DRA
CONSULTING ENGINEERS

Civil Engineer Services
Part 8 Report

Project:

Proposed Housing Development
at Clanrickarde Lodges,
Boreenmanna Road,
Cork City

Client:

Cork City Council

Comhairle Cathrach Chorcaí
Cork City Council

Date of Report:

17th December 2024

Project Ref. No.:

23083

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Document Control

Producer:	Date:	Reviewer:	Date:	Approver:	Date:	Revision Status:
R. Power	19/09/2023	J. Reidy	20/09/2023	A. Dennany	20/09/2023	1
R. Power	25/09/2023	J. Reidy	25/09/2023	A. Dennany	25/09/2023	2
R. Power	24/04/2024	J. Reidy	24/04/2024	A. Dennany	24/04/2024	3

1.0 Introduction & Proposed Development

The following report outlines the Civil Engineering design elements for a proposed housing development at Clanrickarde Lodges, Boreenmanna Road, Cork City. The proposed development consists of 4No. social housing units on a brownfield site.

2.0 Civil Engineering Services

The following section outlines the civil engineering services for the proposed development.

2.1 Foul Sewerage

Existing Foul Network:

There are existing combined Uisce Eireann sewers located on Boreenmanna Road, to the south of the site, and Clanrickarde Estate Road, to the west of the site.

Proposed Foul Sewerage:

It is proposed to discharge the foul effluent from the proposed development to the existing Uisce Eireann combined sewer on Boreenmanna Road.

Please refer to drawing 23083-100 for existing foul sewer details and drawing 23083-150 for the proposed foul sewer details.

2.2 Surface Water Drainage:

Existing Surface Water Drainage:

There are existing combined Uisce Eireann sewers located on Boreenmanna Road, to the south of the site, and Clanrickarde Estate Road, to the west of the site.

Proposed Surface Water Drainage:

It is proposed that surface water from the proposed development will discharge to the existing Uisce Eireann combined sewer on the Clanrickarde Estate Road.

Sustainable Urban Drainage Systems (SUDS)in the form of permeable paving has been provided to manage the surface water on the paved area of the development. The surface water discharge from the remainder of the site will be attenuated and discharge to the Uisce Eireann combined sewer via a flow control device that will limit the rate of discharge to 1.0 l/s.

Please refer to drawing 23083-100 for existing surface water sewer details and drawing 23083-150 for the proposed surface water sewer details. The surface water network calculation can be found in Appendix A of this report.

2.3 Water Supply:

Existing Watermain:

There are a number of existing Uisce Eireann watermains located on Boreenmanna Road and Clanrickarde Estate Road that vary in size from 100mm to 200mm.

Proposed Watermain:

It is proposed to connect the proposed development to the existing 100mm diameter cast iron water main located on the Clanrickarde Estate Road.

A new hydrant, also connected to the Boreenmanna Road 200mm watermain, will also be provided.

Please refer to drawing 23083-100 for existing watermain details and drawing 23083-160 for the proposed watermain details.

2.4 Uisce Eireann:

A Confirmation of Feasibility for the water services connections as outlined has been received, which can be found in Appendix B of this report.

3.0 Roads & Traffic

The proposed development consists of 4No. social housing units which are to be located within an existing residential area. The additional 4No. units will have a negligible impact on the surrounding area's traffic.

4.0 Assessment of Flood Risk:

The proposed development is to be located on Boreenmanna Road in Cork City. The main receptors (flood water sources) are the River Lee, located over 1.0km to the north of the proposed development.

A review of the relevant CFRAM (Catchment Flood Risk Assessment and Management) maps has shown that the location of the proposed development is outside the expected 1 in 1000 flood event for both a coastal and fluvial event.

We also note that there is no history of flooding within the vicinity of the site.

As the proposed development is outside the extent of the 1 in 1000-year flood events and there is no history of flooding within the area, we are of the opinion that the risk of flooding to the site is extremely low and as such a Stage 1 Flood Risk Assessment for the proposed development is not required.

Figure 1 – CFRAM Mapping Extract (source floodinfo.ie)

We trust you find the above to be of use, however, should you have any queries or require any further information, please don't hesitate to contact us.

