to Irish Water on 5th January 2022, in which the above strategy was proposed. This enquiry included details of the final outfall loadings from the development to the Irish Water Network.

A response to this enquiry was received from Irish Water on 10th January 2022 and this response advised that the proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

Public networks traversing the site (if any) are to be identified and the necessary wayleave arrangements are to be made to ensure access to such networks is achievable post completion of the project. Such legalities will be developed during later stages of the design and prior to commencement of the construction works.

For details of both the Pre-connection Enquiry and the Response from Irish Water, See attached Appendix B: Pre-connection Enquiry.

iii. Surface Water Drainage –

Record drawings as issued by Fingal County Council during preliminary discussions identify the following services at the proposed development:

- a 225mm dia. storm drain on Seatown Road
- a 600mm dia. concrete storm drain on North Street

There are no records of any Surface Water drainage on Main Street.

See figure 4: Existing Surface Water Drainage Layout

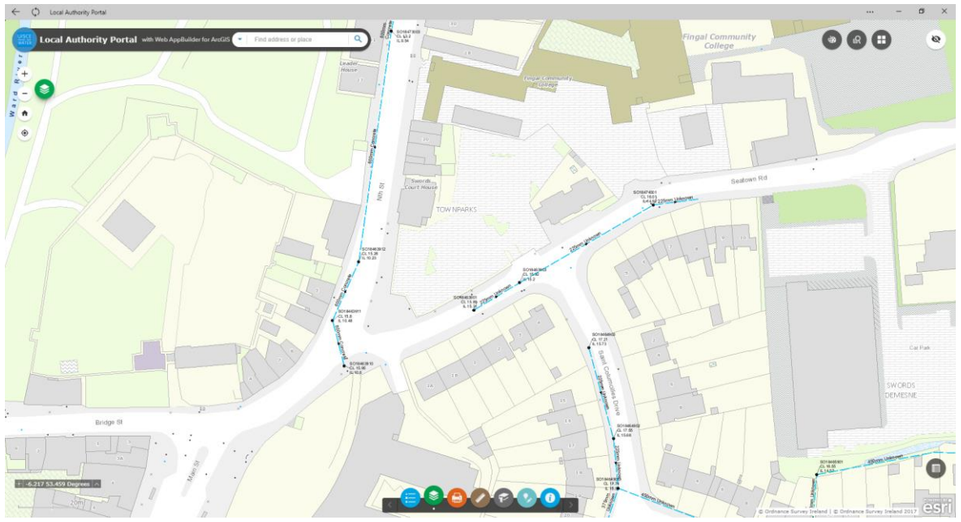


Figure 4 – Existing Storm Drainage Layout (as forwarded by Fingal County Council)

The site of the proposed development presently comprises of the existing public roads, a surface car park and localised soft landscaping and the impermeable area of the site measures circa 12,170m2.

See Figure 5 – Existing Site Layout: Impermeable Areas

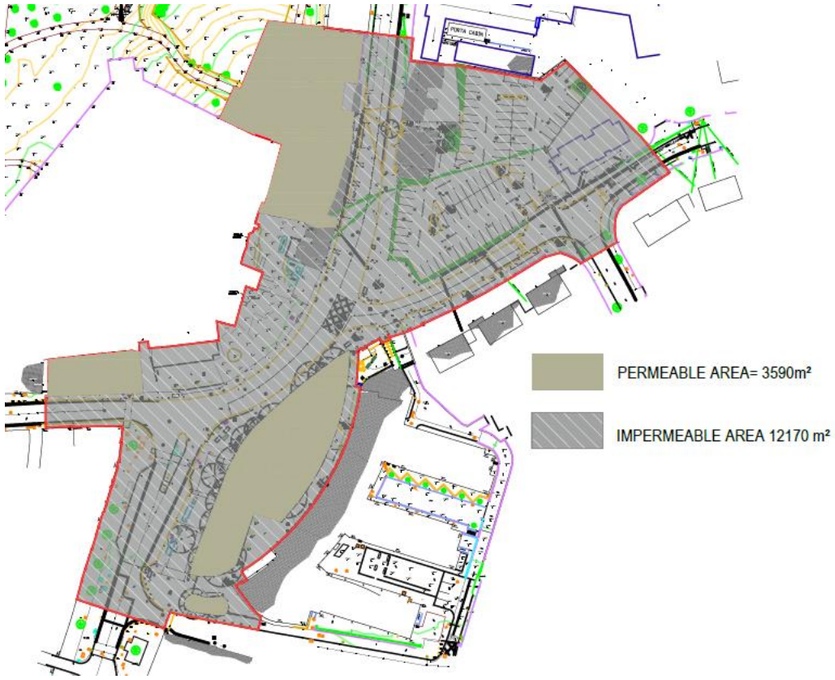


Figure 5 - Existing Site Layout: Impermeable Areas

The proposed development is to comprise of the redevelopment of the public realm at the junction of Main Street/Bridge Street/North Street/Seatown Road and beyond for a section of each of these roads with such public realm works including hard and soft landscaping. The development also includes the construction of a Cultural Centre Building on the site of the existing Local Authority carpark. On completion of the development, the impermeable area of the site will measure circa 11,670 m2, which is a reduction of circa 500m2 in impermeable area.

