

Carrigaline Mixed Use Development

Carrigaline, Cork

ENGINEERING SERVICES REPORT

Engineering Services Report

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Document Control Sheet

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REPORT

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Rev.	Date	By	Chk	Description
A	15/07/2021	KC	NF	ISSUED FOR PRE-PLANNING
B	04/10/2021	KC	NF	ISSUE FOR PRE-APPLICATION
C	05/05/2022	KC	NF	ISSUED FOR PLANNING

Review

Prepared By: Kevin Callaghan

Date: 21st June 2021

Other Contributors:

Checked by: Niall FitzGerald



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1.0 Introduction

The proposed development will consist of the following components:

- The construction of 224 no. residential units consisting of 202 no. proposed apartments in 2 no. blocks, ranging in height from 6 to 7 storeys and 22 no. townhouse/duplex units;
- A 184 m² creche/childcare facility;
- The provision of landscaping and amenity areas to include 1 no. local play area, 1 no. kick about areas, an activity trail/greenway along the river, a gathering area/amphitheatre with tired seating areas, a civic space/promenade and 2 no. courtyard areas;
- The provision of 3 no. retail units, residential amenity and management spaces at ground and first floor level; and
- All associated ancillary development including vehicular access on to the Kilmoney Road Lower, and a cycle/pedestrian connection on to the R611 (via an activity trail/greenway along the river), lighting, drainage, roads boundary treatments, ESB Substation, bicycle & car parking and bin storage.

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

- a. Foul Effluent Disposal
- b. Surface Water Disposal
- c. Water Supply
- d. Traffic
- e. Flood Assessment



2.0 Report

a. Foul Effluent Disposal

The following is the proposed strategy for the disposal of foul effluent generated by the new development:

The foul drainage from the development will be collected by a gravity foul system, which will discharge directly to the proposed new pumping station on the site. The network will consist of 150mm to 225mm diameter upvc pipes laid to falls ranging from 1 in 60 to 1 in 100 collecting the foul waste from the residential and commercial units on the site.

The design and details will all comply with and be adopted from the Irish Water Connection and Developer Services Document for Wastewater Infrastructure Standard Details and Code of Practice.

For details of the above, see Appendix A: Drg. No. LY05-V1-XXX-VR-HLCE-CE-002 Foul Drainage Layout

b. Surface Water Disposal

The following is the proposed strategy for the disposal of surface water generated by the new development:

It is proposed that all surface water generated by the proposed development will be collected via 150mm to 375mm upvc pipes laid to falls ranging from 1 in 100 to 1 in 200 and discharging via gravity to the adjacent river. All drains will pass through a Class 1 Bypass separator before discharging to the river.

The surface water drainage will be attenuated and discharge to the river will be restricted to greenfield run-off of 8.6l/s. The network will be designed to cater for 20% climate change and 1 in 100 year return period. The resulting design requires 600m² of attenuated storage which will be located under the covered car park area which is located outside the flood plane. The network is also utilising the green roof which slows down the flow from the roof and therefore the time taken for the run-off from the roof into the



storm network increases allowing the runoff from the paved areas at ground level to enter the system and discharge to the river.

A head wall detail and non return valve will be constructed as part of the outfall detail to the river.

For details of the above, see Appendix A: Drg. No. LY05-V1-XXX-VR-HLCE-CE-001 Storm Drainage Layout and Appendix B for Surface Water Calculations.

c. Water Supply

It is proposed to serve the proposed residential units by taking a connection from the existing 180mm diameter PE watermain on Kilmoney Road.

Fire hydrants will be installed to serve the new development and their number and position will be compliant with the Fire Safety Certificate for the development.

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

For details of the above, see Appendix A: Drg. No. LY05-V1-XXX-VR-HLCE-CE-003 Watermain Layout

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

Note: A pre-connection enquiry was submitted to Irish water on the 9th July 2021, in which the above strategy for foul and water supply were proposed. This enquiry included details of the following:

- Foul loadings from the proposed development to the proposed new pumping station
- Water demand for the proposed development
- Confirmation of Feasibility was received on the 31st of August 2021 reference CDS21004834
- Statement of Design Acceptance was received on the 30th of April 2022



See Appendix C: Pre-Connection Enquiry to Irish Water and Confirmation of Feasibility and Statement of Design Acceptance

d. Traffic

The following reports and assessments will be submitted by Martin Hanley Consulting Engineers Ltd. (Traffic and Transport) as part of the traffic and transport engineering scope for this application:

- 1. Traffic & Transport Assessment
- 2. Mobility Management Plan (Travel Plan)
- 3. Road Safety Audit Stage 1/2
- 4. Junction design with vehicle tracking analysis.

Please refer to separate reports and documentation by Martin Hanley Consulting Engineers Ltd.

e. Flood Assessment

A full site-specific Flood Risk Assessment will be carried out by ARUP as part of the submission. The FRA will meet the requirements detailed in *'The Planning System and Flood Risk Management Guidelines for Planning Authorities'* (2009), prepared by the then Department of Environment, Heritage and Local Government (DEHLG) and the Office of Public Works (OPW). The FRA will also be in line with the guidance included in the Draft Strategic Flood Risk Assessment for Ballincollig - Carrigaline Municipal District Local Area Plan (November 2020).

Please refer to separate reports and documentation by ARUP



Appendix A -

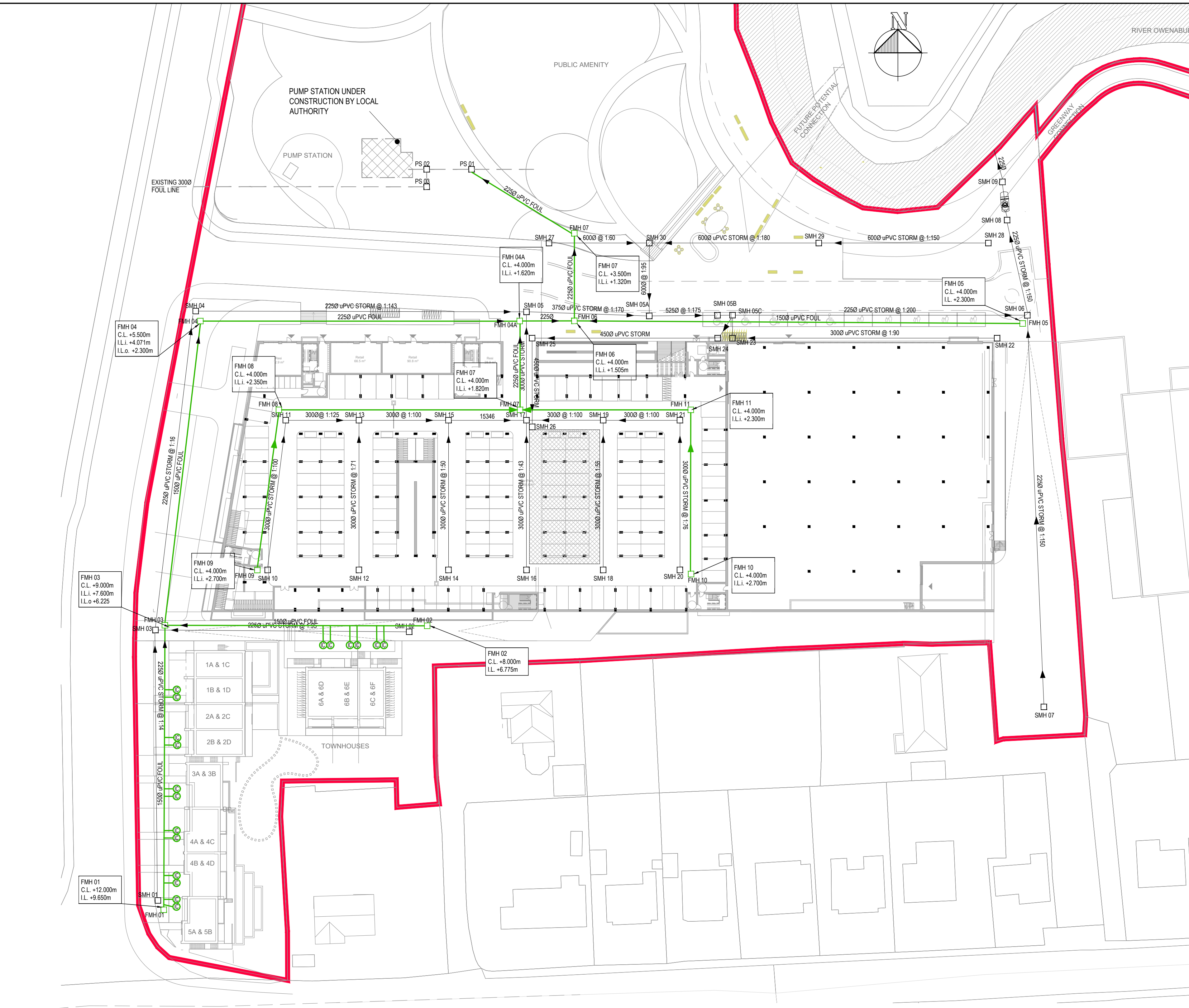
Site Services Drawings:

Drg. No. LY05-V1-XXX-VR-HLCE-CE-001 Storm Drainage Layout

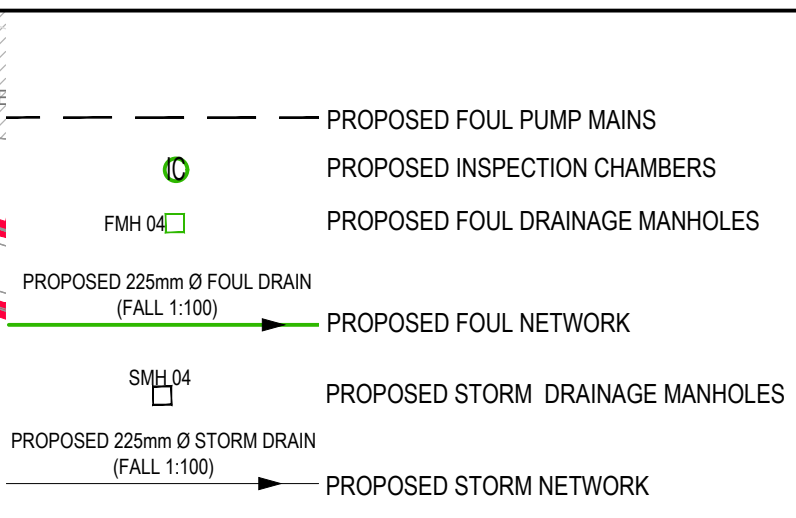
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Drg. No. LY05-V1-XXX-VR-HLCE-CE-007 Foul Drainage Long Sections