End of Report

Appendix A - Water Services Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	0.80
FSR Region	Scotland and Ireland	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.200	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	x
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)
S.IC 03	0.023	5.00	18.400	450	569542.966	571135.453
S.IC 02		5.00	18.400	450	569529.558	571131.003
S.MH 04 (FCD)			18.400	1200	569528.086	571133.151
CONNECTION			18.200		569521.084	571132.512

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
1.000	S.IC 03	S.MH 04 (FCD)	15.057	0.600	17.200	17.100	0.100	150.6	225
1.001	S.MH 04 (FCD)	CONNECTION	7.031	0.600	17.100	17.000	0.100	70.3	225
2.000	S.IC 02	S.MH 04 (FCD)	2.604	0.600	17.200	17.100	0.100	26.0	225

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.063	42.3	3.1	0.975	1.075	0.023	0.0	41	0.622
1.001	1.561	62.1	3.1	1.075	0.975	0.023	0.0	34	0.817
2.000	2.574	102.3	0.0	0.975	1.075	0.000	0.0	0	0.000

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
FSR Region	Scotland and Ireland	Drain Down Time (mins)	240
M5-60 (mm)	17.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.200	Check Discharge Rate(s)	✓
Summer CV	0.750	100 year (l/s)	1.0
Winter CV	0.840	Check Discharge Volume	x
Analysis Speed	Normal		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
5	0	0	0
30	0	0	0
100	20	0	0

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Pre-development Discharge Rate

Site Makeup	Greenfield	Region	1
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 100 year (l/s)	
SPR	0.10		

Node S.MH 04 (FCD) Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	17.100	Product Number	CTL-SHE-0045-1000-1200-1000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node S.IC 03 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	17.200	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	84	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	2.000	Number Required	1
Porosity	0.95	Pit Length (m)	2.000		

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Results for 5 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	S.IC 03	46	17.340	0.140	2.3	0.6061	0.0000	OK
60 minute winter	S.IC 02	46	17.339	0.139	0.5	0.0222	0.0000	OK
60 minute winter	S.MH 04 (FCD)	46	17.339	0.239	2.1	0.2706	0.0000	SURCHARGED
15 minute summer	CONNECTION	1	17.000	0.000	0.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	S.IC 03	1.000	S.MH 04 (FCD)	2.1	0.327	0.049	0.4942	
60 minute winter	S.IC 02	2.000	S.MH 04 (FCD)	-0.5	-0.040	-0.004	0.0855	
60 minute winter	S.MH 04 (FCD)	Hydro-Brake®	CONNECTION	0.7				3.4

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Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	S.IC 03	92	17.541	0.341	2.3	1.4810	0.0000	SURCHARGED
120 minute winter	S.IC 02	90	17.541	0.341	0.5	0.0543	0.0000	SURCHARGED
120 minute winter	S.MH 04 (FCD)	92	17.540	0.440	1.8	0.4979	0.0000	SURCHARGED
15 minute summer	CONNECTION	1	17.000	0.000	0.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	S.IC 03	1.000	S.MH 04 (FCD)	1.8	0.314	0.042	0.5988	
120 minute winter	S.IC 02	2.000	S.MH 04 (FCD)	-0.5	-0.019	-0.005	0.1036	
120 minute winter	S.MH 04 (FCD)	Hydro-Brake®	CONNECTION	0.7				6.6

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Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	S.IC 03	132	17.954	0.754	2.8	3.2736	0.0000	SURCHARGED
180 minute winter	S.IC 02	132	17.955	0.755	0.3	0.1200	0.0000	SURCHARGED
180 minute winter	S.MH 04 (FCD)	132	17.954	0.854	1.6	0.9662	0.0000	SURCHARGED
15 minute summer	CONNECTION	1	17.000	0.000	0.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	S.IC 03	1.000	S.MH 04 (FCD)	1.6	0.285	0.038	0.5988	
180 minute winter	S.IC 02	2.000	S.MH 04 (FCD)	-0.3	-0.013	-0.003	0.1036	
180 minute winter	S.MH 04 (FCD)	Hydro-Brake®	CONNECTION	0.9				12.0

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Appendix B - Uisce Eireann Confirmation of Feasibility

CONFIRMATION OF FEASIBILITY

Uisce Éireann
Bosca OP448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

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

www.water.ie

John Reidy

DRA Consulting Engineers
The Park
Lord Edward Street
Limerick
Co. Limerick
V94 840C