See Figure 6 – Proposed Site Layout: Impermeable Areas

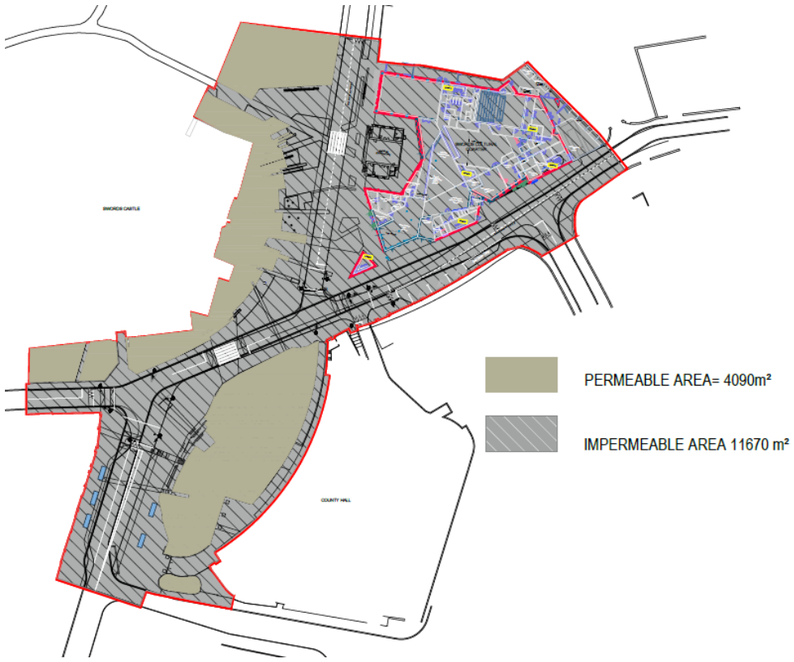


Figure 6 - Proposed Site Layout: Impermeable Areas

While such a reduction will result in a reduced surface water run-off from the site, it is still proposed to adopt SuDs features into the design as well as attenuation of surface water.

The following is the surface water drainage strategy for the development:

Cultural Centre Building –

All surface water from the proposed building and its immediate surrounds is to be collected by a gravity surface water drainage system, which will envelope the perimeter of the building. This drainage will discharge to a new surface water manhole at the northwest corner of the site of the building, from which it will discharge to the existing 600mm dia. surface water drain on North Street. Prior to discharging to the new manhole, the surface water will be attenuated in 2 no. storm water attenuation tanks,

one at each side of the building. Furthermore, green roof technology is being adopted for the building resulting in circa 66% of the flat roofs of the building being extensive green roof. The green roof will comprise of 30% of the total roof area (inclusive of sloped roofs) – see figure 7.

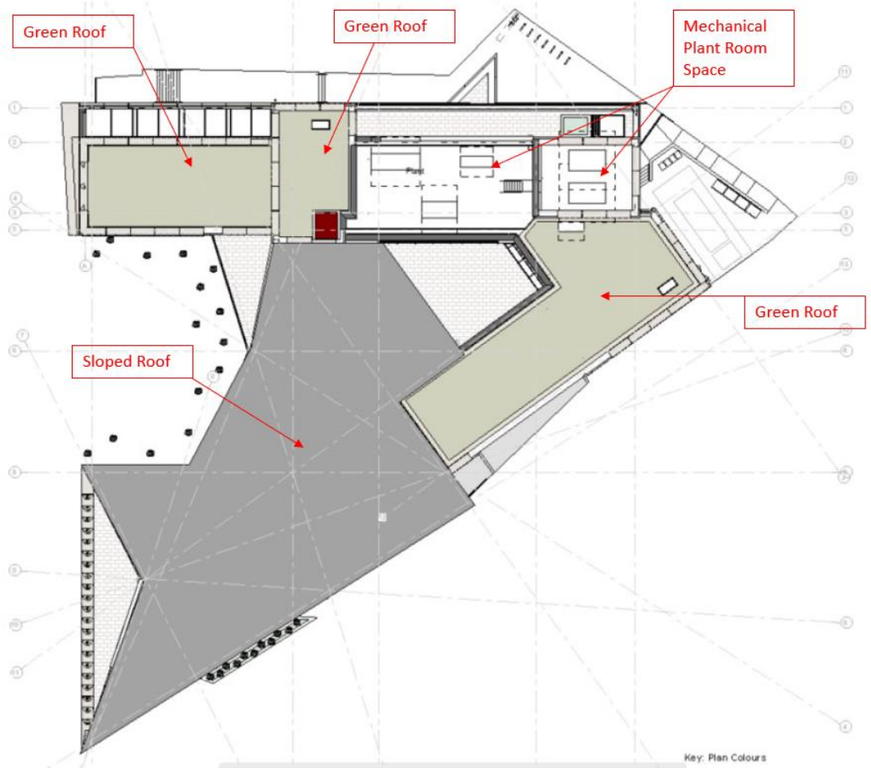


Figure 7 – Extent of Green Roof

The provision of the attenuation tanks and the adoption of green roof technology will assist in controlling the rate of surface water discharge from the site to reflect green field run-off i.e. 2 litres/sec/hectare.

Public Realm –

The new public realm is to comprise of a combination of soft and hard landscaping and can be seen on the Landscaping Plan prepared by Dermot Foley Landscape Architects – See Appendix C.

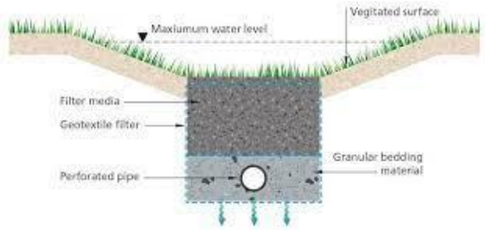
Surface water generated by the hard landscaping of the new public realm will be collected by storm drainage outlets, which will be complimentary to the surface finish of the public realm. For example, the storm water on North Street will be collected by dished stone kerbing/channel, which matches the proposed finished of the road and footpath – see below examples of typical dished kerbing/channels.

