

COYLE KENNEDY
Consulting Engineers

GFSC
Moneenageisha Road
Galway
Ireland

Tel: +353 (0)91 752000
Fax: +353 (0)91 753000

website: www.coylekennedy.com
email: mail@coylekennedy.com

Report
On the Proposed
Surface Water & Foul Water Drainage
And
Watermain Layout
for
New Day Care Facilities
Seamus Quirke Road
Galway

December 2022

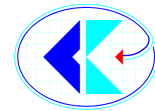
English Office:
Third Floor
GW Business Centre
Great West House
Great West Road
Brentford TW8 9DF
England

Tel: +44 (0)203 393 1174
Fax: +44 (0)203 004 1234

Coyle Kennedy Limited
Registered in Ireland 346183

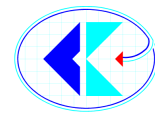
Directors:
Brian Coyle BE CEng MIEI MStructE
Tadhg Kennedy BE MEngSc CEng MIEI MStructE





Contents

1. Introduction	2
2. Design Information	2
3. Site Location.....	2
4. Existing Surface Water Drainage	3
5. Climate Change	4
6. Site Characteristics and Rainfall for Storm Water Assessment.....	4
7. Proposed Storm Water Management Strategy	4
7.1 SUDS - Permeable Paving	4
7.2 Service Life and Maintenance of Permeable Paving	5
7.3 Surface Water Runoff from Access Road & Carpark.....	7
7.4 Attenuation - Filter Zone/ Trenches	7
8. Foul Water Drainage	8
9. Water Supply.....	8
Appendix 1 Drawings & Calculations	9
Appendix 2 Irish Water Letter - Satisfactory Response	10



1. Introduction

Coyle Kennedy Consulting Engineers were commissioned by Galway City Council to undertake a civil engineering infrastructure design report to form part of an overall submission for a planning application for a Day Centre Facility and Emergency Temporary Homeless Accommodation at Seamus Quirke Road, Galway. This report will outline the proposed surface water, watermain and foul sewer drainage network including the Sustainable Urban Drainage System (SUDS) and surface water attenuation strategy for the proposed development.

2. Design Information

Design and Drawing information prepared as part of the planning documentation is included in the appendices of this report. Drawings numbers P-300B, 301 & P302 along with calculations are to be read and referenced to convey the overall design intent. Reference should also be made to the Architects and other design team member's documentation that outlines all other project drawing and design intent as part of the planning documentation.

3. Site Location

The proposed site for development is currently occupied by the Cope Day Centre located on the South side of Seamus Quirke Road in Galway City. It is proposed to construct a new multi-storey Day Centre Facility and Emergency Temporary Homeless Accommodation and all associated site works and ancillary services and make connection to adjacent infrastructure e.g., roads, car-parking, drains, sewers, watermain, paths etc.

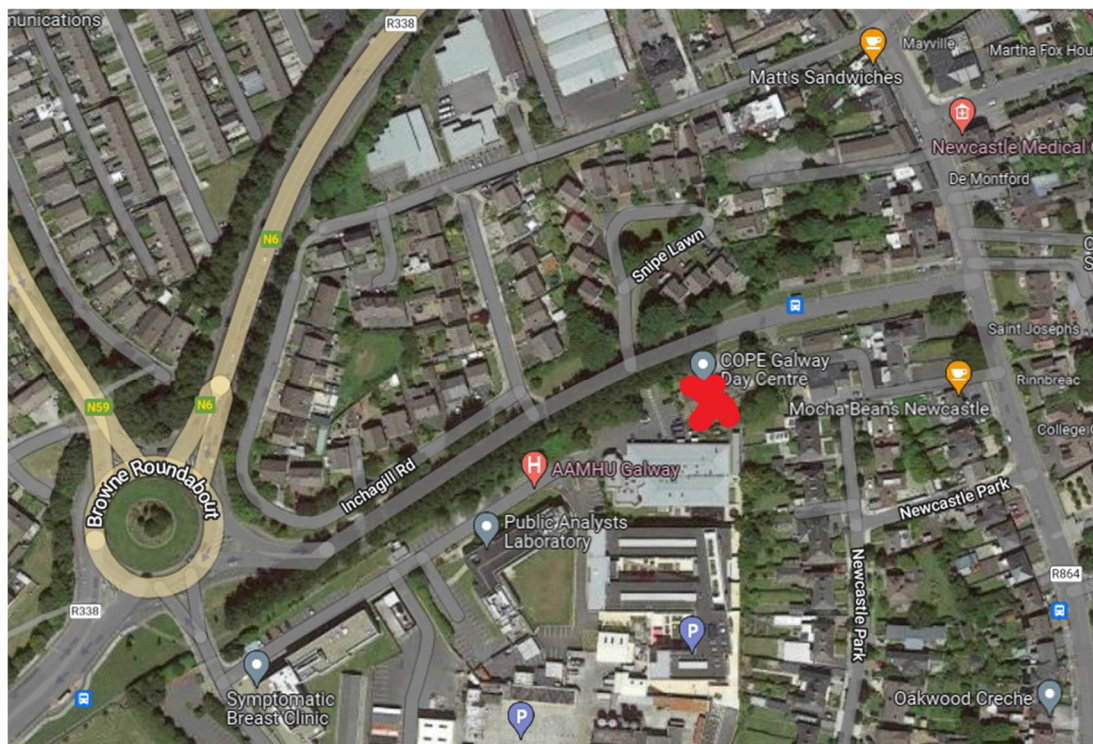
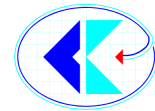


Figure 1 Site Location - Extract from Google Maps



4. Existing Surface Water Drainage

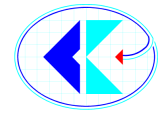
An underground Surface Water culvert transverse the site and has been surveyed to establish its location and geometry.

The internal dimensions have been surveyed as 1200mm wide and 900mm deep. Several pipe connections into the side of the existing culvert have been identified in the CCTV survey and it is expected that such connections are the discharge outlet points from the existing surface water drainage networks surrounding and adjacent to the existing building. Slit trenches (by IGSL) were excavated in the soil that indicated that the alignment / depth of the culvert varies below the existing ground level. On average the depth to the top of the culvert is circa 800mm below existing ground level having a top of culvert level of circa 8.0mAod. The internal CCTV survey has established that hard/compact settled deposits exist in the culvert resulting in a loss of 25% cross-sectional area. Therefore, it is recommended that locally opening-up and cleaning out of the culvert be carried out to maintain design flow capacity. Diversion of the culvert is not expected however it may be established later that some additional maintenance/alteration/improvement and diversion to the existing culvert is necessary. The culvert appears to be formed with a Concrete Base, Masonry/Concrete Walls, and Concrete Lid.

It is intended that the culvert will be independent of the proposed building and no building foundation loads shall be transferred to it. This can be achieved by bearing the building foundations at the same or lower bearing strata as the base of the Culvert.



Figure 2 Internal Photo of Culvert - Adrain Solutions CCTV Image



5. Climate Change

Surface water attenuation calculations for the proposed development are based on regional rainfall data and are increased by a factor of 20% to take account of climate change.

6. Site Characteristics and Rainfall for Storm Water Assessment

For the Galway area, the SAAR can be taken as approximately 1278mm and the soil factor as given in the Flood Studies report is SOIL = 0.3 for this site. The site area is approximately 0.129 hectares, of which approximately .109 hectares is impermeable.

7. Proposed Storm Water Management Strategy

Sustainable Urban Drainage system (SUDS) has been incorporated into the overall landscape proposals to reduce surface water runoff volume and improve water quality. Sustainable Urban Drainage System SuDS are a collection of simple techniques which can help reduce flooding. SUDs manage surface water by attenuation and filtration with the aim of replicating, as closely as possible, the natural drainage from a site.

Most of the proposed hard surfacing comprises of roofs, paths, roads and carparking and all surface water from these areas is collected into a drainage network, re-used and/or attenuated, and allowed to gradually discharge using a hybrid approach of natural filtration and controlled discharge into the existing culvert. The attenuation and provision of SUDS is to reduce discharge and improve water quality primarily.

The proposed development will be serviced by a network of silt trap gullies, surface water pipes, access junctions, inspection chambers & manholes, installed as indicated on drawing P-300B.