24 August 2023

Our Ref: CDS23005295 Pre-Connection Enquiry
Clanrickarde Estate, Boreenmanna Road, Cork, Co. Cork

Dear Applicant/Agent,

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

Irish Water has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Housing Development of 4 unit(s) at Clanrickarde Estate, Boreenmanna Road, Cork, Co. Cork **(the Development).**

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

- **Water Connection** - Feasible without infrastructure upgrade by Irish Water
- **Wastewater Connection** - Feasible without infrastructure upgrade by Irish Water:

  In order to accommodate the proposed the Development discharge, drainage proposals must incorporate a suitable level of Sustainable Drainage Systems (SUDS)/Attenuation in the management of stormwater for the entire development to reduce peak surface water discharge into the existing combined network to greenfield runoff. Please refer to Section 1.5 of the Irish Water Wastewater Code of Practice for further details

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

Stiúrthóirí / Directors: Tony Keohane (Chairman), Niall Gleeson (CEO), Christopher Banks, Fred Barry, Gerard Britchfield, Liz Joyce, Patricia King, Eileen Maher, Cathy Mannion, Michael Walsh
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 Eirinn / Registered in Ireland No.: 530363
IW-H-P-MD
REV013

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

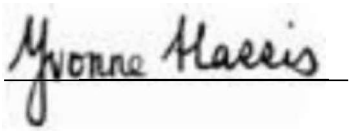
Where can you find more information?

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

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

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

Yours sincerely,



Yvonne Harris
Head of Customer Operations

Section A - What is important to know?

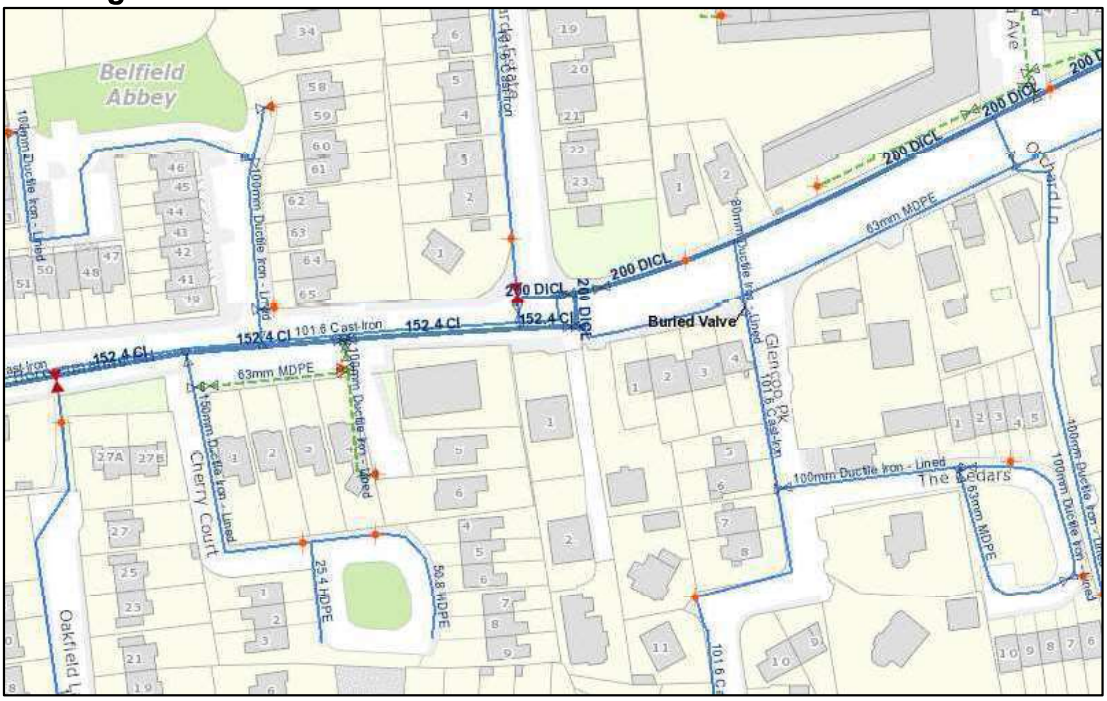
What is important to know?	Why is this important?
Do you need a contract to connect?	• Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Irish Water's network(s). • Before the Development can connect to Irish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

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

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

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

Existing Water Infrastructure:



Existing Wastewater Infrastructure:

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

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

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