Dished Kerbing/channel

Surface water collected by this dished kerbing will be served by new gullies along the run of the kerbing. All surface water generated by the public realm will be collected and discharged to the existing public surface water drainage systems serving North Street and Seatown Road.

Presently, there are no records of any surface water drainage on Main Street and therefore it is proposed to install a new 225mm storm drain along a section of Main Street and connect to the existing storm drainage serving North Street.

The public realm will include a significant area of soft landscaping and it is proposed to incorporate Suds features such as swales, tree planters & hardstand areas complete with underlying free draining aggregate and drainage board throughout the development.



Swales

Tree Planters

For details of the above, refer to the following:

Appendix C: Landscape Plan by Dermot Foley Landscape Architects

Appendix D: Drg. No. SCQ-CC-XXX-DR-HLCE-CE-0004 Proposed Storm Drainage Plan

Appendix E: Storm Water Drainage Attenuation Calculations

b. Site Specific Flood Risk Assessment –

A site-specific flood risk assessment was carried out by Horganlynch Consulting Engineers on the site and the findings of same are outlined in a separate report. In summary, the assessment found as follows:

'It is the considered view of the report that the proposed development can be delivered on the subject site in the context of flood risk to same and that the mitigating measures identified in the report can be accommodated by the site's detail design and surface water drainage design.

The OPW's document 'The Planning System and Flood Risk Assessment Management – Guidelines For Planning Authorities' require that the proposed development is compatible with the flood risk for the site. In accordance with these guidelines, the subject site is located within Flood Zone 'C'.

Lands in Flood Zone 'C' are suitable for all types of land use, including Cultural type developments such as this, which is classified as 'less vulnerable development' in the Guidelines. In light of this, the proposed development is suitable for this type of flooding zoning and the Planning Guidelines Sequential Approach is passed.

In summary, it is concluded that the proposed development meets the requirements of the Flood Risk Assessment Guidelines and that the proposed development is appropriate to this zone and a justification test is not required'

c. Traffic & Transport

Traffic & Transport is being addressed by MHL & Associates and their findings are included in a separate report.

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Appendix A - Proposed Foul Drainage Layout

- Drg. No. SCQ-CC-XXX-DR-HLCE-CE-0005

PROPOSED FOUL DRAINAGE PLAN

SCALE : 1:500

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2) THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S, SERVICES ENGINEER'S AND HORGANLYNCH DRAWINGS, DETAILS AND SPECIFICATIONS.
3) ALL DIMENSIONS TO BE CHECKED ON SITE AND ANY DISCREPANCY TO BE REPORTED TO THE ARCHITECT / ENGINEER. FIGURED DIMENSIONS ONLY TO BE USED, DRAWINGS NOT TO BE SCALED. ALL LEVELS ARE STRUCTURAL UNLESS OTHERWISE NOTED.
4) THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL HL DRAWINGS AND SPECIFICATIONS

LEGEND :

	EXISTING FOUL MANHOLE		PROPOSED FOUL SEWER
	EXISTING FOUL SEWER		PROPOSED FOUL MANHOLE

REV	BY	CKD.	DATE	DESCRIPTION
0	KL	NF	04.04.22	ISSUED FOR STAGE 2A (ii)
1	KL	NF	12.04.22	RE-ISSUED FOR STAGE 2A (ii)
2	BMP	NF	19.04.22	RE-ISSUED FOR STAGE 2A (ii)
3	SC	NF	07.07.22	ISSUED FOR PLANNING

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PROJECT
DUBLIN CITY COUNCIL
SWORDS CULTURAL QUARTER

DRG. TITLE
PROPOSED FOUL DRAINAGE PLAN

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DWG SCQ-CC-XXX-DR-HLCE-CE-00005

SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS SHOWN (@ A1)	BMP	NF	NF

HL PROJECT REF.	STATUS	REVISION
OY22	S4	3

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Appendix B - Pre-connection Enquiry

- Pre-connection Enquiry Application
- Confirmation of Feasibility from Irish Water

Pre-connection enquiry form

Business developments, mixed use developments, housing developments

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

Please refer to the **Guide to completing the pre-connection enquiry form** on page 13 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): HLCE LTD.

Trading name (if applicable): HORGANLYNCH CONSULTING ENGINEERS

Company registration number (if applicable): 644843

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

*Contact name: NIALL FITZGERALD

*Postal address: TELLENGANA BLACKROCK ROAD CORK

*Eircode: T12HP7R

*Telephone: 021 4936100

Mobile: 086 2321682

*Email: niall.fitzgerald@horganly

2 Agent details (if applicable):

Contact name: NIALL FITZGERALD

Company name (if applicable): HORGANLYNCH

Postal address: TELLENGANA BLACKROCK ROAD CORK

Eircode: T12HP7R

Telephone: 021 4936100

Email: niall.fitzgerald@horganly

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

Applicant [ ] Agent [X]

Section B | Site details

4 ***Site address:** FINGAL COUNTY COUNCIL

CAR PARK, SEATOWN ROAD SWORDS,

COUNTY DUBLIN

5 ***Irish Grid co-ordinates of site:** Eastings (X) 318385 Northings (Y) 247000

Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

6 ***Local Authority:**

Local Authority that granted planning permission (if applicable):

N/A

7 ***Has full planning permission been granted?** Yes [ ] No [X]

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

Section C | Development details

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

Property type	Number of units	Property type	Number of units	Property type	Number of units
House		Apartments		Agricultural	
Office		School		Retail unit	
Residential care home		Institution		Industrial unit	
Hotel		Factory		Other	1
Other (please specify type)	CULTURAL CENTRE WITH LIBRARY, THEATRE ETC.				