7.1 SUDS - Permeable Paving

Permeable paving and gravel paths / ponds are proposed as a surface finish on the Courtyard at Ground Level. The proposed Permeable Paving is a source control Sustainable urban Drainage system. Source control Concrete Block Permeable Paving (CBPP) is an alternative to conventional paving and allows water to flow through rather than run-off the surface. Normally, it can be used as source control measure for small roads, pavements and carparking areas.

The Permeable paving and gravel paths that are proposed in this development are indicated on the planning drawings.

The permeable paving simply allows water to pass through the gaps between the concrete paving blocks into the underlying permeable sub-base material where it can be stored and discharged gradually to prevent flooding. Microbial bacteria withing the subgrade material bio-degrades pollutants and improves water quality.

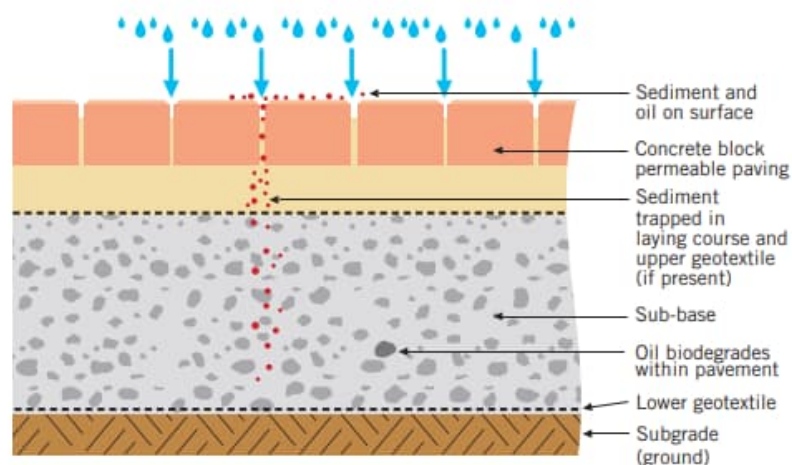
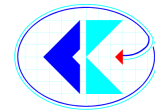


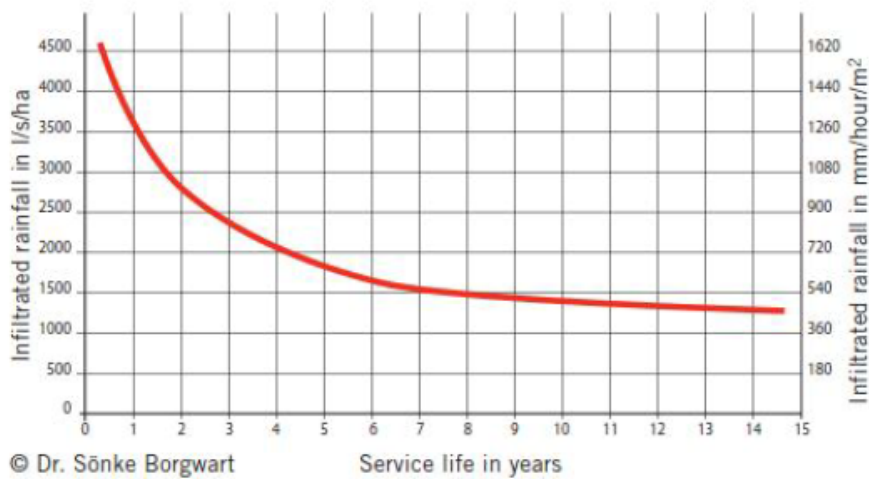
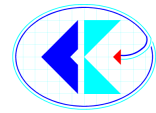
Figure 3 Extract from Paving.org Uniclass L534:L217 Edition 5

Many publications (Pollution Prevention Guidelines 2006, CIRIA C609-2004 & C697-2007) states the benefits of 'techniques that control pollution close to the source, such as permeable surfaces or infiltration trenches which can offer a suitable means of treatment for run-off from low risk areas such as roofs, carparks, and non-operational areas'.

Percentage Removal of Pollutants	
Total suspended solids	60-95%
Hydrocarbons	70-90%
Total phosphorus	50-80%
Total nitrogen	65-80%
Heavy metals	60-95%
(source: CIRIA C609, 2004)	
Water Quality Treatment Potential	
Removal of total suspended solids	High
Removal of heavy metals	High
Removal of nutrients (phosphorus, nitrogen)	High
Removal of bacteria	High
Treatment of suspended sediments & dissolved pollutants	High
(source: CIRIA C697, 2007)	

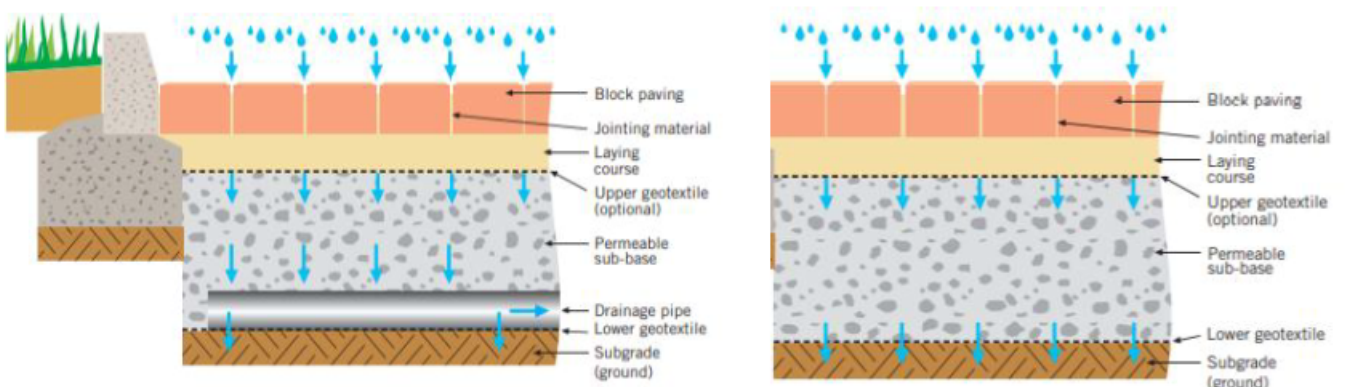
7.2 Service Life and Maintenance of Permeable Paving

One issue that the Block Paving Industry now well understands is the performance of permeable block paved surface over time. The infiltration rate of CBPP will decrease due to build-up of material in the jointing material. International best practice (USA, German) recommends that the design infiltration rate through the surface should be 10% of the initial rate, to take account of the effect of clogging over a 20-year design life without maintenance.

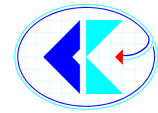


Initially, CBPP has an infiltration in the order of 1440mm/hour/m², and allowing for clogging, studies have shown that long-term infiltration capability of permeable paving will normally substantially exceed UK & IRE hydrological requirements.

At circa 90% blockage the permeable paving is still capable of circa 140mm/hour/m² which is much greater than the highest recorded rainfall event of circa 52mm/hour in Ireland even allowing for climate change. Nevertheless, it is also important to note that maintenance will be required however, any problems with CBPP will become apparent on the surface from visual inspection.



For this development it is proposed to use full Infiltration system where the permeable paving is located with overflow into the drainage network with a permeable geotextile (no impermeable membrane) below the subgrade material. The above illustration demonstrates the proposed SUDS detail.



7.3 Surface Water Runoff from Access Road & Carpark

It is proposed that the Surface water runoff from the vehicular accessway and carpark be collected in a Kerb Drain or Aco Drain (Aco or similar) that allows water to be collected and pass-through silt trap gullies before discharging into the hybrid attenuation / filtration zone that will be constructed below the carparking area. Refer to Drawings P-300B and P301 for the layout and details of such system.