PROPOSED FOUL LAYOUT PLAN
SCALE 1:500



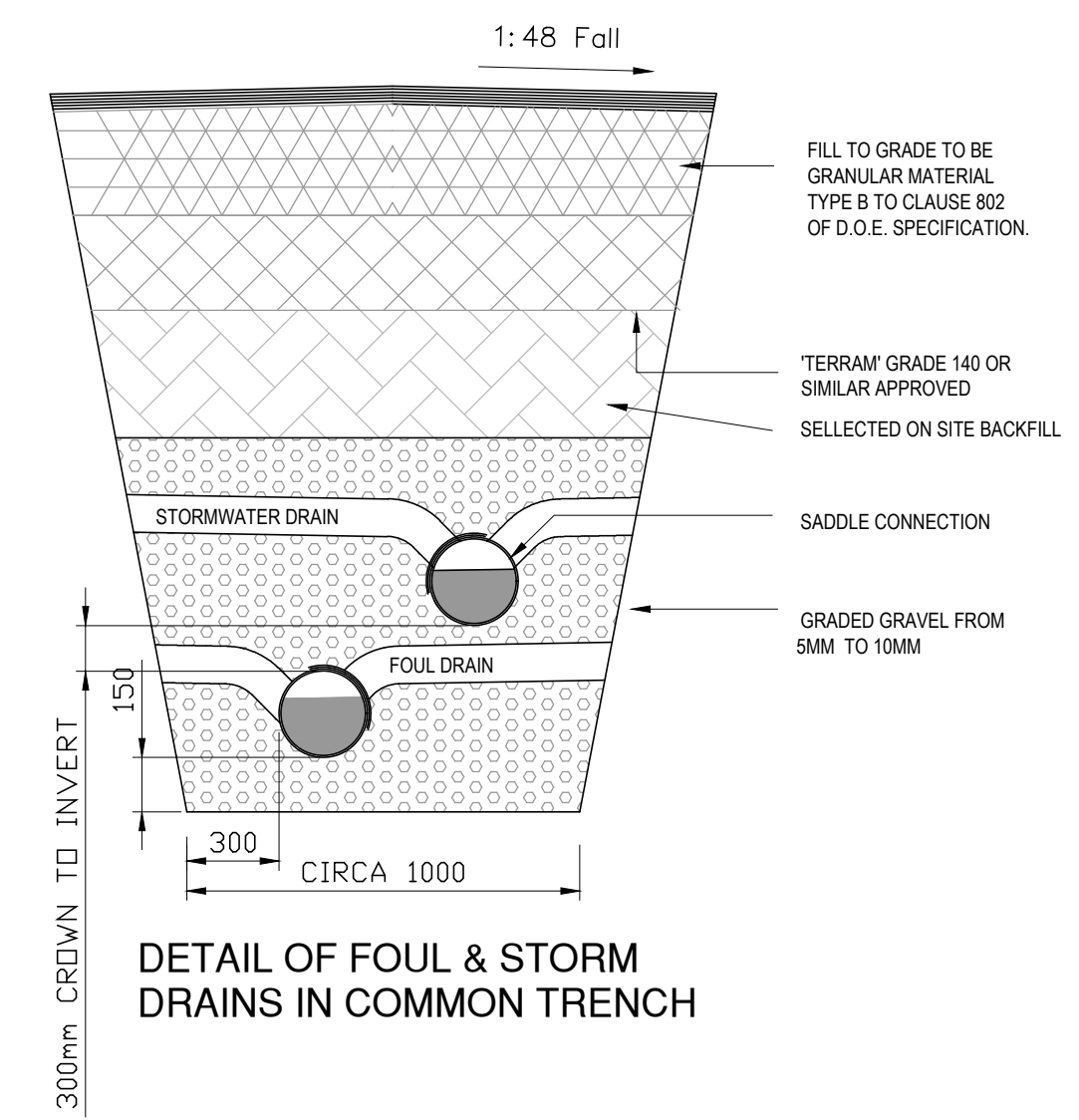
LEVELS CLOUDED TO BE CONFIRMED

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

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

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
WATERMANS ALL LOCATIONS	900
WATER SERVICES ALL LOCATIONS	900
ELECTRICAL CABLE DUCTS IN ROADWAY	900
ELECTRICAL 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

- GENERAL NOTES:
- 1) ALL FOUL SEWER PIPES TO BE uPVC & COMPLY WITH THE PROVISIONS IN EN 1401 2009/2012. PIPES TO BE APPLICATION AREA CODE 'UD' STIFFNESS CLASS 8kN/m² (SN8), WITH A JETTING RESISTANCE OF 2000 psi (180 Bar).
 - 2) ALL PIPES TO BE A MINIMUM DISTANCE OF 1m (TO FACE) FROM ROAD KERB.
 - 3) ALL MANHOLES TO BE A MINIMUM DISTANCE OF 0.5m FROM THE KERB.
 - 4) LOCATION OF ALL FOUL DRAINAGE IS INDICATIVE / REPRESENTATIVE ONLY. EXACT SET OUT OF FOUL DRAINAGE TO BE LOCATED ON SITE IN ACCORDANCE WITH IRISH WATER DETAILS.
 - 5) MINIMUM SEPARATION OF ALL SERVICES ON SITE TO BE AS PER IRISH WATER DETAIL STD-W-05
 - 6) MINIMUM OF 3M SEPARATION TO ALL WASTEWATER NETWORK FROM PROPERTIES
 - 7) ALL INSPECTION CHAMBERS FOR PROPERTIES TO BE CONSTRUCTED IN ACCORDANCE WITH IRISH WATER TYPICAL DETAILS. PLEASE REF STD-WW-02 & STD-WW-03
 - 8) WHERE MANHOLE COVERS TO BE LOCATED IN SOFT LANDSCAPED/GRASS AREAS, TO ENSURE THAT ALL MANHOLE COVERS ARE IDENTIFIABLE, ACCESSIBLE AND WILL NOT BECOME OVERGROWN, COVERS ARE TO BE SURROUNDED BY A CONCRETE PLINTH, 200MM ALL ROUND AND 100MM DEEP FORMED WITH C20/25 CONCRETE, 20MM AGGREGATE SIZE, BEDDED IN CLAUSE 804 MATERIAL.
- WATER TEST:
- 8) FOUL & STORM SEWERS SHOULD BE TESTED FOR A MIN OF 30 MINUTES, UNDER A HEAD OF NOT LESS THAN 1M OR GREATER THAN 2.5M OVER THE HIGHEST POINT ON THE LINE UNDER TEST; THE PIPELINE SHOULD 'STAND' FOR A PERIOD 2 HOURS AFTER FILLING AND TOPPED UP AS NECESSARY BEFORE COMMENCING THE TEST. THE MAXIMUM AMOUNT OF WATER LOSS SHOULD BE IN ACCORDANCE WITH LOCAL AUTHORITY GUIDELINES
 - 9) AN AIR TEST MAY BE CARRIED OUT IN LIEU OF THE ABOVE AND IN ACCORDANCE WITH LOCAL AUTHORITY GUIDELINES
 - 10) AT TIME OF COMPLETION THE DEVELOPER SHOULD ENSURE THAT ALL DRAINS WITHIN THE SITE ARE CLEAN AND FREE OF OBSTRUCTIONS
 - 11) A CONDITION SURVEY SHOULD ALSO BE CARRIED OUT VIA CCTV FOOTAGE AND PRESENTED TO THE LOCAL AUTHORITY PRIOR TO SITE HANDOVER