9 *Approximate start date of proposed development: - - / - - / - - - -

10 *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.

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

Water ☐ Please go to Section D

Wastewater ☒ Please go to Section E

Both ☐ Please complete both Sections D and E

Section D | Water connection and demand details

12 ***Is there an existing connection to public water mains at the site?** Yes ☐ No ☐

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

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

13 **Approximate date water connection is required:** ☐☐ / ☐☐ / ☐☐☐☐

14 ***What diameter of water connection is required to service the development?** ☐☐☐ mm

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

If 'Yes', how many? ☐☐

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

Post-development peak hour water demand		**l/s**
Post-development average hour water demand		**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.

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

Post-development peak hour water demand		**l/s**
Post-development average hour water demand		**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 **What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?**

☐☐☐☐☐ m

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

☐☐☐☐☐ m

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

Please include calculations on the attached sheet provided.

21 Are there fire flow requirements? Yes ☐ No ☐

Additional fire flow requirements over and above those identified in Q16-17		l/s

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

22 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 12 of this document for further details):

Section E | Wastewater connection and discharge details

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

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

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

24 *Approximate date that wastewater connection is required: - - / - - / - - - -

25 *What diameter of wastewater connection is required to service the development? 1 5 0 mm

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

If 'Yes', how many? ☐☐

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

Post-development peak discharge	2.46	**l/s**
Post-development average discharge	0.41	**l/s**

Please include calculations on the attached sheet provided.

28 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.

29 Wastewater organic load:

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

Temperature range	
pH range	

30 *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.

31 *Do you propose to pump the wastewater? Yes ☐ No ☒

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

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

m

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

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

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: [X]

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). [X]

> 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 Irish Water infrastructure. [X]

> Conceptual design of the connection asset from the proposed development to the existing Irish Water infrastructure, including service conflicts, gradients, pipe sizes and invert levels. [ ]

> Any other information that might help Irish Water assess this pre-connection enquiry. [ ]

Section G | Declaration

I/We hereby make this application to Irish Water 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 Irish Water.

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 Irish Water and may be transferred to third parties for the purposes of the water and/or wastewater connection process. I hereby give consent to Irish Water 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 Irish Water's full Data Protection Notice, please see **https://www.water.ie/privacy-notice/**

Signature: [ ] Date: 05 / 01 / 2022

Your full name (in BLOCK CAPITALS):

NIALL FITZGERALD

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

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

Irish Water
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.

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

Calculations

Water demand

On-site storage

Fire flow requirements

Occupancy -

Ground Floor -

Art Gallery - 50
Exhibition Area - 50
Living Area - 25
Local Student Exhibition Space - 100
Cafe - 120
Gallery Project Room - 10
Theatre - 150

First Floor -

Venue Room - 120
Library - 50
Lnowledge Room -15

Second Floor -

Library - 50
Office - 20
Study Area - 40

Third Floor -

Library - 50

Total Occupancy - 850

Dry weather flow (DWF) - 25 Litres/person/day
Total daily wastewater discharge = 850x25 = 21,250 litres/day
Total daily wastewater discharge+10% of unit consumption allowance = 23,375 litres/day

Normal length ofday = 16 hours
peak flow factor = 6

Post development average discharge = 23,375/(16x3600) = 0.41 litres/sec
Post development peak discharge = 6x0.41 = 2.46 litres/sec

Guide to completing the pre-connection enquiry form

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

The Irish Water Codes of Practice are available at **www.water.ie** 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.

Section C | Development details

Question 8: Please specify the number of different property/premises types by filling in the tables provided.

Question 9: Please indicate the approximate commencement date of works on the development.

Question 10: 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 11: 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 12: Please indicate if a water connection already exists for this site.

Question 12.1: Please indicate if this enquiry concerns an additional connection to one already installed on the site.

Question 12.2: Please indicate if you are proposing to upgrade the water connection to facilitate an increase in water demand. Irish Water will determine what impact this will have on our infrastructure.

Question 13: Please indicate the approximate date that the proposed connection to the water infrastructure will be required.

Question 14: Please indicate what diameter of water connection is required to service this development.

Question 15: 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 16: If this connection enquiry concerns a business premises, please provide calculations for the water demand and include your calculations on the calculation sheet provided. Business premises include shops, offices, hotels, schools, etc. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.

Question 17: If this connection enquiry is for an industrial premises, please calculate the water demand and include your calculations on the calculation sheet provided. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.

Question 18: 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 19: 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 20: 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 21: The water supply system shall be designed and constructed to reliably convey the water flows that are required of the development including fire flow requirements by the Fire Authority. The Fire Authority will provide the requirement for fire flow rates that the water supply system will have to carry. Please note that while flows in excess of your required demand may be achieved in the Irish Water network and could be utilised in the event of a fire, Irish Water cannot guarantee a flow rate to meet your fire flow requirement. To guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development. Please include your calculations on the attached sheet provided, and further provide confirmation of the Fire Authority requirements.

Question 22: 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 23: Please indicate if a wastewater connection to a public sewer already exists for this site.

Question 23.1: Please indicate if this enquiry relates to an additional wastewater connection to one already installed.

Question 23.2: Please indicate if you are proposing to upgrade the wastewater connection to facilitate an increased discharge. Irish Water will determine what impact this will have on our infrastructure.