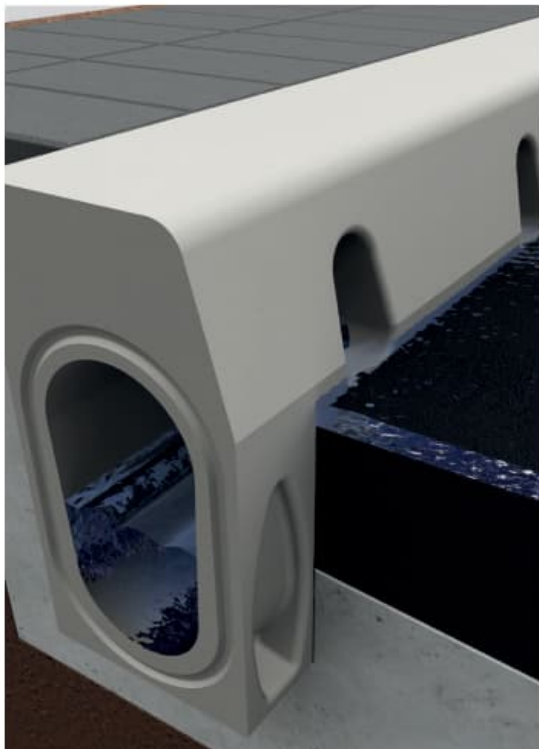


Figure 4 Extract from Aco Kerb Drain

Such drainage system is easy to install and maintain and contains silt trap gullies.

7.4 Attenuation - Filter Zone/ Trenches

A shallow attenuation area for the site is proposed to be constructed beneath the access road and carpark. It will be surrounded in a geotextile that will allow water storage and natural filtration into the soil. The detail for same is included in the attached drawings P-300B and P301. The attenuation zone is filled with clean stone that provides temporary sub-surface storage volume for stormwater run-off from impervious areas. The stone filled attenuation zone (like a filter trench) also acts as a filter material where microbial bacteria can breakdown pollutants. This attenuation zone also acts as an elongated soakaway that will slow down surface water discharge allowing it to be stored, percolate and discharge as necessary in the form of a hybrid SUDS approach.

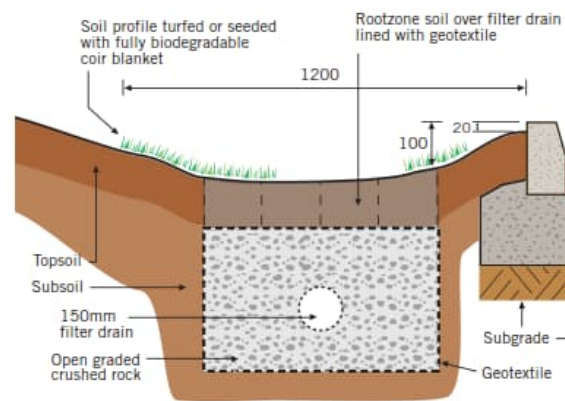
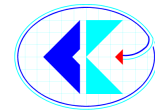


Figure 5 Filter Trench / Attenuation Zone

8. Foul Water Drainage

While a foul water connection to the Irish Water network already exists onsite, nevertheless, based on the site survey, the invert level of the existing foul sewer network it is not deep enough to accommodate the arrangement of the proposed foul water outlets to also have adequate gradients in the pipework for self-cleansing velocity. Therefore, a new connection is required.

The proposed design for the foul water drainage network makes allowances for the building operating as a temporary residence along with providing some onsite facilities e.g., laundry, toilet, meals and showering services for other people together with Day staff. The foul water discharge has been calculated with reference to EPA and Irish Water Guidelines for such services.

It has been estimated that a maximum foul water flow rate from the proposed building is circa 0.75litres per second. A 100mm diameter foul water pipe is adequate to accommodate the design flow.

The proposed foul water network is shown on Coyle Kennedy drawing P-300B.

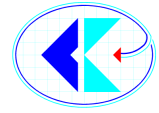
A pre-connection enquiry was submitted to Irish Water and a satisfactory confirmation letter was received that a connection for this foul water flow can be facilitated. A copy of the Irish Water letter is included in Appendix 2.

9. Water Supply

Varming Consulting Engineers assessed the water demand for the new building. It has been estimated that a peak water demand of 2l/s daily water consumption (excluding fire-fighting water) for this building.

The watermain Layout & details are shown on Coyle Kennedy Consulting Engineers drawing P-300B & P-302

A pre-connection enquiry was submitted to Irish Water and a satisfactory confirmation letter was received that a connection to the water network can be facilitated with some IW pipe network upgrade works. A copy of the Irish Water letter is included in Appendix 2.



Appendix 1 Drawings & Calculations



Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:

Site name:

Site location:

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:

Longitude:

Reference:

Date:

Site characteristics

Total site area (ha):

Significant public open space (ha):

Area positively drained (ha):

Impermeable area (ha):

Percentage of drained area that is impermeable (%):

Impervious area drained via infiltration (ha):

Return period for infiltration system design (year):

Impervious area drained to rainwater harvesting (ha):

Return period for rainwater harvesting system (year):

Compliance factor for rainwater harvesting system (%):

Net site area for storage volume design (ha):

Net impermeable area for storage volume design (ha):

Pervious area contribution to runoff (%):

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Design criteria

Climate change allowance factor:

Urban creep allowance factor:

Volume control approach:

Interception rainfall depth (mm):

Minimum flow rate (l/s):

Methodology

esti:

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics:

SOIL type:

SPR:

Hydrological characteristics:

Rainfall 100 yrs 6 hrs:

Rainfall 100 yrs 12 hrs:

FEH / FSR conversion factor:

SAAR (mm):

M5-60 Rainfall Depth (mm):

'r' Ratio M5-60/M5-2 day:

Hydrological region:

Growth curve factor 1 year:

Growth curve factor 10 year:

Growth curve factor 30 year:

Growth curve factor 100 years:


Q_{BAR} for total site area (l/s):

Q_{BAR} for net site area (l/s):

Site discharge rates	Default	Edited
1 in 1 year (l/s):	<input type="text" value="2"/>	<input type="text" value="2"/>
1 in 30 years (l/s):	<input type="text" value="2"/>	<input type="text" value="2"/>
1 in 100 year (l/s):	<input type="text" value="2"/>	<input type="text" value="2"/>

Estimated storage volumes	Default	Edited
Attenuation storage 1/100 years (m ³):	<input type="text" value="31"/>	<input type="text" value="20"/>
Long term storage 1/100 years (m ³):	<input type="text" value="0"/>	<input type="text" value="0"/>
Total storage 1/100 years (m ³):	<input type="text" value="31"/>	<input type="text" value="20"/>

This report was produced using the storage estimation tool developed by HRWallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at <http://www.uksuds.com/terms-and-conditions.htm>. The outputs from this tool have been used to estimate storage volume requirements. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Coyle Kennedy		Page 1
Consulting Civil & Structura... email: mail@coyleken... Website: www.coylekenned...	Emergency Accommodation & Day Care Centre, Galway Drainage	
Date 26/05/2022 File 21-147-P-300 ROOF Drain...	Designed by AC Checked by	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	5	PIMP (%)	100
M5-60 (mm)	17.400	Add Flow / Climate Change (%)	0
Ratio R	0.300	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	75	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	1.000	Min Slope for Optimisation (1:X)	100


Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	15.800	0.198	80.0	0.022	5.00	0.0	0.600	o	100	Pipe/Conduit
1.001	11.800	0.118	100.0	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit
1.002	10.000	0.100	100.0	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit
1.003	9.000	0.086	105.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
2.000	13.500	0.151	89.4	0.011	5.00	0.0	0.600	o	100	Pipe/Conduit
1.004	4.000	0.036	110.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	66.67	5.31	8.550	0.022	0.0	0.0	0.0	0.86	6.8	5.3
1.001	65.73	5.50	8.303	0.034	0.0	0.0	0.0	1.00	17.8	8.1
1.002	64.96	5.67	8.185	0.046	0.0	0.0	0.0	1.00	17.8	10.8
1.003	64.26	5.82	8.085	0.046	0.0	0.0	0.0	0.98	17.3	10.8
2.000	66.81	5.28	8.200	0.011	0.0	0.0	0.0	0.81	6.4	2.7
1.004	63.96	5.89	7.999	0.057	0.0	0.0	0.0	0.96	16.9	13.2

Coyle Kennedy		Page 2
Consulting Civil & Structura... email: mail@coyleken... Website: www.coylekenned...	Emergency Accommodation & Day Care Centre, Galway Drainage	
Date 26/05/2022 File 21-147-P-300 ROOF Drain...	Designed by AC Checked by	
Innovyze	Network 2020.1.3	