DETAIL OF FOUL & STORM DRAINS IN COMMON TRENCH

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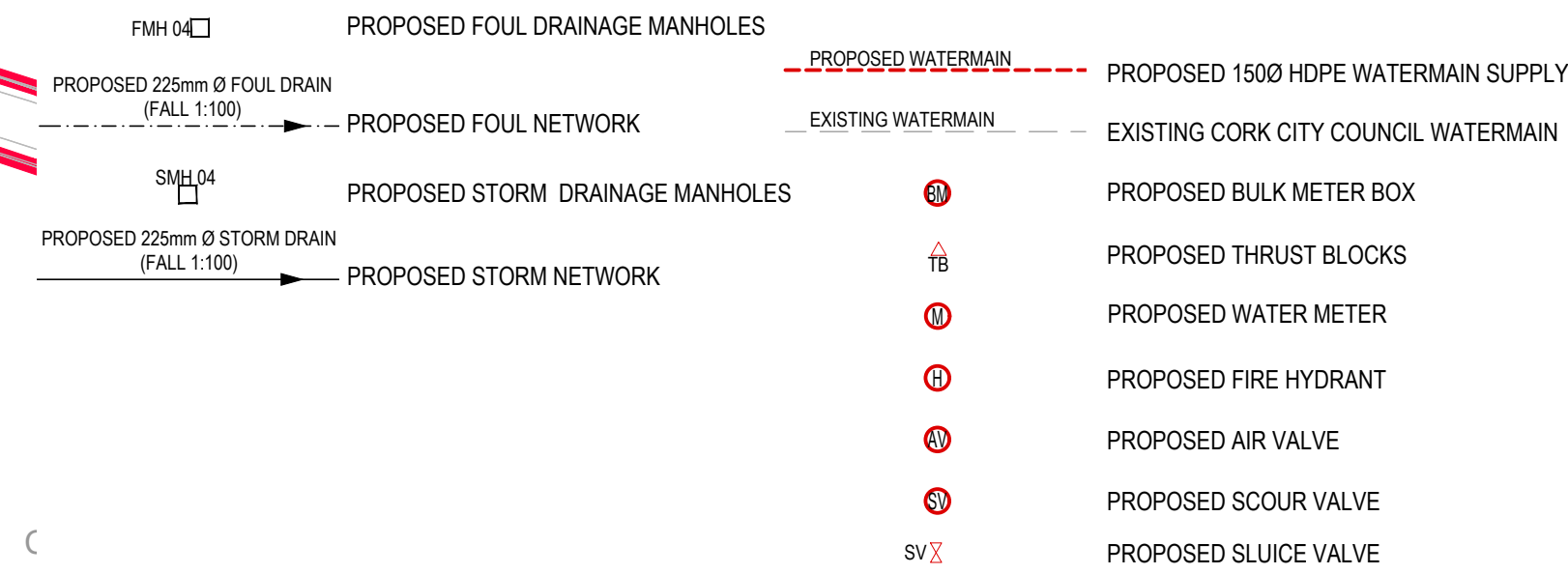
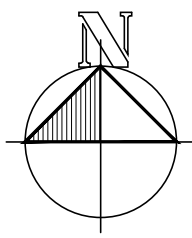
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1	SC	KC	16.07.21	ISSUED FOR PRE-PLANNING
2	SC	KC	06.10.21	ISSUED FOR PRE-APPLICATION
3	KL	KC	27.04.22	ISSUED FOR IRISH WATER STATEMENT OF DESIGN ACCEPTANCE
4	KL	KC	28.04.22	IRISH WATER COMMENTS INCORPORATED
5	KL	KC	05.05.2022	ISSUED FOR PLANNING APPLICATION

PROJECT			
CARRAIGALINE SHD, CORK			
DRG. TITLE			
SITE SERVICES			
FOUL LAYOUT			
SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS SHOWN (@ A1)	SC	KC	KC

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DRAWING: LY05-V1-XXX-DR-HLCE-CE-0002

HL PROJECT REF.	STATUS	REVISION
LY05	P1	5

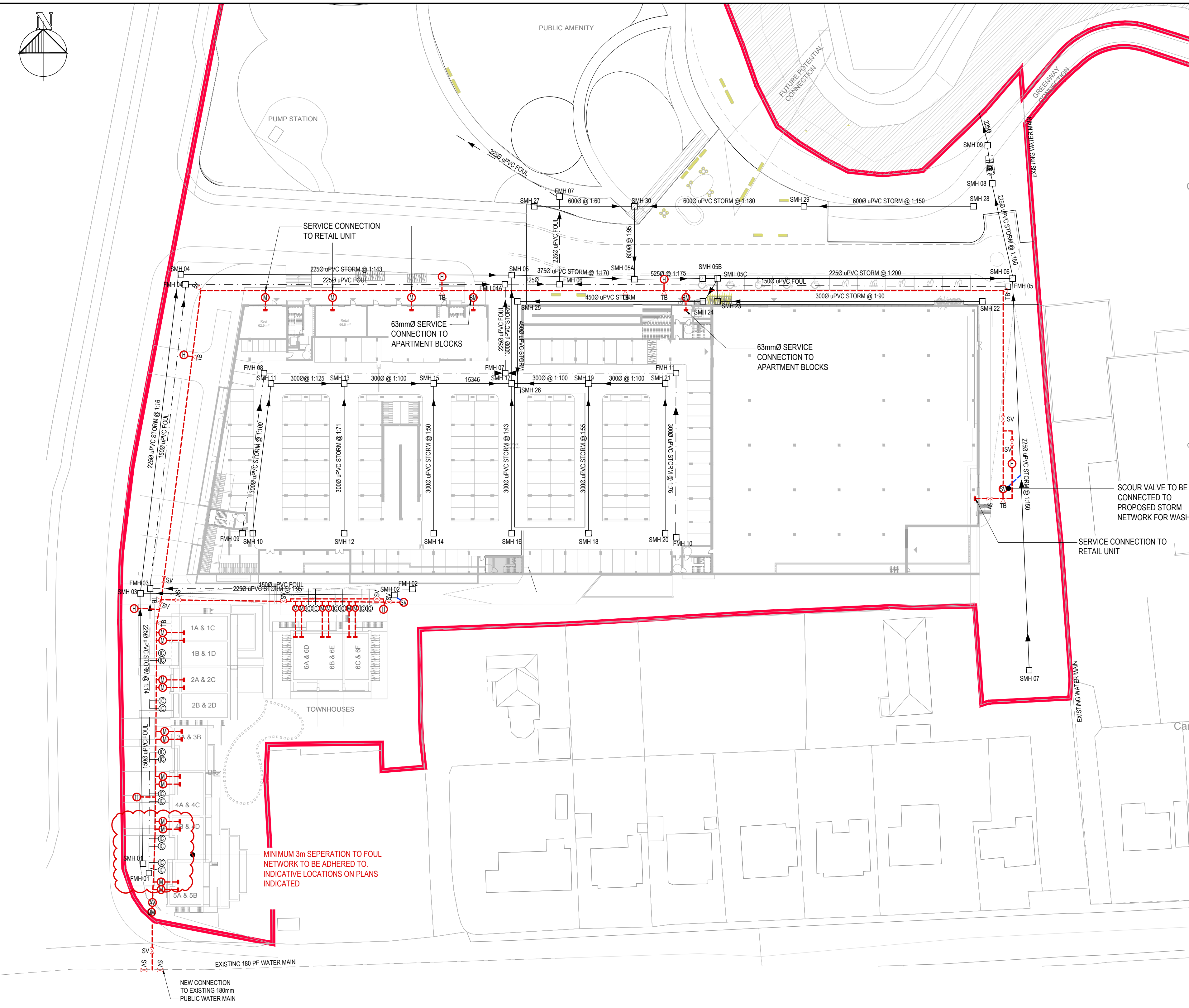


- 1) WATERMAIN TO BE 1500 FOR MAIN CIRCULATION ROUTE. BRANCH MAINS TO BE 1000. ALL WATERMAIN LINES TO BE CLASS C 10 BAR PRESSURE. WATERMAIN TO BE LAID A MINIMUM OF 3m FROM PROPOSED STRUCTURE.
- 2) EACH PREMISE SHALL HAVE:
 - AN INDIVIDUAL WATER SUPPLY, TAKEN FROM A MANIFOLD BOX.
 - THE MANIFOLD BOX SHALL BE LOCATED ON THE FOOTPATH OUTSIDE THE BUILDING AS CLOSE TO PROPERTY BOUNDARY AS POSSIBLE.
 - INDIVIDUAL WATER METERS ARE REQUIRED FOR EACH INDIVIDUAL PREMISE.
- 3) THE DEVELOPER SHALL MAKE PROVISION FOR ANY REDUNDANT EXISTING WATER SERVICES CONNECTIONS. ALL REDUNDANT EXISTING WATER SERVICES CONNECTIONS SHALL BE TRACED BACK TO THE PUBLIC MAIN BY THE DEVELOPER OR IRISH WATER THROUGH THE CONNECTION AGREEMENT AND SHALL BE BLANKED OFF AT THE DEVELOPERS EXPENSE.
- 4) ALL FIRE HYDRANTS WILL BE ACCESSIBLE IN AN EMERGENCY. REFER TO SECTION 3.5 OF WATER CODE OF PRACTICE.
- 5) ALL PLANTING OF NEW TREES/SHRUBS ADJACENT TO THE WATERMAIN SHALL COMPLY WITH IRISH WATER STANDARD DETAIL STD-W-12A.
- 6) THRUST BLOCKS TO BE PROVIDED ON WATERMANS AT DEAD ENDS, TEES, BENDS & AT BOTH SIDES OF A SLUICE VALVE CHAMBER. ALL DETAILS TO CONFORM WITH IRISH WATER STANDARD DETAILS DOCUMENT No IW-CDS-5020. ALL INCLUDED WITH THE SPECIFICATIONS DOCUMENTS.
- 7) LOCATION OF ALL WATERMANS ARE INDICATIVE / REPRESENTATIVE ONLY. EXACT SET OUT OF WATERMAIN TO BE LOCATED ON SITE IN ACCORDANCE WITH IRISH WATER DETAILS.
- 8) MINIMUM SEPERATION OF ALL SERVICES ON SITE TO BE AS PER IRISH WATER DETAIL STD-W-11. MINIMUM SEPERATION DISTANCES AS FOLLOWS

HORIZONTAL	
300mm TO DISTRIBUTION MAINS OF LESS THAN 300mm DIAMETER	500
500mm TO TRUNK MAINS BETWEEN 300mm AND 450mm DIAMETER	800
3m TO TRUNK / ARTERIAL MAINS OF GREATER THAN 450mm DIAMETER	600
TELECOM DUCTS IN ROADWAYS	750
CABLE TV DUCTS IN FOOTPATHS	450
- 9) MINIMUM OF 1M SEPERATION TO ALL WATERMANS FROM PROPERTY BOUNDARIES

ALL WATERSUPPLY DETAILS 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-5020-01. CONTRACTOR IS ALSO TO REFER TO THE CODE OF PRACTICE FOR WATER INFRASTRUCTURE DOCUMENT. CONNECTIONS AND DEVELOPER SERVICES. DESIGN AND CONSTRUCTION REQUIREMENTS FOR SELF LAY DEVELOPMENTS DOCUMENT IW-CDS-5020-03

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
WATERMANS ALL LOCATIONS	900
WATER SERVICES ALL LOCATIONS	600
ELECTESS CABLE DUCTS IN ROADWAY	900
ELECTESS CABLE DUCTS IN FOOTPATHS	500
NATURAL GAS MAINS IN ROADWAYS	800
NATURAL GAS MAINS IN FOOTPATHS	600
TELECOM DUCTS IN ROADWAYS	750
CABLE TV DUCTS IN FOOTPATHS	450