Question 24: Please specify the approximate date that the proposed connection to the wastewater infrastructure will be required.

Question 25: Please indicate what diameter of wastewater connection is required to service this development.

Question 26: Please indicate if more than one connection is required to service this development. Please indicate number required.

Question 27: If this enquiry relates to a business premises, please provide calculations for the wastewater discharge and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

Question 28: If this enquiry relates to an industrial premises, please provide calculations for the wastewater discharge and include your calculations on the calculation sheet provided. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

Question 29: 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 30: In exceptional circumstances, such as brownfield sites, where the only practical outlet for storm/ surface water is to a combined sewer, Irish Water will consider permitting a restricted attenuated flow to the combined sewer. Storm/surface water will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer and the applicant must demonstrate how the storm/surface water flow from the proposed site is minimised using sustainable urban drainage system (SUDS). This type of connection will only be considered on a case by case basis. Please advise if the proposed development intends discharging surface water to the combined wastewater collection system.

Question 31: Please specify if the development needs to pump its wastewater discharge to gain access to Irish Water infrastructure.

Question 32: 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 33: 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 34: Please specify the proposed invert level of the pipe exiting the property to the public road.

Section F | Supporting documentation

Please provide additional information as listed.

Section G | Declaration

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

Notes

Notes

Niall Fitzgerald

Horgan Lynch
Tellngana
Blackrock Road
Co. Cork
T12HP7R

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

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

www.water.ie

10 January 2022

Re: CDS22000092 pre-connection enquiry - Subject to contract | Contract denied

Connection for Multi/Mixed Use Development of 1 unit(s) at Fingal County Council, Car Park, Swords, Co. Dublin

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Wastewater connection at Fingal County Council, Car Park, Swords, Co. Dublin (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	**OUTCOME OF PRE-CONNECTION ENQUIRY** **THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.**
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
The design and construction of the Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

Stiúrthóirí / Directors: Cathal Marley (Chairman), Niall Gleeson, Eamon Gallen, Yvonne Harris, Brendan Murphy, Dawn O'Driscoll, Maria O'Dwyer
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin 1 D01 NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Irish Water is a designated activity company, limited by shares.
Uimhir Chláraithe in Éirinn / Registered in Ireland No.: 530363

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Kevin McManmon from the design team at kmcmanmon@water.ie. For further information, visit **www.water.ie/connections.**

Yours sincerely,

Yvonne Harris

Yvonne Harris
Head of Customer Operations

Horganlynch
Consulting Engineers

Appendix C - Landscaping Plan by Dermot Foley Landscape Architect

- Drg. No. Fe.02-DR-2001

LEGEND AND SCHEDULE OF MATERIALS

- SITE BOUNDARY
- PROPOSED CARRIAGEWAY SURFACE TO ENGINEER'S DETAIL
- PROPOSED CYCLE TRACK TO ENGINEER'S DETAIL
- PROPOSED TABLE TOP WITH BUFF COLORED MACADAM TO ENGINEER'S DETAIL
- PROPOSED PEDESTRIAN CROSSING TO ENGINEER'S DETAIL
- PROPOSED BUS STOP TO ENGINEER'S DETAIL
- PROPOSED KERB EDGE
- PROPOSED SMALL FORMAT GRANITE STONE PAVING
- PROPOSED LARGE FORMAT GRANITE STONE PAVING
- PROPOSED CONCRETE PAVING WITH SELECTED FINISH TYPE 1 - EXPOSED AGGREGATE / GRINDED CONCRETE AS PER ENGINEER'S ADVISE
- PROPOSED CONCRETE PAVING WITH SELECTED FINISH TYPE 2
- EXISTING PAVING RETAINED
- PROPOSED CONCRETE TERRACES AND SEATING
- PROPOSED CONCRETE STEPPED SEATING IN SOFTLANDSCAPE
- EXISTING RAILING RETAINED
- PROPOSED RAILING
- PROPOSED GATE
- PROPOSED HANDRAIL
- PROPOSED SCULPTURE LOCATION
- +16.00ex EXISTING LEVEL RETAINED
- +18.00 PROPOSED LEVEL
- PROPOSED CIRCULAR SEAT
- PROPOSED SEATING
- PROPOSED BICYCLE STAND
- PROPOSED BELISHA BEACON TO ENGINEER'S DETAIL
- PROPOSED TRAFFIC LIGHT TO ENGINEER'S DETAIL
- PROPOSED STREET LUMINAIRE TO ENGINEER'S DETAIL
- EXISTING SCULPTURES RETAINED
- PROPOSED LAWN
- PROPOSED PLANTED SWALE
- PROPOSED GROUNDCOVER AND HERBACEOUS PLANTING
- PROPOSED HEDGE PLANTING
- EXISTING PLANTING RETAINED
- PROPOSED TREES REFER TO PLANTING SCHEDULE
- EXISTING TREE RETAINED
- EXISTING TREE REMOVED
- EXISTING TREE REPLANTED

SCHEDULE OF PROPOSED TREE PLANTING

TREE REF.	QUANTITY	SPECIES:
Po	05	*Platanus orientalis* 'Minaret' 5 x tr., wrb., 25-30cm g., 5-6m high., clear stem min. 2.5m
Pa	08	*Prunus avium* 'Plena' 5 x tr., wrb., 2m h.,16-18 cm.g., clear stem min. 2m
Pp	11	*Prunus padus* 5 x tr., wrb., 2m h.,16-18 cm.g., clear stem min. 2m
Fa	04	*Frangula alnus* 3 x tr., wrb. 3m h. multistem.
Ps	03	*Prunus spinosa* 3 x tr., wrb., 3m h., multistem
Cm	07	*Crataegus monogyna* 3 x tr., wrb., 12-14cm g., 3m h., clear stem min. 1.8m
Mr	03	Malus 'Rudoph' 4 x tr., wrb., 2.5m h., 12-14 cm g.