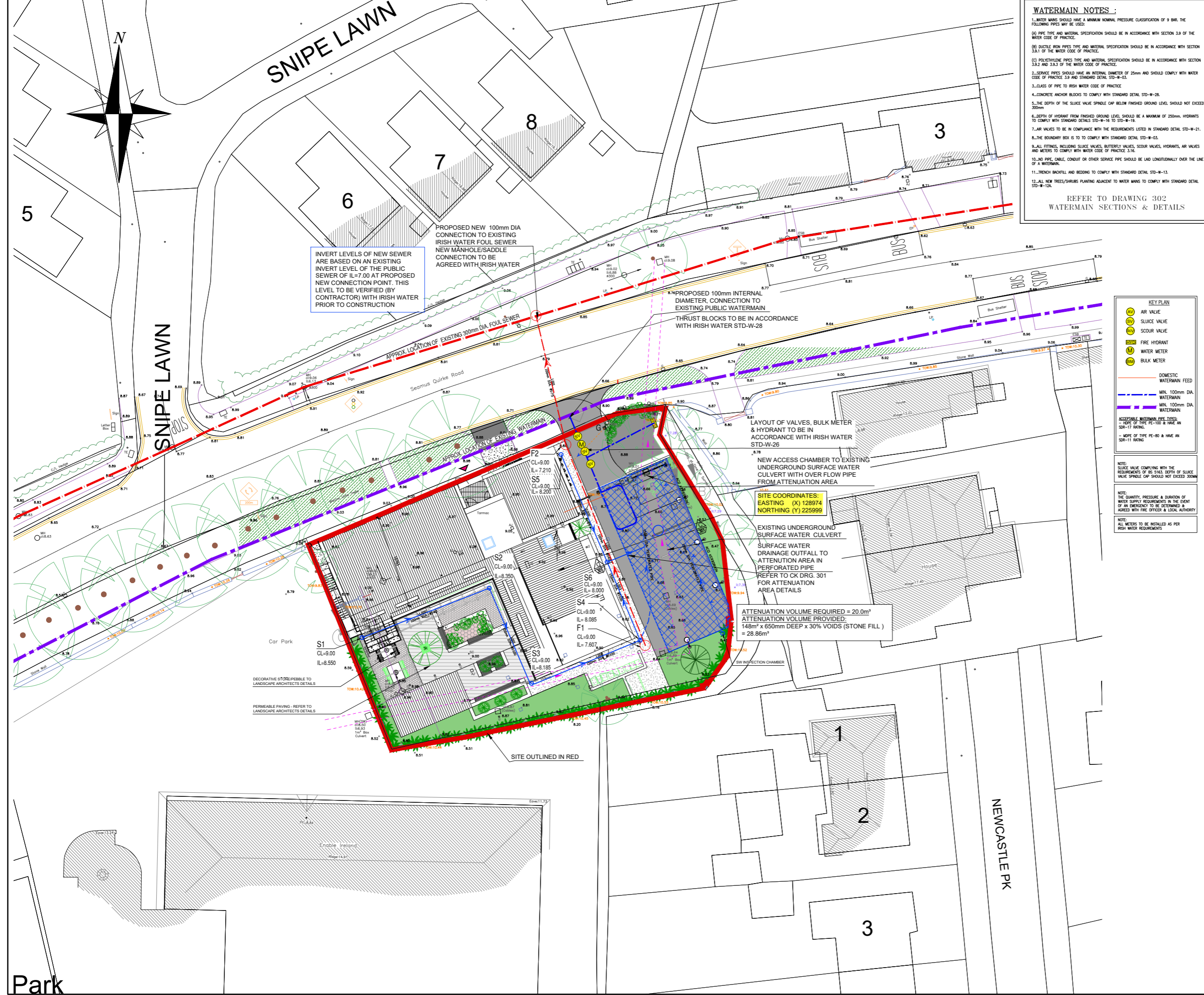
PIPELINE SCHEDULES for Storm

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)
1.000	o	100	1	9.000	8.550	0.350	Open Manhole	1200
1.001	o	150	2	9.000	8.303	0.548	Open Manhole	1200
1.002	o	150	3	9.000	8.185	0.666	Open Manhole	1200
1.003	o	150	4	9.000	8.085	0.766	Open Manhole	1200
2.000	o	100	5	9.000	8.200	0.700	Open Manhole	1200
1.004	o	150	6	0.000	7.999		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)
1.000	15.800	80.0	2	9.000	8.353	0.547	Open Manhole	1200
1.001	11.800	100.0	3	9.000	8.185	0.666	Open Manhole	1200
1.002	10.000	100.0	4	9.000	8.085	0.766	Open Manhole	1200
1.003	9.000	105.3	6	0.000	7.999		Open Manhole	1200
2.000	13.500	89.4	6	0.000	8.049		Open Manhole	1200
1.004	4.000	110.0		0.000	7.963		Open Manhole	0



WATERMAIN NOTES :

1. WATER MAINS SHOULD HAVE A MINIMUM NOMINAL PRESSURE CLASSIFICATION OF 9 BAR. THE FOLLOWING PIPES MAY BE USED:
 - (A) PIPE TYPE AND MATERIAL SPECIFICATION SHOULD BE IN ACCORDANCE WITH SECTION 3.9 OF THE WATER CODE OF PRACTICE.
 - (B) DUCTILE IRON PIPES TYPE AND MATERIAL SPECIFICATION SHOULD BE IN ACCORDANCE WITH SECTION 3.9.2 AND 3.9.3 OF THE WATER CODE OF PRACTICE.
 - (C) POLYETHYLENE PIPES TYPE AND MATERIAL SPECIFICATION SHOULD BE IN ACCORDANCE WITH SECTION 3.9.2 AND 3.9.3 OF THE WATER CODE OF PRACTICE.
2. SERVICE PIPES SHOULD HAVE AN INTERNAL DIAMETER OF 25mm AND SHOULD COMPLY WITH WATER CODE OF PRACTICE 3.9 AND STANDARD DETAIL STD-W-03.
3. CLASS OF PIPE TO IRISH WATER CODE OF PRACTICE.
4. CONCRETE ANCHOR BLOCKS TO COMPLY WITH STANDARD DETAIL STD-W-28.
5. THE DEPTH OF THE SLUICE VALVE SPINDLE CAP BELOW FINISHED GROUND LEVEL SHOULD NOT EXCEED 300mm.
6. DEPTH OF HYDRANT FROM FINISHED GROUND LEVEL SHOULD BE A MAXIMUM OF 250mm. HYDRANTS TO COMPLY WITH STANDARD DETAILS STD-W-16 TO STD-W-19.
7. AIR VALVES TO BE IN COMPLIANCE WITH THE REQUIREMENTS LISTED IN STANDARD DETAIL STD-W-21.
8. THE BOUNDARY BOX IS TO COMPLY WITH STANDARD DETAIL STD-W-03.
9. ALL FITTINGS, INCLUDING SLUICE VALVES, BUTTERFLY VALVES, SCOUR VALVES, HYDRANTS, AIR VALVES AND METERS TO COMPLY WITH WATER CODE OF PRACTICE 3.16.
10. NO PIPE, CABLE, CONDUIT OR OTHER SERVICE PIPE SHOULD BE LAD LONGITUDINALLY OVER THE LINE OF A WATERMAIN.
11. TRENCH BACKFILL AND BEDDING TO COMPLY WITH STANDARD DETAIL STD-W-13.
12. ALL NEW TREES/SHRUBS PLANTING ADJACENT TO WATER MAINS TO COMPLY WITH STANDARD DETAIL STD-W-12A.