PROPOSED WATER SUPPLY PLAN
SCALE 1:500

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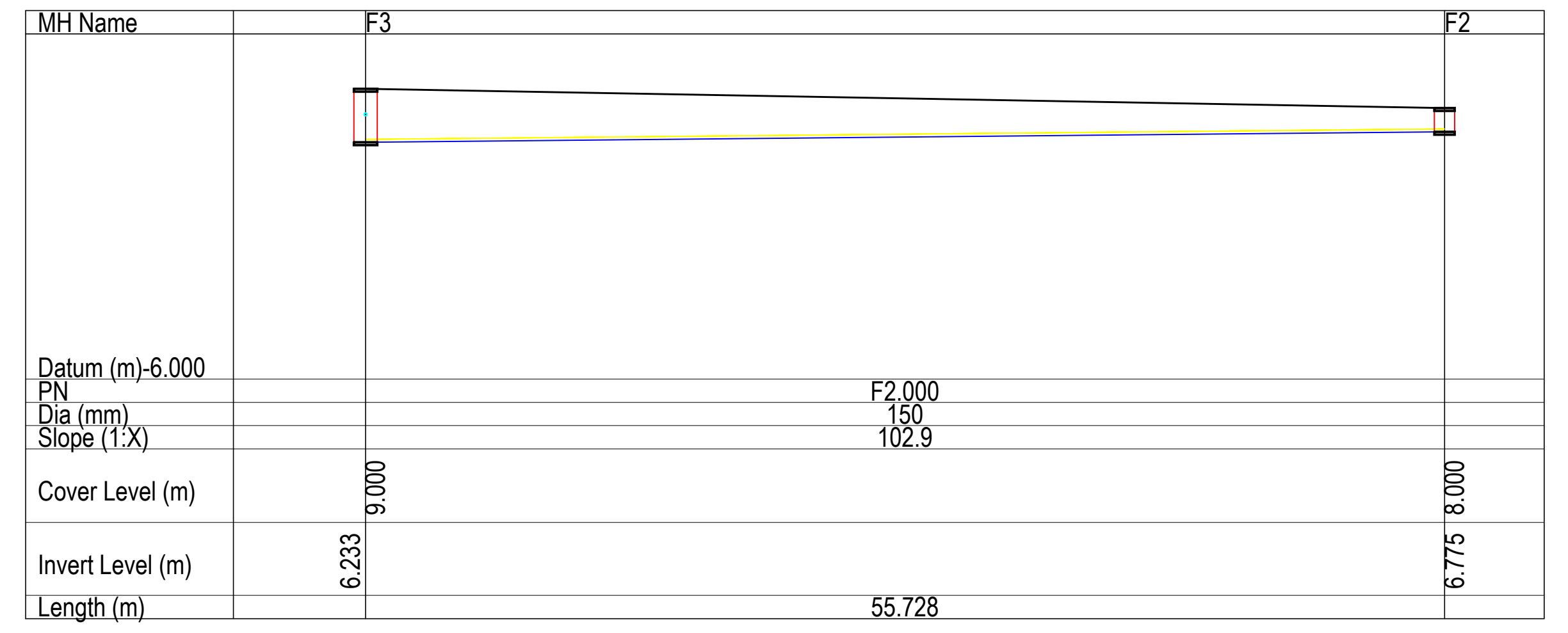
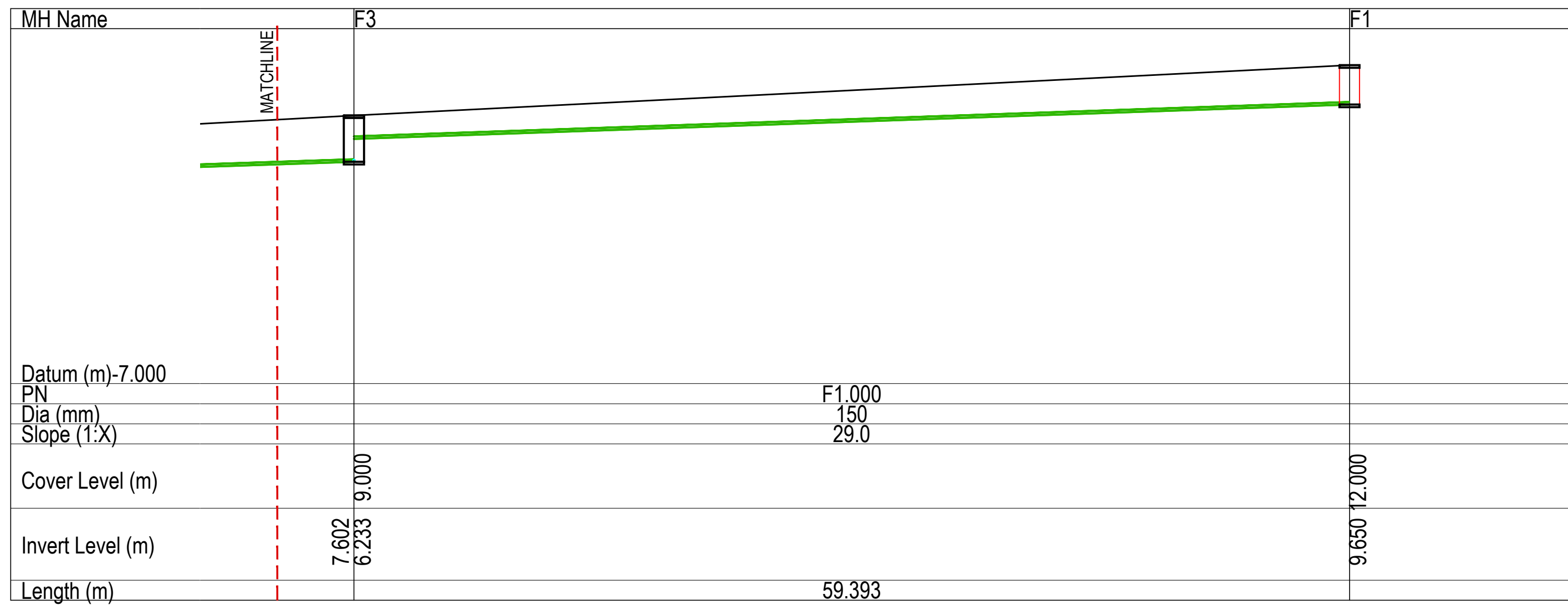
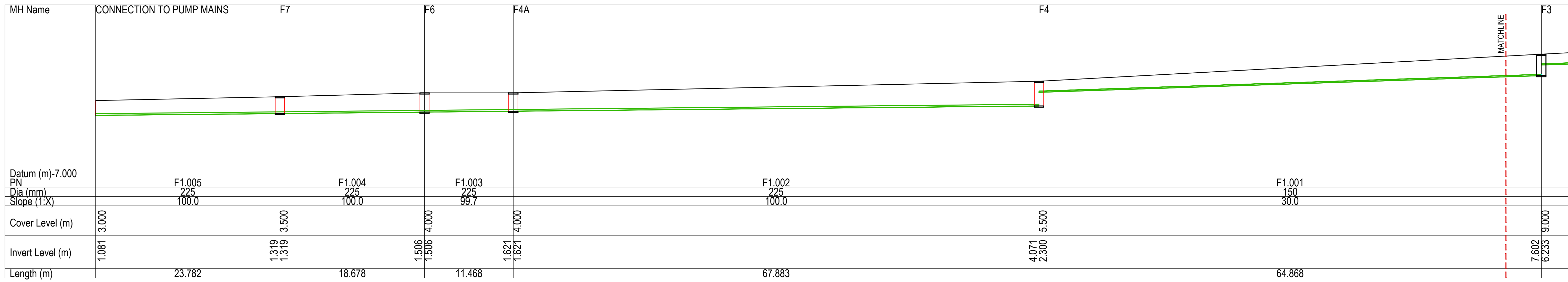
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4	KL	KC	28.04.22	IRISH WATER COMMENTS INCORPORATED
5	KL	KC	28.04.22	LOOP REVISED - REISSUED FOR STATEMENT OF DESIGN ACCEPTANCE
6	KL	KC	05.05.2022	ISSUED FOR PLANNING APPLICATION

PROJECT			
CARRAIGALINE SHD, CORK			
DRG. TITLE			
SITE SERVICES			
WATERMAIN LAYOUT			
SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS SHOWN (@ A1)	SC	KC	KC

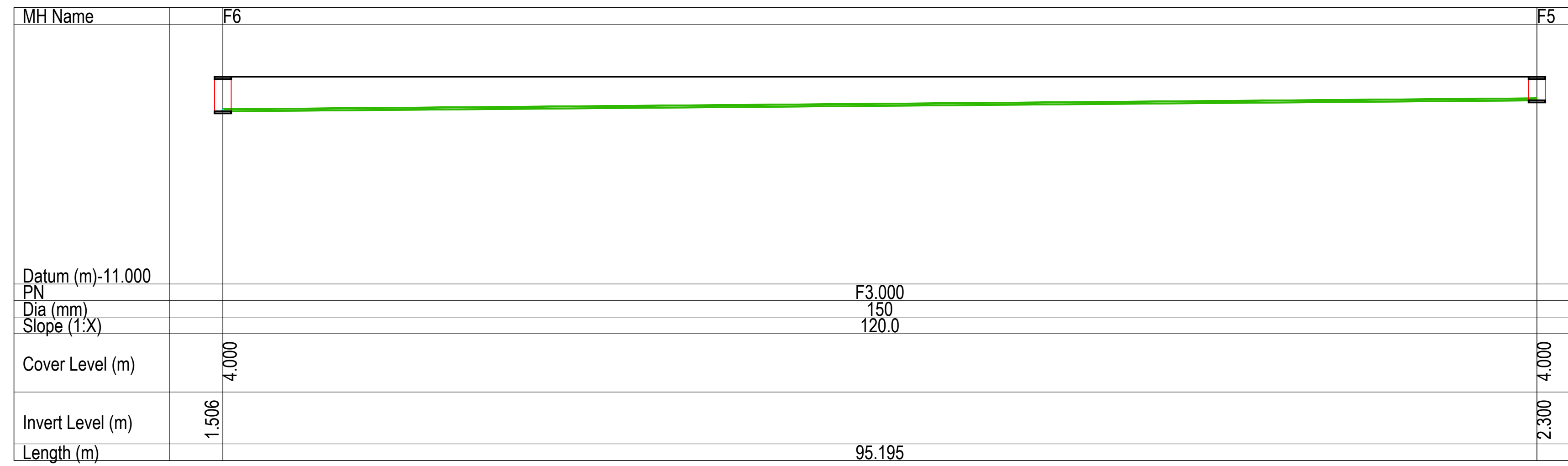
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DRAWING: LY05-V1-XXX-DR-HLCE-CE-0003