Abbreviations:

xtr.	number of transplants in nursery
h.	height
s.	spread
wrb	wire root-balled
cm g	girth of tree in centimeters measured 1m above ground
2 ltr cg	plants supplied in 2 litre volume containers

Groundcover and herbaceous mix, typically:

Europaeus euonymus
Dryopteris affinis 2 ltr cg.
Convalaria majalis 2 ltr cg.
Geranium spp. 2 ltr cg.
Helleborus foetidus 2 ltr cg.
Luzula sylvatica 2 ltr cg.
Echinacea purpurea 2 ltr cg.
Hyacinthoides spp. 2 ltr cg.
Narcissus spp. 2 ltr cg.
Armeria maritima 2 ltr cg.
Achillea millefolium 2 ltr cg.
Verbascum bomb. 'Gainsborough' 2 ltr cg.

Hedge planting, typically:

Carpinus betulus, 900-1200mm h.
Ilex aquifolium, 900-1200mm h.

Groundcover planting at swales, typically:

Luzula sylvatica 2 ltr cg.
Luzula nivea 2 ltr cg.
Iris pseudacorus 2 ltr cg.
Astilbe spp 2 ltr cg.
Juncus effusus 2 ltr cg.
Molinia caerulea 2 ltr cg.

This drawing is the copyright of the Landscape Architect. Unless otherwise stated all dimensions are in millimetres. Where dimensions are not given, drawings must not be scaled and the matter must be referred to the Landscape Architect. If the drawing includes conflicting details/dimensions the matter must be referred to the Landscape Architect. All dimensions must be checked on site. The Landscape Architect must be informed, by the Contractor, of any discrepencies before work proceeds.

NOTES:

DATE	REV.	DESCRIPTION	DRAWN BY	CHECKED BY
"	"	"	"	"

DERMOT FOLEY *LANDSCAPE ARCHITECTS*
MALPAS STREET BLACKPITTS D08 DD56 IRELAND T:+353 1 4545148 WWW.DERMOTFOLEY.COM

CLIENT: FINGAL COUNTY COUNCIL

PROJECT: SWORDS CULTURAL QUARTER

DRAWING: LANDSCAPE PLAN

ISSUE STATUS: PLANNING

DRAWING NO.	REVISION
Fc.02-DR-2001	-

PROJECT NO	SCALE	SHEET SIZE	DRAWN BY	CHECKED BY	1st ISSUE
Fc.02	1:500	A1	al	sc	12.04.2022

NORTH

SFR 26/ISSUE-S1/DR.08.09.2009

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Consulting Engineers

Appendix D - Proposed Storm Drainage Layout

- Drg. No. SCQ-CC--XXX-DR-HLCE-CE-0004

PROPOSED STORM DRAINAGE PLAN

SCALE : 1:500

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4) THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL HL DRAWINGS AND SPECIFICATIONS

LEGEND :

- EXISTING STORM MANHOLE
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- PROPOSED STORM MANHOLE
- PROPOSED DISHED STONE KERB
- PROPOSED STORM ATTENUATION TANK
- RG — PROPOSED ROAD GULLY
- KG — PROPOSED KERB INLET GULLY

REV	BY	CKD.	DATE	DESCRIPTION
0	KL	NF	04.04.22	ISSUED FOR STAGE 2A (ii)
1	KL	NF	12.04.22	RE-ISSUED FOR STAGE 2A (ii)
2	BMP	NF	19.04.22	RE-ISSUED FOR STAGE 2A (ii)
3	SC	NF	07.07.22	ISSUED FOR PLANNING

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PROJECT
FINGAL COUNTY COUNCIL
SWORDS CULTURAL QUARTER

DRG. TITLE
PROPOSED STORM DRAINAGE PLAN

SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS SHOWN (@ A1)	BMP	NF	NF

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DWG SCQ-CC-XXX-DR-HLCE-CE-00004

HL PROJECT REF.	STATUS	REVISION
OY22	S4	3

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Appendix E - Storm Water Drainage Attenuation Calculations

Existing Network Details for Storm

* - Indicates pipe has been modified outside of System 1

	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
*	S1.000	31.607	0.790	40.0	0.000	5.00	0.600	o	225	Pipe/Conduit
*	S1.001	25.194	0.252	100.0	0.006	0.00	0.600	o	225	Pipe/Conduit
*	S1.002	11.498	0.115	100.0	0.015	0.00	0.600	o	225	Pipe/Conduit
*	S1.003	6.329	0.063	100.5	0.009	0.00	0.600	o	225	Pipe/Conduit
*	S1.004	40.614	0.406	100.0	0.031	0.00	0.600	o	225	Pipe/Conduit
*	S2.000	16.694	0.167	100.0	0.017	5.00	0.600	o	225	Pipe/Conduit
*	S2.001	5.097	0.051	99.9	0.008	0.00	0.600	o	225	Pipe/Conduit
*	S2.002	13.599	0.136	100.0	0.006	0.00	0.600	o	225	Pipe/Conduit
*	S2.003	7.461	0.075	99.5	0.008	0.00	0.600	o	225	Pipe/Conduit
	S2.004	15.513	0.155	100.1	0.007	0.00	0.600	o	225	Pipe/Conduit
	S2.005	42.382	0.415	102.1	0.063	0.00	0.600	o	225	Pipe/Conduit
	S1.005	10.782	0.108	99.8	0.000	0.00	0.600	o	225	Pipe/Conduit