REFER TO DRAWING 302 WATERMAIN SECTIONS & DETAILS

NOTES

GENERAL NOTES :

1. ALL COYLE KENNEDY DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTS DRAWINGS AND ALL OTHER RELEVANT DRAWINGS.
2. CONCRETE GRADE: CARPARK AREAS - 40mm, OTHER AREAS - 35mm, COLUMNS 30mm, UNLESS NOTED OTHERWISE.
3. ALL SETTING OUT AND INSULATION, OPC, SCREED AND RAISON PROTECTION DETAILS BY ARCHITECT.
4. COVER TO ALL REINFORCEMENT: - INTERNAL SURFACES - 25mm; EXTERNALLY EXPOSED SURFACES - 35mm; BELOW GROUND - 50mm; COLUMNS - 35mm; ALL SURFACES EXPOSED IN CARPARKS - 40mm.
5. DETAILED SPECIFICATIONS (CONTRACT DOCUMENTS) ARE AVAILABLE AT ENGINEERS OFFICE FOR INSPECTION BY CONTRACTORS, BY APPOINTMENT.
6. DETAILS OF SUBSTRUCTURE GAS/WATER PROOFING MEMBRANES TO BE BY A REPUTABLE, COMPETENT SUPPLIER.
7. ALL SITE DEVELOPMENT WORKS SHOULD COMPLY WITH THE "RECOMMENDATIONS FOR SITE DEVELOPMENT WORKS FOR HOUSING AREAS" PUBLISHED BY THE DEPARTMENT OF THE ENVIRONMENT.
8. THE CONTRACTOR SHALL BE DEEMED TO HAVE ALLOWED FOR, WITHIN HIS TENDER, EMPLOYING A CHARTERED STRUCTURAL ENGINEER WITH ADEQUATE PROFESSIONAL INDEMNITY INSURANCE TO ASSESS, DESIGN AND CONSTRUCT SUCH TEMPORARY WORKS AS ARE NECESSARY TO OBTAIN SUPPORT TO EXISTING AND/OR CONSTRUCTED ELEMENTS DURING THE CONSTRUCTION PERIOD. THIS APPLIES TO ELEMENTS WITHIN THE SITE AND NEIGHBOURING THE SITE.
9. THE CONTRACTOR IS DEEMED TO HAVE VISITED THE SITE AND CONSULTED WITH RELEVANT AUTHORITIES AND BE SATISFIED IN RELATION TO THE SITES SURROUNDINGS, EXISTING SERVICES, LEVELS, BOUNDARIES, GROUND CHARACTERISTICS AND ANY OTHER SITE CONSTRAINTS.
10. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT BUILDING REGULATIONS.
11. DO NOT SCALE.

DRAINAGE NOTES :

1. CONTRACTOR TO MAKE ALL NECESSARY ENQUIRIES REGARDING LOCATION OF EXISTING SEWERS, ELECTRICAL AND OTHER SERVICES ON SITE.
2. FOR DRAINAGE WORK LOCAL TO BUILDINGS, REFER TO ARCHITECTS DRAWINGS.
3. ALL DRAINAGE WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT SPECIFICATION, PART H BUILDING REGULATIONS AND DEPT. OF ENVIRONMENT DOCUMENT "RECOMMENDATIONS FOR SITE DEVELOPMENT WORKS FOR HOUSING AREAS", 8th EDITION, 2015, WITH "SEWERS FOR ADOPTION" 6TH EDITION A DESIGN & CONSTRUCTION GUIDE FOR DEVELOPERS.
4. BEDDING MATERIAL TO BE 10mm SINGLE SIZED AGGREGATE COMPLYING WITH THE REQUIREMENTS OF IS 5, PART 1 "AGGREGATES FOR CONCRETE".
5. THE PREPARED UNDERBED OF THE TRENCH SHOULD CONSIST OF BEDDING MATERIAL FOR THE FULL WIDTH OF THE TRENCH AND LAD TO THE CORRECT GRADE.
6. THE MINIMUM THICKNESS OF BEDDING MATERIAL UNDER THE BARREL OF THE PIPE SHOULD BE 100mm.
7. IMPORTED BEDDING MATERIAL AND BACKFILL USING "AS DUG MATERIAL" MUST BE APPROVED BY ENGINEER.
8. ALL PVC-U PIPES AND FITTINGS USED FOR DRAIN AND SEWER MUST COMPLY WITH IS 424 "UNPLASTICIZED POLYVINYL CHLORIDE (PVC-U) PIPES AND FITTINGS FOR BURIED DRAINAGE AND SEWAGE SYSTEMS".

KEY PLAN

- AV AIR VALVE
- SV SLUICE VALVE
- SCV SCOUR VALVE
- FH FIRE HYDRANT
- WM WATER METER
- BM BULK METER

DOMESTIC WATERMAIN FEED

MIN. 100mm DIA. WATERMAIN

MIN. 100mm DIA. WATERMAIN

ACCEPTABLE WATERMAIN PIPE TYPES: - HDPE OF TYPE PE-100 & HAVE AN SDR-17 RATING. - HDPE OF TYPE PE-80 & HAVE AN SDR-11 RATING.

NOTE: SLUICE VALVE COMPLYING WITH THE REQUIREMENTS OF IS 5163. DEPTH OF SLUICE VALVE SPINDLE CAP SHOULD NOT EXCEED 300mm.

NOTE: THE QUANTITY, PRESSURE & DURATION OF WATER SUPPLY REQUIREMENTS IN THE EVENT OF AN EMERGENCY TO BE DETERMINED & AGREED WITH FIRE OFFICER & LOCAL AUTHORITY.

NOTE: ALL METERS TO BE INSTALLED AS PER IRISH WATER REQUIREMENTS.

DRAINAGE KEY

- EXISTING SURFACE WATER CULVERT
- ROAD GULLY
- ACC KERNSIDAN (HALF BATTERED UNITS)
- PROPOSED STORM SEWER & INSPECTION CHAMBER
- PROPOSED 150mm DIA. FOUL SEWER & MANHOLE
- ATTENUATION ZONE

ALL MAIN DRAINAGE PIPES TO BE UPVC TO IS EN 1401 & AGREEMENT CERTIFIED.

ALL LOCAL STORM PIPES AROUND HOUSES TO BE MIN. 100mm DIA. LAD AT MIN. 1:50 FALLS.

ALL LOCAL FOUL PIPES AROUND HOUSES TO BE MIN. 100mm DIA. LAD AT MIN. 1:50 FALLS.

ALL INTERNAL CONNECTIONS TO LOCAL EXTERNAL DRAINAGE TO BE 1:40 FALLS.

ALL INSPECTION CHAMBERS TO BE IN COMPLIANCE WITH STANDARD DETAIL STD-W-13.

ALL INTERNAL DRAINAGE IN BUILDINGS TO ARCHITECTS DETAILS.

ALL SLOTTED DRAINAGE CHANNELS AROUND BUILDING TO ARCHITECTS/LANDSCAPE ARCHITECTS DETAILS.

REFER TO CK DRAWING 301 FOR TYPICAL DRAINAGE DETAILS AND 302 FOR TYPICAL WATERMAIN DETAILS

SITE COORDINATES:
EASTING (X) 128974
NORTHING (Y) 225999

ATTENUATION VOLUME REQUIRED = 20.0m³
ATTENUATION VOLUME PROVIDED:
148m² x 650mm DEEP x 30% VOIDS (STONE FILL) = 28.86m³

INVERT LEVELS OF NEW SEWER ARE BASED ON AN EXISTING INVERT LEVEL OF THE PUBLIC SEWER OF IL=7.00 AT PROPOSED NEW CONNECTION POINT. THIS LEVEL TO BE VERIFIED (BY CONTRACTOR) WITH IRISH WATER PRIOR TO CONSTRUCTION

PROPOSED NEW 100mm DIA CONNECTION TO EXISTING IRISH WATER FOUL SEWER NEW MANHOLE/SADDLE CONNECTION TO BE AGREED WITH IRISH WATER

PROPOSED 100mm INTERNAL DIAMETER, CONNECTION TO EXISTING PUBLIC WATERMAIN

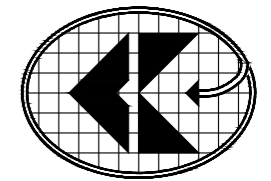
THRUST BLOCKS TO BE IN ACCORDANCE WITH IRISH WATER STD-W-28

LAYOUT OF VALVES, BULK METER & HYDRANT TO BE IN ACCORDANCE WITH IRISH WATER STD-W-26

NEW ACCESS CHAMBER TO EXISTING UNDERGROUND SURFACE WATER CULVERT WITH OVER FLOW PIPE FROM ATTENUATION AREA

EXISTING UNDERGROUND SURFACE WATER CULVERT

SURFACE WATER DRAINAGE OUTFALL TO ATTENUATION AREA IN PERFORATED PIPE REFER TO CK DRG. 301 FOR ATTENUATION AREA DETAILS



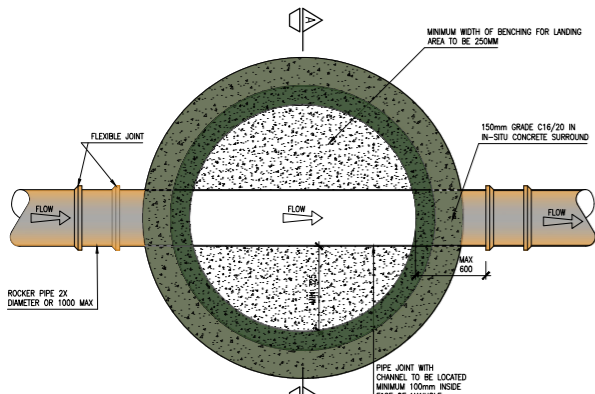
COYLE KENNEDY
Consulting Engineers

GFSC,
Moncenageisha Rd,
Galway.