HL PROJECT REF.	STATUS	REVISION
LY05	P1	6



FOUL LONGSECTIONS
 VERTICAL SCALE 1:250
 HORIZONTAL SCALE 1:250



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CARRAIGALINE SHD, CORK			
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FOUL LONG SECTIONS			
SCALE	DRAWN BY	CHECKED BY	APPROVED BY
AS SHOWN (@ A1)	SC	KC	KC

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DWG: LY05-V1-XXX-DR-HLCE-CE-0007

HL PROJECT REF.	STATUS	REVISION
LY05	P1	1



Appendix B – Surface Water Drainage 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	31.780	0.212	149.9	0.131	15.00	0.600	o	600	Pipe/Conduit
* S1.001	38.272	0.212	180.5	0.000	0.00	0.600	o	600	Pipe/Conduit
* S2.000	20.693	0.353	58.6	0.081	15.00	0.600	o	600	Pipe/Conduit
* S1.002	18.158	0.192	94.6	0.000	0.00	0.600	o	600	Pipe/Conduit
* S1.003	0.952	0.012	79.3	0.000	0.00	0.600	o	600	Pipe/Conduit
S3.000	61.298	4.350	14.1	0.088	15.00	0.600	o	225	Pipe/Conduit
S4.000	52.403	0.550	95.3	0.096	15.00	0.600	o	225	Pipe/Conduit
S3.001	64.476	3.931	16.4	0.000	0.00	0.600	o	225	Pipe/Conduit
S3.002	70.438	0.492	143.1	0.000	0.00	0.600	o	225	Pipe/Conduit
* S5.000	31.758	0.636	49.9	0.063	15.00	0.600	o	300	Pipe/Conduit
* S6.000	31.778	0.446	71.3	0.051	15.00	0.600	o	300	Pipe/Conduit
* S7.000	32.149	0.321	100.2	0.063	15.00	0.600	o	300	Pipe/Conduit
* S7.001	15.534	0.125	124.3	0.057	0.00	0.600	o	300	Pipe/Conduit
* S6.001	19.027	0.190	100.1	0.056	0.00	0.600	o	300	Pipe/Conduit
* S5.001	16.530	0.105	157.4	0.000	0.00	0.600	o	300	Pipe/Conduit
* S8.000	31.829	0.741	43.0	0.049	15.00	0.600	o	300	Pipe/Conduit
* S9.000	31.817	0.419	75.9	0.058	15.00	0.600	o	300	Pipe/Conduit
* S9.001	16.285	0.159	102.4	0.065	0.00	0.600	o	300	Pipe/Conduit
* S10.000	31.764	0.578	55.0	0.048	15.00	0.600	o	300	Pipe/Conduit
* S9.002	16.302	0.163	100.0	0.036	0.00	0.600	o	300	Pipe/Conduit
* S5.002	19.658	0.157	125.2	0.046	0.00	0.600	o	300	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	26	3.500	2.300	0.600	3.500	2.088	0.812		2000
* S1.001	2	3.500	2.088	0.812	3.500	1.876	1.024		2000
* S2.000	28	3.500	2.300	0.600	3.500	1.947	0.953		2000
* S1.002	27	3.500	1.875	1.025	4.000	1.683	1.717		2000
* S1.003	4	4.000	1.683	1.717	4.000	1.671	1.729	Non Return Valve	1500
S3.000	1	12.000	10.575	1.200	9.000	6.225	2.550		1200
S4.000	7	8.000	6.775	1.000	9.000	6.225	2.550		1200
S3.001	2	9.000	6.225	2.550	5.500	2.294	2.981		1200
S3.002	3	5.500	2.294	2.981	4.000	1.802	1.973		1200
* S5.000	14	4.000	2.700	1.000	4.000	2.064	1.636		1500
* S6.000	13	4.000	2.700	1.000	4.000	2.254	1.446		1500
* S7.000	8	4.000	2.700	1.000	4.000	2.379	1.321		1500
* S7.001	9	4.000	2.379	1.321	4.000	2.254	1.446		1500
* S6.001	10	4.000	2.254	1.446	4.000	2.064	1.636		1500
* S5.001	11	4.000	2.064	1.636	4.000	1.959	1.741		1500
* S8.000	15	4.000	2.700	1.000	4.000	1.959	1.741		1500
* S9.000	17	4.000	2.700	1.000	4.000	2.281	1.419		1500
* S9.001	18	4.000	2.281	1.419	4.000	2.122	1.578		1500
* S10.000	16	4.000	2.700	1.000	4.000	2.122	1.578		1500
* S9.002	19	4.000	2.122	1.578	4.000	1.959	1.741		1500
* S5.002	12	4.000	1.959	1.741	4.000	1.802	1.898		1500

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Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
S3.003	25.236	0.144	175.3	0.000	0.00	0.600	o	375	Pipe/Conduit
S1.004	15.677	0.049	319.9	0.000	0.00	0.600	o	375	Pipe/Conduit
S1.005	1.511	0.049	30.8	0.000	0.00	0.600	o	375	Pipe/Conduit
* S11.000	19.741	0.039	506.2	0.000	15.00	0.600	o	450	Pipe/Conduit
* S11.001	39.566	0.079	500.8	0.091	0.00	0.600	o	450	Pipe/Conduit
* S11.002	2.747	0.005	549.4	0.000	0.00	0.600	o	450	Pipe/Conduit
S12.000	57.224	0.634	90.3	0.232	15.00	0.600	o	300	Pipe/Conduit
S12.001	2.014	0.106	18.9	0.000	0.00	0.600	o	300	Pipe/Conduit
S1.006	64.261	0.260	247.2	0.000	0.00	0.600	o	525	Pipe/Conduit
S13.000	80.649	0.550	146.6	0.000	15.00	0.600	o	225	Pipe/Conduit
S1.007	23.248	0.133	174.8	0.000	0.00	0.600	o	525	Pipe/Conduit
S1.008	8.076	0.046	175.6	0.000	0.00	0.600	o	525	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)
S3.003	4	4.000	1.802	1.823	4.000	1.658	1.967		1200
S1.004	18	4.000	1.658	1.967	4.000	1.609	2.016		1200
S1.005	23	4.000	1.609	2.016	4.000	1.560	2.065	Non Return Valve	1200
* S11.000	21	3.500	1.687	1.363	4.000	1.648	1.902		1500
* S11.001	22	4.000	1.648	1.902	4.000	1.569	1.981		1500
* S11.002	23	4.000	1.569	1.981	4.000	1.564	1.986		1500
S12.000	25	4.000	2.300	1.400	4.000	1.666	2.034		1200
S12.001	29	4.000	1.666	2.034	4.000	1.560	2.140	Non Return Valve	1200
S1.006	18	4.000	1.560	1.915	4.000	1.300	2.175	Hydro-Brake®	1200
S13.000	24	2.200	1.850	0.125	4.000	1.300	2.475		1200
S1.007	5	4.000	1.300	2.175	3.000	1.167	1.308		1200
S1.008	6	3.000	1.167	1.308	2.000	1.121	0.354		1200