	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
*	S1.000	1	15.700	14.375	1.100	14.700	13.585	0.890		1200
*	S1.001	2	14.700	13.585	0.890	14.700	13.333	1.142		1200
*	S1.002	3	14.700	13.333	1.142	14.700	13.218	1.257		1200
*	S1.003	4	14.700	13.218	1.257	14.700	13.155	1.320		1200
*	S1.004	5	14.700	13.155	1.320	15.200	12.749	2.226		1200
*	S2.000	7	15.700	14.375	1.100	15.700	14.208	1.267		1200
*	S2.001	8	15.700	14.208	1.267	15.700	14.157	1.318		1200
*	S2.002	9	15.700	14.157	1.318	15.700	14.021	1.454		1200
*	S2.003	10	15.700	14.021	1.454	15.700	13.946	1.529		1200
	S2.004	11	15.700	13.946	1.529	15.700	13.791	1.684		1200
	S2.005	12	15.700	13.791	1.684	15.200	13.376	1.599		1200
	S1.005	6	15.200	12.749	2.226	14.800	12.641	1.934	Hydro-Brake®	1200

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	15.700	1.325	Open Manhole	1200	S1.000	14.375	225				
S2	14.700	1.115	Open Manhole	1200	S1.001	13.585	225	S1.000	13.585	225	
S3	14.700	1.367	Open Manhole	1200	S1.002	13.333	225	S1.001	13.333	225	
S4	14.700	1.482	Open Manhole	1200	S1.003	13.218	225	S1.002	13.218	225	
S5	14.700	1.545	Open Manhole	1200	S1.004	13.155	225	S1.003	13.155	225	
S7	15.700	1.325	Open Manhole	1200	S2.000	14.375	225				
S8	15.700	1.492	Open Manhole	1200	S2.001	14.208	225	S2.000	14.208	225	
S9	15.700	1.543	Open Manhole	1200	S2.002	14.157	225	S2.001	14.157	225	
S10	15.700	1.679	Open Manhole	1200	S2.003	14.021	225	S2.002	14.021	225	
S11	15.700	1.754	Open Manhole	1200	S2.004	13.946	225	S2.003	13.946	225	
S12	15.700	1.909	Open Manhole	1200	S2.005	13.791	225	S2.004	13.791	225	
S6	15.200	2.451	Open Manhole	1200	S1.005	12.749	225	S1.004	12.749	225	
								S2.005	13.376	225	627
S	14.800	2.159	Open Manhole	0		OUTFALL		S1.005	12.641	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S1	718322.445	747008.482	718322.445	747008.482	Required	
S2	718350.532	747022.978	718350.532	747022.978	Required	
S3	718338.981	747045.368	718338.981	747045.368	Required	
S4	718329.031	747051.130	718329.031	747051.130	Required	
S5	718323.433	747048.178	718323.433	747048.178	Required	
S7	718317.872	747001.270	718317.872	747001.270	Required	
S8	718302.705	746994.296	718302.705	746994.296	Required	

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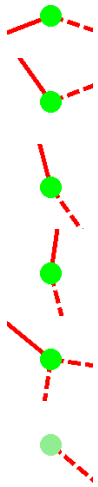
Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S9	718297.882	746995.945	718297.882	746995.945	Required	
S10	718285.190	746991.062	718285.190	746991.062	Required	
S11	718280.874	746997.149	718280.874	746997.149	Required	
S12	718277.031	747012.178	718277.031	747012.178	Required	
S6	718283.254	747054.102	718283.254	747054.102	Required	
S	718274.949	747060.979			No Entry	



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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	225	S1	15.700	14.375	1.100	Open Manhole	1200
S1.001	o	225	S2	14.700	13.585	0.890	Open Manhole	1200
S1.002	o	225	S3	14.700	13.333	1.142	Open Manhole	1200
S1.003	o	225	S4	14.700	13.218	1.257	Open Manhole	1200
S1.004	o	225	S5	14.700	13.155	1.320	Open Manhole	1200
S2.000	o	225	S7	15.700	14.375	1.100	Open Manhole	1200
S2.001	o	225	S8	15.700	14.208	1.267	Open Manhole	1200
S2.002	o	225	S9	15.700	14.157	1.318	Open Manhole	1200
S2.003	o	225	S10	15.700	14.021	1.454	Open Manhole	1200
S2.004	o	225	S11	15.700	13.946	1.529	Open Manhole	1200
S2.005	o	225	S12	15.700	13.791	1.684	Open Manhole	1200
S1.005	o	225	S6	15.200	12.749	2.226	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	31.607	40.0	S2	14.700	13.585	0.890	Open Manhole	1200
S1.001	25.194	100.0	S3	14.700	13.333	1.142	Open Manhole	1200
S1.002	11.498	100.0	S4	14.700	13.218	1.257	Open Manhole	1200
S1.003	6.329	100.5	S5	14.700	13.155	1.320	Open Manhole	1200
S1.004	40.614	100.0	S6	15.200	12.749	2.226	Open Manhole	1200
S2.000	16.694	100.0	S8	15.700	14.208	1.267	Open Manhole	1200
S2.001	5.097	99.9	S9	15.700	14.157	1.318	Open Manhole	1200
S2.002	13.599	100.0	S10	15.700	14.021	1.454	Open Manhole	1200
S2.003	7.461	99.5	S11	15.700	13.946	1.529	Open Manhole	1200
S2.004	15.513	100.1	S12	15.700	13.791	1.684	Open Manhole	1200
S2.005	42.382	102.1	S6	15.200	13.376	1.599	Open Manhole	1200
S1.005	10.782	99.8	S	14.800	12.641	1.934	Open Manhole	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	20.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