Tel: +353 (0)91 752000
Fax: +353 (0)91 753000

Website: www.coylekennedy.com
email: mail@coylekennedy.com

PROJECT		HOMELESS DAY CENTRE & EMERGENCY ACCOMMODATION	
CLIENT		GALWAY CITY COUNCIL	
TITLE		SITE DRAINAGE LAYOUT	
PROJECT No.	21-147	STATUS - DRAWING No.	P-300
DATE	NOVEMBER 2021	DRAWING REV.	B
SCALE	1:200 at A1	BY	AC
		CHECKED	BC



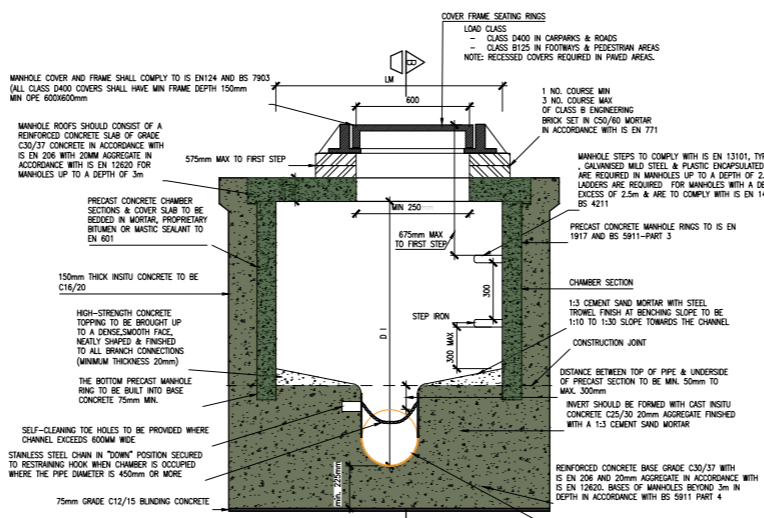
DETAIL 01
TYPICAL PRE-CAST MANHOLE
PLAN
SCALE 1:20

MINIMUM SIZE OF CAPPING SLABS

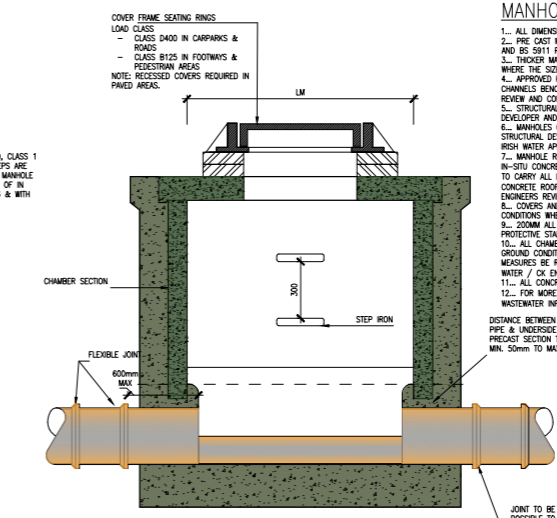
PIPE SIZE (mm)	WIDTH (mm)	DEPTH (mm)
100	500	100
125	600	100
150	600	150
175	600	150
200	600	200
225	600	200
250	600	250
275	600	250
300	600	300
325	600	300
350	600	300
375	600	300
400	600	300
425	600	300
450	600	300
475	600	300
500	600	300
525	600	300
550	600	300
575	600	300
600	600	300

MINIMUM INTERNAL DIMENSIONS OF MANHOLES

DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	INTERNAL DIAMETER OF MANHOLE (mm)
LESS THAN 375mm	1200
375mm to 450mm	1350
450mm to 750mm	1500



DETAIL 2
SECTION A-A THRU
TYPICAL PRE-CAST MANHOLE
SCALE 1:20



DETAIL 03
SECTION B-B THRU
TYPICAL PRE-CAST MANHOLE
SCALE 1:20

MANHOLE NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. THE CAST MANHOLE UNITS COMPLYING WITH REQUIREMENTS OF IS EN 1917 AND BS 5911 PART 3.
3. THE MANHOLE UNITS SHALL BE PROVIDED WITH A MINIMUM 100mm INSIDE FACE OF MANHOLE.
4. APPROVED PRE-CAST CONCRETE BASES MAY BE USED INCORPORATING CHANNELS, BENCHING, ETC. SUBJECT TO IRISH WATER APPROVAL / CK ENGINEERS REVIEW AND COMPLYING WITH BS 5911 PART 4: 2002.
5. STRUCTURAL DESIGN OF MANHOLES SHALL BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO THE CK ENGINEERS FOR REVIEW.
6. MANHOLES GREATER THAN 2m IN DEPTH SHALL REQUIRE A DETAILED STRUCTURAL DESIGN BY PRECAST MANHOLE RING SUPPLIER AND BE SUBJECT TO IRISH WATER APPROVAL / CK ENGINEERS REVIEW.
7. MANHOLE ROOFS SHALL CONSIST OF REINFORCED CONCRETE SLAB OF IN-SITU CONCRETE C30/37 WITH A MINIMUM THICKNESS OF 225mm DESIGNED TO CARRY ALL LIVE AND DEAD LOADS. ALTERNATIVELY APPROVED PRE-CAST CONCRETE ROOF SLAB MAY BE USED SUBJECT TO IRISH WATER APPROVAL / CK ENGINEERS REVIEW AND COMPLYING WITH BS 5911 PART 4: 2002.
8. ALL CHAMBERS TO BE DESIGNED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLUATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM IRISH WATER / CK ENGINEERS REVIEW.
9. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS STEEL METAL BAND AROUND COVERS IN GREEN AREAS.
10. ALL CHAMBERS TO BE PROVIDED WITH ANTI FLUATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM IRISH WATER / CK ENGINEERS REVIEW.
11. ALL WORK TO BE IN ACCORDANCE WITH IS EN 206: 2013.
12. FOR MORE INFORMATION REFER TO 'IRISH WATER CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE'

NOTES

- GENERAL NOTES:**
1. ALL CIVIL ENGINEERING DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTS DRAWINGS AND ALL OTHER RELEVANT DRAWINGS.
 2. ALL SETTING OUT, INSULATION, DPC, SLOPED AND RIBBON PROTECTION DETAILS BY ARCHITECT.
 3. DETAILED SPECIFICATIONS (IF NOT ISSUED) ARE AVAILABLE AT ENGINEERS OFFICE FOR INSPECTION BY CONTRACTORS, BY APPOINTMENT.
 4. DETAILS OF SUBSTRUCTURE GAS/WATER PROOFING MEMBRANES TO BE BY A REPUTABLE, COMPETENT SUPPLIER.
 5. ALL SITE DEVELOPMENT WORKS SHALL COMPLY WITH THE 'RECOMMENDATIONS FOR SITE DEVELOPMENT WORKS FOR HOUSING AREAS' PUBLISHED BY THE DEPARTMENT OF THE ENVIRONMENT.
 6. THE CONTRACTOR SHALL BE DEEMED TO HAVE ALLOWED FOR WITHIN HIS TENDER, INCLUDING A UNREGISTERED STRUCTURAL ENGINEER WITH ADEQUATE PROFESSIONAL INDEMNITY INSURANCE TO ASSESS, DESIGN AND DETAIL SUCH TEMPORARY WORKS AS ARE NECESSARY TO OBTAIN SUPPORT TO EXISTING AND/OR UNREGISTERED ELEMENTS DURING THE CONSTRUCTION PERIOD. THIS APPLIES TO ELEMENTS WITHIN THE SITE AND NEIGHBOURING THE SITE.
 7. THE CONTRACTOR IS DEEMED TO HAVE VISITED THE SITE AND CONSULTED WITH RELEVANT AUTHORITIES AND BE SATISFIED IN RELATION TO THE SITES SURROUNDINGS, EXISTING SERVICES, LEVELS, BOUNDARIES, GROUND CHARACTERISTICS AND ANY OTHER SITE CONSTRAINTS.
 8. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT BUILDING REGULATIONS.
 9. WHERE LEANIN IS SPECIFIED ALL LEANIN TO BE TO GRADE GEN 3. UNLESS NOTED OTHERWISE.
 10. ALL LEVELS ARE STRUCTURAL LEVELS (U.A.O.).
 11. ALL COLLARS CENTERED ON GRIDS (U.A.O.).
 12. DO NOT SCALE FROM DRAWINGS. USE FIGURED DIMENSIONS ONLY.