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S26	3.500	1.200	Open Manhole	2000	S1.000	2.300	600				
S2	3.500	1.412	Open Manhole	2000	S1.001	2.088	600	S1.000	2.088	600	
S28	3.500	1.200	Open Manhole	2000	S2.000	2.300	600				
S27	3.500	1.625	Open Manhole	2000	S1.002	1.875	600	S1.001	1.876	600	1
								S2.000	1.947	600	72
S4	4.000	2.317	Open Manhole	1500	S1.003	1.683	600	S1.002	1.683	600	
S1	12.000	1.425	Open Manhole	1200	S3.000	10.575	225				
S7	8.000	1.225	Open Manhole	1200	S4.000	6.775	225				
S2	9.000	2.775	Open Manhole	1200	S3.001	6.225	225	S3.000	6.225	225	
								S4.000	6.225	225	
S3	5.500	3.206	Open Manhole	1200	S3.002	2.294	225	S3.001	2.294	225	
S14	4.000	1.300	Open Manhole	1500	S5.000	2.700	300				
S13	4.000	1.300	Open Manhole	1500	S6.000	2.700	300				
S8	4.000	1.300	Open Manhole	1500	S7.000	2.700	300				
S9	4.000	1.621	Open Manhole	1500	S7.001	2.379	300	S7.000	2.379	300	
S10	4.000	1.746	Open Manhole	1500	S6.001	2.254	300	S6.000	2.254	300	
								S7.001	2.254	300	
S11	4.000	1.936	Open Manhole	1500	S5.001	2.064	300	S5.000	2.064	300	
								S6.001	2.064	300	
S15	4.000	1.300	Open Manhole	1500	S8.000	2.700	300				
S17	4.000	1.300	Open Manhole	1500	S9.000	2.700	300				
S18	4.000	1.719	Open Manhole	1500	S9.001	2.281	300	S9.000	2.281	300	
S16	4.000	1.300	Open Manhole	1500	S10.000	2.700	300				
S19	4.000	1.878	Open Manhole	1500	S9.002	2.122	300	S9.001	2.122	300	
								S10.000	2.122	300	
S12	4.000	2.041	Open Manhole	1500	S5.002	1.959	300	S5.001	1.959	300	
								S8.000	1.959	300	
								S9.002	1.959	300	
S4	4.000	2.198	Open Manhole	1200	S3.003	1.802	375	S3.002	1.802	225	
								S5.002	1.802	300	
S18	4.000	2.342	Open Manhole	1200	S1.004	1.658	375	S1.003	1.671	600	238
								S3.003	1.658	375	
S23	4.000	2.391	Open Manhole	1200	S1.005	1.609	375	S1.004	1.609	375	
S21	3.500	1.813	Open Manhole	1500	S11.000	1.687	450				
S22	4.000	2.352	Open Manhole	1500	S11.001	1.648	450	S11.000	1.648	450	
S23	4.000	2.431	Open Manhole	1500	S11.002	1.569	450	S11.001	1.569	450	
S25	4.000	1.700	Open Manhole	1200	S12.000	2.300	300				
S29	4.000	2.334	Open Manhole	1200	S12.001	1.666	300	S12.000	1.666	300	
S18	4.000	2.440	Open Manhole	1200	S1.006	1.560	525	S1.005	1.560	375	
								S11.002	1.564	450	
								S12.001	1.560	300	
S24	2.200	0.350	Open Manhole	1200	S13.000	1.850	225				
S5	4.000	2.700	Open Manhole	1200	S1.007	1.300	525	S1.006	1.300	525	
								S13.000	1.300	225	
S6	3.000	1.833	Open Manhole	1200	S1.008	1.167	525	S1.007	1.167	525	
S	2.000	0.879	Open Manhole	0		OUTFALL		S1.008	1.121	525	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S26	572731.031	562374.549	572731.031	562374.549	Required	
S2	572699.251	562374.529	572699.251	562374.529	Required	
S28	572640.287	562374.716	572640.287	562374.716	Required	
S27	572660.979	562374.509	572660.979	562374.509	Required	
S4	572661.022	562356.350	572661.022	562356.350	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)
S1	572558.766	562229.826	572558.766	562229.826	Required	
S7	572611.136	562290.839	572611.136	562290.839	Required	
S2	572558.733	562291.124	572558.733	562291.124	Required	
S3	572565.358	562355.259	572565.358	562355.259	Required	
S14	572619.288	562303.903	572619.288	562303.903	Required	
S13	572600.283	562303.879	572600.283	562303.879	Required	
S8	572581.038	562303.892	572581.038	562303.892	Required	
S9	572584.711	562335.830	572584.711	562335.830	Required	
S10	572600.245	562335.657	572600.245	562335.657	Required	
S11	572619.272	562335.661	572619.272	562335.661	Required	
S15	572635.857	562303.926	572635.857	562303.926	Required	
S17	572668.389	562303.876	572668.389	562303.876	Required	
S18	572668.389	562335.693	572668.389	562335.693	Required	
S16	572652.141	562303.932	572652.141	562303.932	Required	
S19	572652.104	562335.696	572652.104	562335.696	Required	
S12	572635.802	562335.755	572635.802	562335.755	Required	
S4	572635.796	562355.413	572635.796	562355.413	Required	
S18	572661.032	562355.399	572661.032	562355.399	Required	
S23	572676.709	562355.399	572676.709	562355.399	Required	
S21	572636.766	562333.662	572636.766	562333.662	Required	
S22	572636.766	562353.404	572636.766	562353.404	Required	
S23	572676.332	562353.404	572676.332	562353.404	Required	
S25	572735.443	562353.477	572735.443	562353.477	Required	
S29	572678.219	562353.385	572678.219	562353.385	Required	
S18	572678.221	562355.399	572678.221	562355.399	Required	
S24	572745.671	562274.791	572745.671	562274.791	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)
S5	572742.481	562355.377	572742.481	562355.377	Required	
S6	572737.861	562378.162	572737.861	562378.162	Required	
S	572736.849	562386.174			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	600	S26	3.500	2.300	0.600	Open Manhole	2000
S1.001	o	600	S2	3.500	2.088	0.812	Open Manhole	2000
S2.000	o	600	S28	3.500	2.300	0.600	Open Manhole	2000
S1.002	o	600	S27	3.500	1.875	1.025	Open Manhole	2000
S1.003	o	600	S4	4.000	1.683	1.717	Open Manhole	1500
S3.000	o	225	S1	12.000	10.575	1.200	Open Manhole	1200
S4.000	o	225	S7	8.000	6.775	1.000	Open Manhole	1200
S3.001	o	225	S2	9.000	6.225	2.550	Open Manhole	1200
S3.002	o	225	S3	5.500	2.294	2.981	Open Manhole	1200
S5.000	o	300	S14	4.000	2.700	1.000	Open Manhole	1500
S6.000	o	300	S13	4.000	2.700	1.000	Open Manhole	1500
S7.000	o	300	S8	4.000	2.700	1.000	Open Manhole	1500
S7.001	o	300	S9	4.000	2.379	1.321	Open Manhole	1500
S6.001	o	300	S10	4.000	2.254	1.446	Open Manhole	1500
S5.001	o	300	S11	4.000	2.064	1.636	Open Manhole	1500
S8.000	o	300	S15	4.000	2.700	1.000	Open Manhole	1500
S9.000	o	300	S17	4.000	2.700	1.000	Open Manhole	1500
S9.001	o	300	S18	4.000	2.281	1.419	Open Manhole	1500
S10.000	o	300	S16	4.000	2.700	1.000	Open Manhole	1500
S9.002	o	300	S19	4.000	2.122	1.578	Open Manhole	1500
S5.002	o	300	S12	4.000	1.959	1.741	Open Manhole	1500
S3.003	o	375	S4	4.000	1.802	1.823	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	31.780	149.9	S2	3.500	2.088	0.812	Open Manhole	2000
S1.001	38.272	180.5	S27	3.500	1.876	1.024	Open Manhole	2000
S2.000	20.693	58.6	S27	3.500	1.947	0.953	Open Manhole	2000
S1.002	18.158	94.6	S4	4.000	1.683	1.717	Open Manhole	1500
S1.003	0.952	79.3	S18	4.000	1.671	1.729	Open Manhole	1200
S3.000	61.298	14.1	S2	9.000	6.225	2.550	Open Manhole	1200
S4.000	52.403	95.3	S2	9.000	6.225	2.550	Open Manhole	1200
S3.001	64.476	16.4	S3	5.500	2.294	2.981	Open Manhole	1200
S3.002	70.438	143.1	S4	4.000	1.802	1.973	Open Manhole	1200
S5.000	31.758	49.9	S11	4.000	2.064	1.636	Open Manhole	1500
S6.000	31.778	71.3	S10	4.000	2.254	1.446	Open Manhole	1500
S7.000	32.149	100.2	S9	4.000	2.379	1.321	Open Manhole	1500
S7.001	15.534	124.3	S10	4.000	2.254	1.446	Open Manhole	1500
S6.001	19.027	100.1	S11	4.000	2.064	1.636	Open Manhole	1500
S5.001	16.530	157.4	S12	4.000	1.959	1.741	Open Manhole	1500
S8.000	31.829	43.0	S12	4.000	1.959	1.741	Open Manhole	1500
S9.000	31.817	75.9	S18	4.000	2.281	1.419	Open Manhole	1500
S9.001	16.285	102.4	S19	4.000	2.122	1.578	Open Manhole	1500
S10.000	31.764	55.0	S19	4.000	2.122	1.578	Open Manhole	1500
S9.002	16.302	100.0	S12	4.000	1.959	1.741	Open Manhole	1500
S5.002	19.658	125.2	S4	4.000	1.802	1.898	Open Manhole	1200
S3.003	25.236	175.3	S18	4.000	1.658	1.967	Open Manhole	1200

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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)
S1.004	o	375	S18	4.000	1.658	1.967	Open Manhole	1200
S1.005	o	375	S23	4.000	1.609	2.016	Open Manhole	1200
S11.000	o	450	S21	3.500	1.687	1.363	Open Manhole	1500
S11.001	o	450	S22	4.000	1.648	1.902	Open Manhole	1500
S11.002	o	450	S23	4.000	1.569	1.981	Open Manhole	1500
S12.000	o	300	S25	4.000	2.300	1.400	Open Manhole	1200
S12.001	o	300	S29	4.000	1.666	2.034	Open Manhole	1200
S1.006	o	525	S18	4.000	1.560	1.915	Open Manhole	1200
S13.000	o	225	S24	2.200	1.850	0.125	Open Manhole	1200
S1.007	o	525	S5	4.000	1.300	2.175	Open Manhole	1200
S1.008	o	525	S6	3.000	1.167	1.308	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)
S1.004	15.677	319.9	S23	4.000	1.609	2.016	Open Manhole	1200
S1.005	1.511	30.8	S18	4.000	1.560	2.065	Open Manhole	1200
S11.000	19.741	506.2	S22	4.000	1.648	1.902	Open Manhole	1500
S11.001	39.566	500.8	S23	4.000	1.569	1.981	Open Manhole	1500
S11.002	2.747	549.4	S18	4.000	1.564	1.986	Open Manhole	1200
S12.000	57.224	90.3	S29	4.000	1.666	2.034	Open Manhole	1200
S12.001	2.014	18.9	S18	4.000	1.560	2.140	Open Manhole	1200
S1.006	64.261	247.2	S5	4.000	1.300	2.175	Open Manhole	1200
S13.000	80.649	146.6	S5	4.000	1.300	2.475	Open Manhole	1200
S1.007	23.248	174.8	S6	3.000	1.167	1.308	Open Manhole	1200
S1.008	8.076	175.6	S	2.000	1.121	0.354	Open Manhole	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coefficient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	20.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m ³ /ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 4 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	17.800	Cv (Summer)	0.750
Return Period (years)	100	Ratio R	0.250	Cv (Winter)	0.840
Region	Scotland and Ireland			Profile Type	Summer Storm
			Duration (mins)		30