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Simulation Criteria for Storm

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	16.200	Storm Duration (mins)	30
Ratio R	0.300		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: S6, DS/PN: S1.005, Volume (m³): 6.0

Unit Reference	MD-SHE-0057-2000-2000-2000
Design Head (m)	2.000
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	57
Invert Level (m)	12.749
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	**Head (m)**	**Flow (l/s)**
Design Point (Calculated)	2.000	2.0
Flush-Flo™	0.247	1.3
Kick-Flo®	0.506	1.1
Mean Flow over Head Range	-	1.5

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**
0.100	1.2	1.200	1.6	3.000	2.4	7.000	3.6
0.200	1.3	1.400	1.7	3.500	2.6	7.500	3.7
0.300	1.3	1.600	1.8	4.000	2.7	8.000	3.8
0.400	1.3	1.800	1.9	4.500	2.9	8.500	3.9
0.500	1.1	2.000	2.0	5.000	3.0	9.000	4.0
0.600	1.2	2.200	2.1	5.500	3.2	9.500	4.1
0.800	1.3	2.400	2.2	6.000	3.3		
1.000	1.5	2.600	2.3	6.500	3.4		

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Storage Structures for Storm

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

Invert Level (m) 13.333

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	55.0	1.000	55.0

Tank or Pond Manhole: S12, DS/PN: S2.005

Invert Level (m) 13.791

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	30.0	1.000	30.0

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 20.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 2
Number of Online Controls 1 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.300
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 16.200 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 100.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status ON

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	S1	60 Winter	100	+20%					14.375
S1.001	S2	360 Winter	100	+20%	100/30 Summer				14.271
S1.002	S3	360 Winter	100	+20%	100/15 Summer				14.271
S1.003	S4	360 Winter	100	+20%	100/15 Summer				14.272
S1.004	S5	360 Winter	100	+20%	100/15 Summer				14.272
S2.000	S7	15 Winter	100	+20%					14.438
S2.001	S8	15 Winter	100	+20%					14.304
S2.002	S9	360 Winter	100	+20%					14.275
S2.003	S10	360 Winter	100	+20%	100/240 Winter				14.274
S2.004	S11	360 Winter	100	+20%	100/120 Winter				14.274
S2.005	S12	360 Winter	100	+20%	100/15 Summer				14.273
S1.005	S6	360 Winter	100	+20%	100/15 Summer				14.270

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	-0.225	0.000	0.00		0.0	OK	
S1.001	S2	0.461	0.000	0.01		0.3	SURCHARGED	

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S3	0.713	0.000	0.04		1.7	SURCHARGED	
S1.003	S4	0.829	0.000	0.05		1.8	SURCHARGED	
S1.004	S5	0.892	0.000	0.03		1.3	SURCHARGED	
S2.000	S7	-0.162	0.000	0.17		8.0	OK	
S2.001	S8	-0.129	0.000	0.37		11.9	OK	
S2.002	S9	-0.107	0.000	0.05		2.4	OK	
S2.003	S10	0.028	0.000	0.08		3.0	SURCHARGED	
S2.004	S11	0.103	0.000	0.08		3.5	SURCHARGED	
S2.005	S12	0.257	0.000	0.15		7.3	SURCHARGED	
S1.005	S6	1.296	0.000	0.04		1.8	SURCHARGED	

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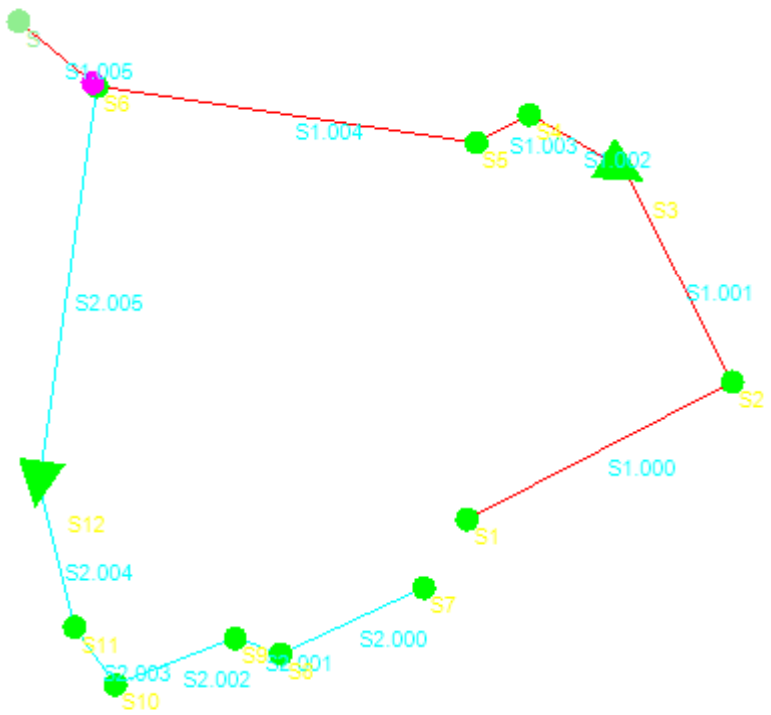

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