DRAINAGE NOTES :

1. CONTRACTOR TO MAKE ALL NECESSARY ENQUIRIES REGARDING LOCATION OF EXISTING SEWERS, ELECTRICAL AND OTHER SERVICES ON SITE.
2. ALL DRAINAGE WORK LOCAL TO BUILDINGS TO BE IN ACCORDANCE WITH CURRENT BUILDING REGULATIONS. REFER TO ARCHITECTS & M&E ENGINEERS DRAWINGS FOR SET OUT OF POP-UPS & RIPS.
3. ALL DRAINAGE WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT SPECIFICATION, PART H BUILDING REGULATIONS AND DEPT. OF ENVIRONMENT DOCUMENT 'RECOMMENDATIONS FOR SITE DEVELOPMENT WORKS FOR HOUSING AREAS', & WITH 'SEWERS FOR ADOPTION 4th EDITION A DESIGN & CONSTRUCTION GUIDE FOR DEVELOPERS'.
4. BEDDING MATERIAL TO BE 10mm SINGLE SIZED AGGREGATE COMPLYING WITH THE REQUIREMENTS OF IS 5, PART 1 'AGGREGATES FOR CONCRETE'.
5. THE PREPARED UNDERBED OF THE TRENCH SHOULD CONSIST OF BEDDING MATERIAL FOR THE FULL WIDTH OF THE TRENCH AND LAD TO THE CORRECT GRADIENT.
6. THE MINIMUM THICKNESS OF BEDDING MATERIAL UNDER THE BARREL OF THE PIPE SHOULD BE 100mm.
7. IMPORTED BEDDING MATERIAL AND BACKFILL USING 'AS DIG MATERIAL' MUST BE APPROVED BY ENGINEER.
8. ALL PVC-U PIPES AND FITTINGS USED FOR DRAIN AND SEWERS MUST COMPLY WITH BS 4743 'UNPLASTICIZED POLY(VINYL CHLORIDE (PVC-U) PIPES AND FITTINGS FOR BURIED DRAINAGE AND SEWAGE SYSTEMS'.
9. ALL MANHOLE COVERS LOCATED IN GRASS AREAS TO BE SURROUNDED BY A CONCRETE PLINTH, 200mm ALL ROUND AND 100mm DEEP FORMED WITH C20/25 CONCRETE.
10. MANHOLE COVERS IN AREAS WITH VEHICULAR ACCESS TO BE CLASS D400 & MANHOLE COVERS IN FOOTWAYS & GRASS VERGES TO BE CLASS B125 IN ACCORDANCE WITH IS EN 124.

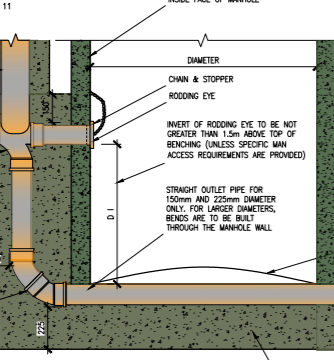
EXCAVATION AND FILL NOTES :

1. THE RESPONSIBLE AUTHORITIES SHOULD BE CONSULTED REGARDING THE GROUND TO BE EXCAVATED WITH REGARD TO THE POSITION AND TYPE OF UNDERGROUND SERVICES THAT ARE LIKELY TO BE ENCOUNTERED DURING EXCAVATION AND ANY POSSIBLE DIVERSIONS REQUIRED.
2. THE BEARING STRATA TO BE APPROVED AND AGREED BY THE CONSULTING ENGINEER.
3. TEMPORARY FILL OVER BEARING STRATA TO BE PROVIDED TO PROTECT THE AGREED BEARING STRATA AND REMOVED FROM SITE BEFORE BEGINNING PERMANENT CONSTRUCTION.
4. EXCAVATE TO THE DIMENSIONS, LEVELS, LINES AND PROFILES SHOWN ON THE RELEVANT DRAWINGS. LEVEL AND GRADE TO FALLS AND REMOVE ALL LOOSE MATERIAL. OBTAIN APPROVAL BEFORE ANY CONCRETING OR FILLING IS CARRIED OUT. IF ROCK OR OTHER NATURAL STRATA IS ENCOUNTERED NOTIFY THE ARCHITECT AND ENGINEER AND OBTAIN INSTRUCTIONS BEFORE EXCAVATION. BACK FILL UNAUTHORIZED OR EXCESS EXCAVATIONS WITH APPROVED FILLING AT NO EXPENSE TO THE CLIENT.
5. WHEN ARCHAEOLOGICAL OBJECTS ARE DISCOVERED DURING EXCAVATION, STOP WORK IN THE IMMEDIATE VICINITY OF THE FIND AND INFORM THE ARCHITECT AND ENGINEER AT ONCE. THE OWNER OF MINERALS, SAND, GRAVEL OR ARCHAEOLOGICAL OBJECTS AND THE USE DISCOVERED IN THE COURSE OF THE EXCAVATIONS SHALL BE DEEMED TO BE THE PROPERTY OF THE CLIENT.
6. EXCAVATIONS IN POSITIONS ADJACENT TO EXISTING BUILDINGS, PATHWAYS OR THE LIKE SHALL BE CARRIED OUT IN SUCH A MANNER THAT SUCH EXISTING BUILDINGS, PATHWAYS OR THE LIKE ARE NOT ENDANGERED.
7. KEEP EXCAVATIONS FREE FROM WATER, AND KEEP WATER FROM EXCAVATIONS CLEAR OF OTHER CONSTRUCTION WORK. THE WATER LEVEL MAY BE SEASONAL AND/OR TIDAL. WHERE TEMPORARY SLUMPS ARE REQUIRED CONSTRUCT THEM CLEAR OF EXCAVATIONS FOR PERMANENT WORK AND FILL THEM WITH SUITABLE FILLING WHEN NO LONGER REQUIRED.
8. DISPOSAL AREA FOR EXCAVATED MATERIAL TO BE AGREED WITH CLIENT AND OTHER RELEVANT AUTHORITIES.
9. UNLESS OTHERWISE AGREED ALL FILL MATERIAL SHOULD BE 'SQUARE PLAN' S.S. 21 '2014 ANEX 1' COMPACTED IN 200mm LAYERS USING 10 NUMBER PASSES OF A 3000kg PER METER WIDTH VIBRATING ROLLER.
10. FILL MATERIAL MUST BE PROVIDED OVER THE FULL EXTENT OF THE BUILDING AND EXTEND AT LEAST 1m BEYOND EXTERNAL FACE OF BUILDING. IT MUST THEN TAPER 45DEG DOWN TO BEARING STRATA.

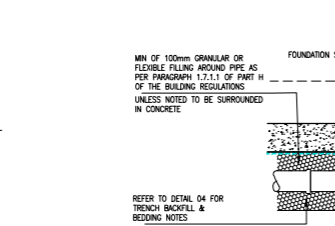
REFER TO DRAWING 300 FOR PLAN LAYOUT OF SEWERS

BACKDROP MANHOLE NOTES

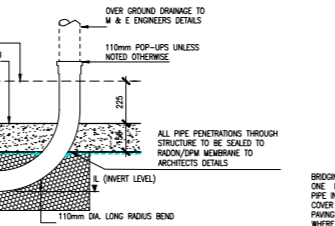
1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. ROOFING EYE CHAMBER SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 AND BS 5284. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO APPROVAL FROM IRISH WATER.
3. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLUATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM IRISH WATER / CK ENGINEERS REVIEW.
4. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
5. MANHOLE DETAILS TO BE IN ACCORDANCE WITH STD-WW-00, 10 AND 11.