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Online Controls for Storm

Non Return Valve Manhole: S4, DS/PN: S1.003, Volume (m³): 8.7

Non Return Valve Manhole: S23, DS/PN: S1.005, Volume (m³): 4.3

Non Return Valve Manhole: S29, DS/PN: S12.001, Volume (m³): 6.6


Hydro-Brake® Optimum Manhole: S18, DS/PN: S1.006, Volume (m³): 3.1

Unit Reference	MD-SHE-0118-8600-2200-8600	Sump Available	Yes
Design Head (m)	2.200	Diameter (mm)	118
Design Flow (l/s)	8.6	Invert Level (m)	1.560
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	150
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.200	8.6	Kick-Flo®	1.055	6.1
Flush-Flo™	0.519	7.7	Mean Flow over Head Range	-	7.0

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)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.2	0.600	7.6	1.600	7.4	2.600	9.3	5.000	12.7	7.500	15.4
0.200	6.6	0.800	7.3	1.800	7.8	3.000	9.9	5.500	13.3	8.000	15.9
0.300	7.3	1.000	6.5	2.000	8.2	3.500	10.7	6.000	13.8	8.500	16.3
0.400	7.6	1.200	6.5	2.200	8.6	4.000	11.4	6.500	14.4	9.000	16.8
0.500	7.7	1.400	6.9	2.400	8.9	4.500	12.0	7.000	14.9	9.500	17.2

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Storage Structures for Storm

Tank or Pond Manhole: S21, DS/PN: S11.000

Invert Level (m) 1.687

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	600.0	1.000	600.0

Tellengana
Blackrock Road
Cork

Carrigaline



Date 15/09/2021 09:03
File LY05-WindesDesignCalc-3.0.MDX

Designed by KL
Checked by KC

Innovyze

Network 2019.1

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 4 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 17.800 Cv (Summer) 0.750
Region Scotland and Ireland Ratio R 0.250 Cv (Winter) 0.840

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

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)
S1.000	S26	60 Winter	100	+20%	100/30 Summer				3.323	0.423	0.000	0.06		26.4
S1.001	S2	60 Winter	100	+20%	100/15 Summer				3.317	0.629	0.000	0.06		25.2
S2.000	S28	60 Winter	100	+20%	100/30 Summer				3.314	0.414	0.000	0.03		15.8
S1.002	S27	60 Winter	100	+20%	100/15 Summer				3.311	0.836	0.000	0.09		41.1
S1.003	S4	60 Winter	100	+20%	100/15 Summer				3.201	0.918	0.000	0.17		41.7
S3.000	S1	30 Winter	100	+20%					10.640	-0.160	0.000	0.18		24.8
S4.000	S7	30 Winter	100	+20%					6.891	-0.109	0.000	0.53		27.0
S3.001	S2	30 Winter	100	+20%					6.326	-0.124	0.000	0.41		51.7
S3.002	S3	30 Winter	100	+20%	100/15 Summer				4.010	1.491	0.000	1.20		50.4
S5.000	S14	60 Winter	100	+20%	100/15 Summer				3.725	0.725	0.000	0.10		14.2
S6.000	S13	60 Winter	100	+20%	100/15 Summer				3.855	0.855	0.000	0.09		11.2
S7.000	S8	30 Winter	100	+20%	100/15 Summer				3.892	0.892	0.000	0.17		17.0
S7.001	S9	30 Winter	100	+20%	100/15 Summer				3.870	1.191	0.000	0.29		24.4
S6.001	S10	60 Winter	100	+20%	100/15 Summer				3.840	1.286	0.000	0.46		44.3
S5.001	S11	60 Winter	100	+20%	100/15 Summer				3.707	1.343	0.000	0.74		55.3
S8.000	S15	60 Winter	100	+20%	100/15 Summer				3.625	0.625	0.000	0.07		11.6
S9.000	S17	60 Winter	100	+20%	100/15 Summer				3.773	0.773	0.000	0.11		13.0
S9.001	S18	60 Winter	100	+20%	100/15 Summer				3.757	1.176	0.000	0.26		24.0
S10.000	S16	60 Winter	100	+20%	100/15 Summer				3.749	0.749	0.000	0.08		10.8
S9.002	S19	60 Winter	100	+20%	100/15 Summer				3.735	1.313	0.000	0.43		40.4
S5.002	S12	60 Winter	100	+20%	100/15 Summer				3.607	1.348	0.000	1.32		113.5
S3.003	S4	60 Winter	100	+20%	100/15 Summer				3.381	1.204	0.000	1.18		154.1
S1.004	S18	1440 Winter	100	+20%	100/15 Summer				3.241	1.208	0.000	0.35		31.5
S1.005	S23	1440 Winter	100	+20%	100/15 Summer				3.251	1.267	0.000	0.29		30.7
S11.000	S21	1440 Winter	100	+20%	100/30 Summer				3.138	1.001	0.000	0.51		51.7
S11.001	S22	1440 Winter	100	+20%	100/15 Summer				3.211	1.113	0.000	0.24		30.7
S11.002	S23	1440 Winter	100	+20%	100/15 Summer				3.252	1.233	0.000	0.13		16.4
S12.000	S25	1440 Winter	100	+20%	100/15 Summer				3.114	0.514	0.000	0.08		9.4
S12.001	S29	1440 Winter	100	+20%	100/15 Summer				3.112	1.146	0.000	0.12		9.6
S1.006	S18	1440 Winter	100	+20%	100/15 Summer				3.252	1.167	0.000	0.03		7.6
S13.000	S24	60 Winter	100	+20%					1.850	-0.225	0.000	0.00		0.0
S1.007	S5	1440 Summer	100	+20%					1.357	-0.468	0.000	0.03		7.6
S1.008	S6	1440 Summer	100	+20%					1.229	-0.463	0.000	0.03		7.6

PN	US/MH Name	Status	Level Exceeded
S1.000	S26	SURCHARGED	
S1.001	S2	SURCHARGED	
S2.000	S28	SURCHARGED	
S1.002	S27	SURCHARGED	
S1.003	S4	SURCHARGED	
S3.000	S1	OK	
S4.000	S7	OK	
S3.001	S2	OK	
S3.002	S3	SURCHARGED	
S5.000	S14	SURCHARGED	
S6.000	S13	SURCHARGED	
S7.000	S8	SURCHARGED	
S7.001	S9	SURCHARGED	
S6.001	S10	SURCHARGED	
S5.001	S11	SURCHARGED	
S8.000	S15	SURCHARGED	
S9.000	S17	SURCHARGED	
S9.001	S18	SURCHARGED	
S10.000	S16	SURCHARGED	
S9.002	S19	SURCHARGED	
S5.002	S12	SURCHARGED	

Tellengana
Blackrock Road
Cork

Carrigaline



Date 15/09/2021 09:03

Designed by KL

File LY05-WindesDesignCalc-3.0.MDX

Checked by KC

Innovyze

Network 2019.1

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

PN	US/MH Name	Status	Level Exceeded
S3.003	S4	SURCHARGED	
S1.004	S18	SURCHARGED	
S1.005	S23	SURCHARGED	
S11.000	S21	SURCHARGED	
S11.001	S22	SURCHARGED	
S11.002	S23	SURCHARGED	
S12.000	S25	SURCHARGED	
S12.001	S29	SURCHARGED	
S1.006	S18	SURCHARGED	
S13.000	S24	OK	
S1.007	S5	OK	
S1.008	S6	OK	

Tellengana
Blackrock Road
Cork



Date 10/09/2021 09:10
File

Designed by kl
Checked by

Innovyze Source Control 2019.1

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.300
Area (ha)	2.800	Urban	0.000
SAAR (mm)	1099	Region Number	Ireland South

Results 1/s

QBAR Rural	8.6
QBAR Urban	8.6
Q100 years	15.9
Q1 year	7.4
Q30 years	13.8
Q100 years	15.9



Appendix C – Pre-Connection Enquiry to Irish Water, Confirmation of Feasibility and Statement of Design Acceptance

Niall Fitzgerald
Tellengana Blackrock Road
Cork

29 April 2022

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

**Re: Design Submission for Kilmoney, Carrigaline, Cork (the “Development”)
(the “Design Submission”) / Connection Reference No: CDS21004834**

Dear Niall Fitzgerald,

Many thanks for your recent Design Submission.

We have reviewed your proposal for the connection(s) at the Development. Based on the information provided, which included the documents outlined in Appendix A to this letter, Irish Water has no objection to your proposals.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Irish Water infrastructure. Before you can connect to our network you must sign a connection agreement with Irish Water. This can be applied for by completing the connection application form at www.water.ie/connections. Irish Water’s current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities (CRU)(https://www.cru.ie/document_group/irish-waters-water-charges-plan-2018/).

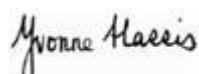
You the Customer (including any designers/contractors or other related parties appointed by you) is entirely responsible for the design and construction of all water and/or wastewater infrastructure within the Development which is necessary to facilitate connection(s) from the boundary of the Development to Irish Water’s network(s) (the “**Self-Lay Works**”), as reflected in your Design Submission. Acceptance of the Design Submission by Irish Water does not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

If you have any further questions, please contact your Irish Water representative:

Name: Brian Lavelle

Email: Brian.Lavelle@water.ie

Yours sincerely,



Yvonne Harris
Head of Customer Operations

Appendix A

Document Title & Revision

- [LY05-V1-XXX-DR-HLCE-CE-0002, LY05-V1-XXX-DR-HLCE-CE-0007]
- [LY05-V1-XXX-DR-HLCE-CE-0003]

For further information, visit www.water.ie/connections

Notwithstanding any matters listed above, the Customer (including any appointed designers/contractors, etc.) is entirely responsible for the design and construction of the Self-Lay Works. Acceptance of the Design Submission by Irish Water will not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

Niall Fitzgerald
 Tellengana
 Blackrock Road
 Cork

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

31 August 2021

Re: CDS21004834 pre-connection enquiry - Subject to contract | Contract denied

Connection for Multi/Mixed Use Development of 252 unit(s) at Kilmoney, Carrigaline, Cork

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Kilmoney, Carrigaline, Cork (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 <u>THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.</u>
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	Connection to be made to the new 180mm diameter PE water main on Kilmoney Road on the southern side of the proposed development
Wastewater Connection	The feasibility of the wastewater connection is subject to the completion of the pumping station and rising main on the northern side of the development to be completed as part of the Carrigaline Western Relief Road. This infrastructure is not being provided by Irish Water so the programme for this project is not under the control of Irish Water. It will be required to get permission from the owner of these assets to connect. Developer to obtain and provide full details of new Pump Station at connection application stage.
Strategic Housing Development	Irish Water notes that the scale of this development dictates that it is subject to the Strategic Housing Development planning process. Therefore, in

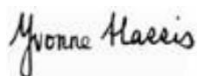
location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

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 Dario Alvarez from the design team on + 353 2254621 or email dalvarez@water.ie For further information, visit **www.water.ie/connections**.

Yours sincerely,



Yvonne Harris

Head of Customer Operations

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):

Trading name (if applicable):

Company registration number (if applicable):

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

*Contact name:

*Postal address:

*Eircode:

*Telephone:

Mobile:

*Email:

2 Agent details (if applicable):

Contact name:

Company name (if applicable):

Postal address:

Eircode:

Telephone:

Email:

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

Applicant

Agent

Section B | Site details

4 ***Site address:**

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

7 ***Has full planning permission been granted?** Yes No
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	
Other (please specify type)					

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

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

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

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

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

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.

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 Irish Water infrastructure.
- > 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: / /

Your full name (in BLOCK CAPITALS):

N I A L L F I T Z G E R A L D

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.

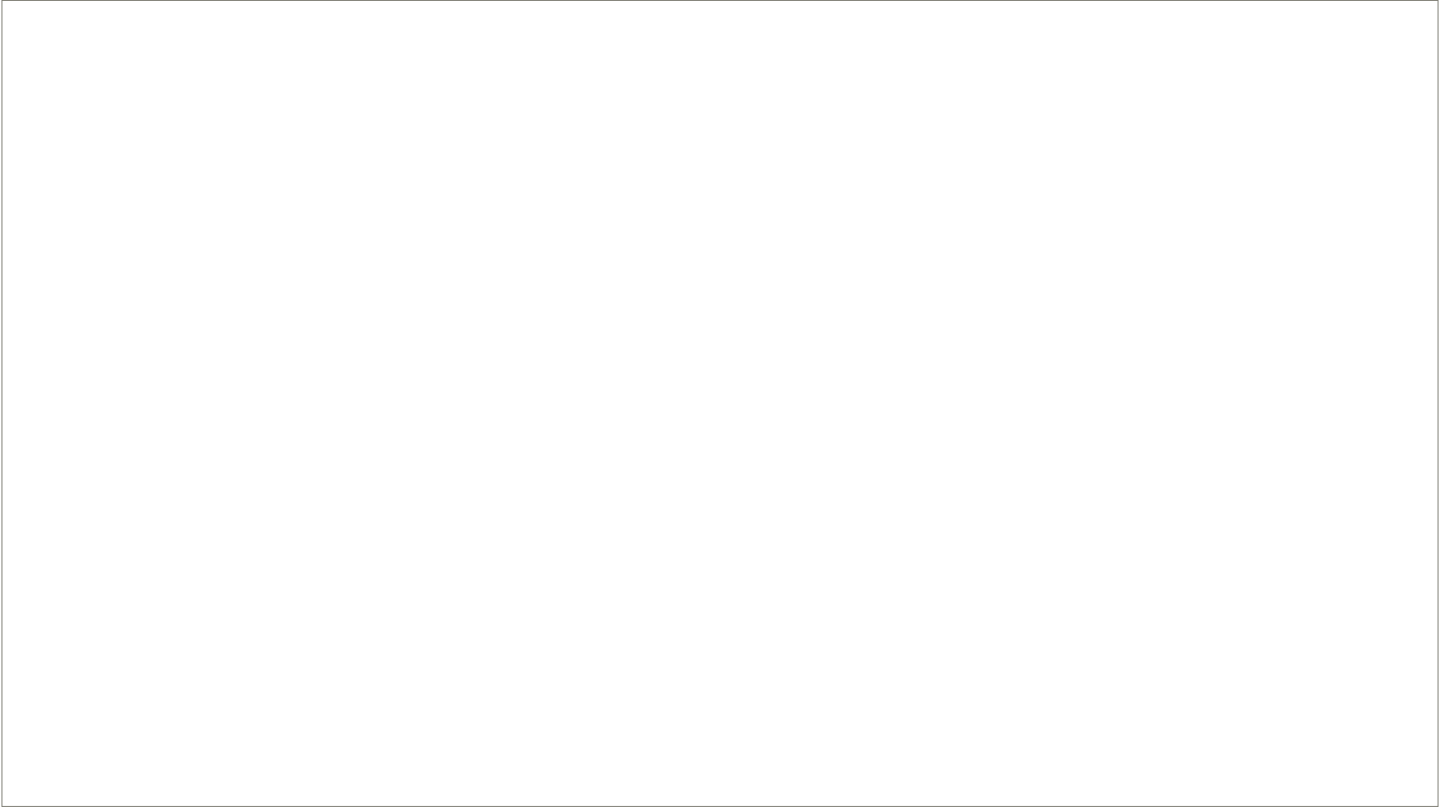
Please note, if mandatory fields are not completed the application will be returned.

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

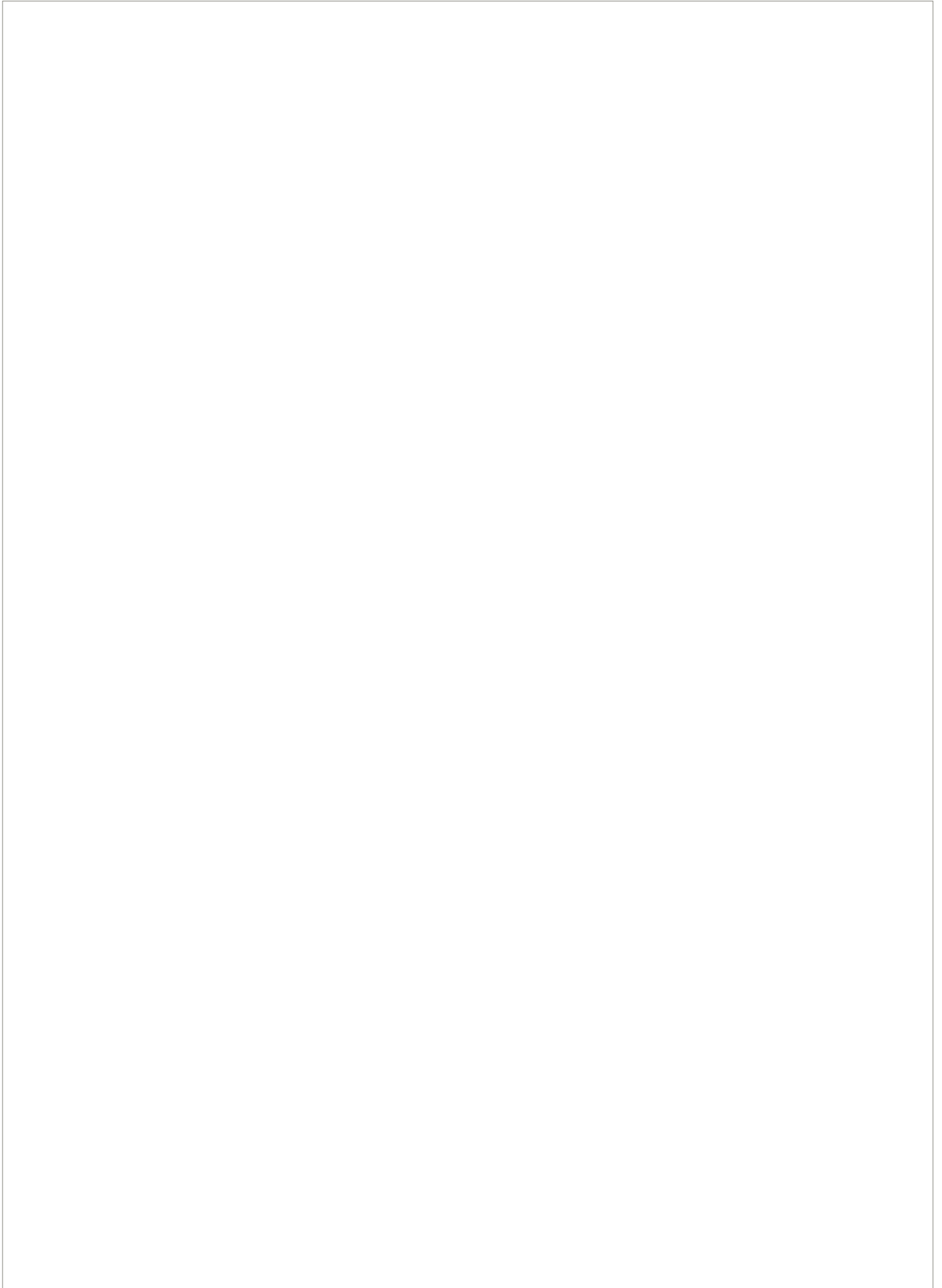
Water demand

On-site storage



Fire flow requirements







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.

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A large, empty rectangular box with a thin black border, occupying most of the page. It is intended for handwritten notes.