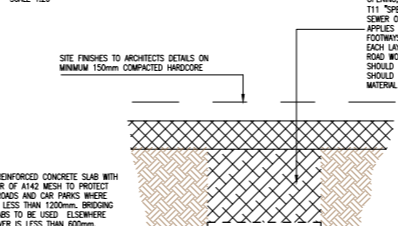
DETAIL 04
TYPICAL EXTERNAL VERTICAL
BACKDROP MANHOLE
TYPE NO.1
SCALE 1:20



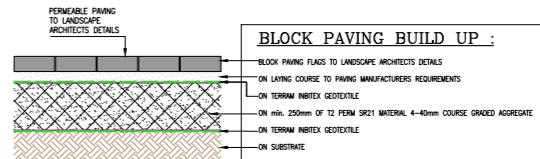
DETAIL 05
TYPICAL INTERNAL POP-UP
SCALE 1:20



DETAIL 06
TYPICAL SECTION TROUGH
SCALE 1:20



DETAIL 07
MEDIUM INSPECTION CHAMBER DETAIL
FOR PAVED/LANDSCAPED AREAS
SCALE 1:20



DETAIL 08
TYPICAL SECTION TROUGH
BLOCK PAVING BUILD UP
SCALE 1:20

ROAD BUILD UP :

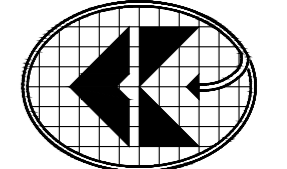
- ROAD SURFACING (TWO COURSES)**
- (1) COURSE 25mm THICKNESS (COMPACTED) DENSE BITUMEN MACADAM WEARING COURSE (10mm NOMINAL SIZE AGGREGATE) IN ACCORDANCE WITH CLAUSE 904 'SPECIFICATION FOR ROADWORKS' BY DEPARTMENT OF ENVIRONMENT.
 - (2) COURSE 40mm THICKNESS (COMPACTED) DENSE BITUMEN MACADAM BASECOURSE (20mm NOMINAL SIZE AGGREGATE) IN ACCORDANCE WITH CLAUSE 902 'SPECIFICATION FOR ROADWORKS' BY DEPARTMENT OF ENVIRONMENT.
- ROAD BASE:** SINGLE COURSE 80mm THICKNESS (COMPACTED) DENSE BITUMEN MACADAM BASECOURSE (40mm NOMINAL SIZE AGGREGATE) IN ACCORDANCE WITH CLAUSE 902 'SPECIFICATION FOR ROADWORKS' BY DEPARTMENT OF ENVIRONMENT.
- SUB-BASE:** 150mm THICKNESS (COMPACTED) GRANULAR MATERIAL TYPE B IN ACCORDANCE WITH CLAUSE 804 'SPECIFICATION FOR ROADWORKS' BY DEPARTMENT OF ENVIRONMENT.
- CAPPING LAYER:** 300mm THICKNESS (COMPACTED) ROCK (HARDWARE) MATERIAL. THE MATERIAL SHOULD HAVE A MINIMUM SIZE OF 100mm AND THE MAXIMUM ALLOWABLE FROG SIZE TO 10mm. THE CAPPING LAYER MAY BE REDUCED IN THICKNESS, SUBJECT TO THE DEVELOPER SUBMITTING TO THE ENGINEER PRIOR TO CONSTRUCTION, ONE TEST RESULTS FOR SUBGRADE.



DETAIL C
TYPICAL SECTION THROUGH
ATTENUATION AREA
SCALE 1:20

Compaction Specification

Type of Compaction Plant	Category	Number of Passes for Layers not exceeding the following compacted thickness:	
		110mm	225mm
Smooth-wheeled Roller (or vibratory roller operating without vibration)	Mass per metre width of roll: Over 2700 kg up to 5400kg	16	16
	Over 5400 kg	18	16
	Mass per metre width of vibrating roll: Over 4000 kg up to 8000 kg	12	12
Pneumatic-tired Roller	Over 8000 kg up to 12000 kg	10	10
	Over 12000 kg	8	8
	Mass per metre width of vibrating roll: Over 700 kg up to 1300 kg	16	16
Vibratory Roller	Over 1300 kg up to 1800 kg	6	6
	Over 1800 kg up to 2300 kg	4	4
	Over 2300 kg up to 2900 kg	3	3
	Over 2900 kg up to 3600 kg	3	3
	Over 3600 kg up to 4300 kg	2	2
Vibrating-plate Compactor	Mass per metre of base plate: Over 1400 kg/m ² up to 1800 kg/m ²	8	8
	Over 1800 kg/m ² up to 2100 kg/m ²	3	3
Vibro-tamper	Mass: Over 50 kg up to 65 kg	4	4
	Over 65 kg up to 75 kg	3	3
Power Rammer	Mass: Over 75 kg	2	2
	Over 100 kg - 500 kg	5	5
	Over 500 kg	5	5



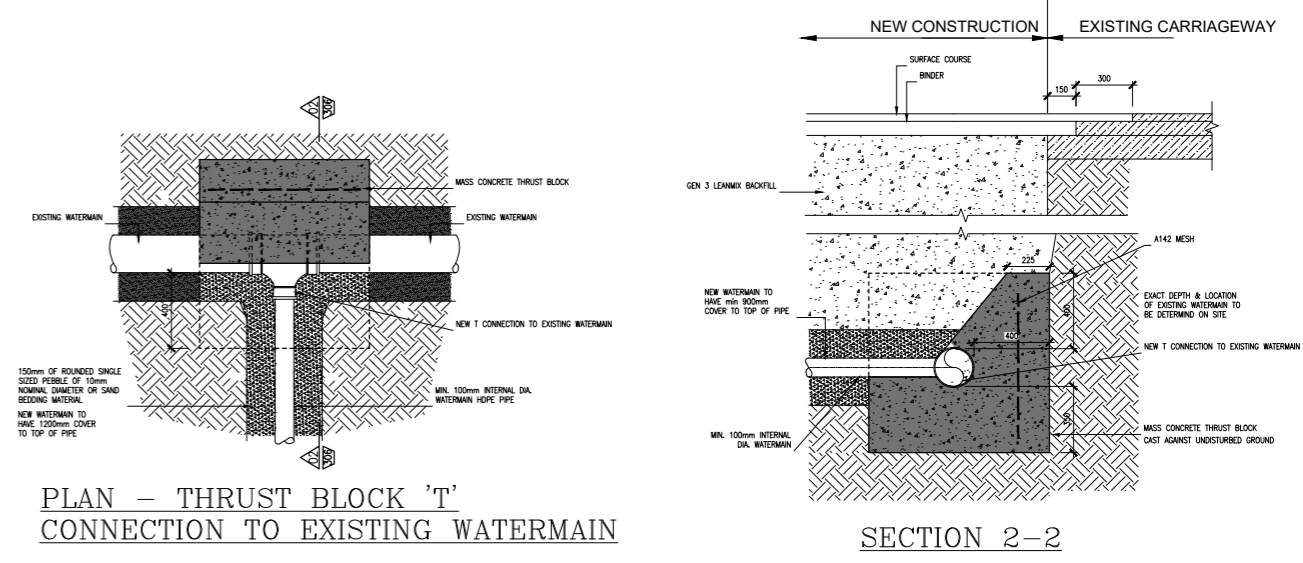
COYLE KENNEDY
Consulting Engineers

GFSC,
Moncenageisha Rd,
Galway.
Tel: +353 (0)91 752000
Fax: +353 (0)91 753000
Website: www.coylekennedy.com
email: mail@coylekennedy.com

PROJECT	HOMELESS DAY CENTRE & EMERGENCY ACCOMMODATION	
CLIENT	GALWAY CITY COUNCIL	
TITLE	DRAINAGE DETAILS & SITE SECTIONS	
PROJECT No.	21-147	STATUS - DRG. No.
DATE	MAY 2022	P-301
SCALE	BY	CHECKED
AS NOTED	AC	BC

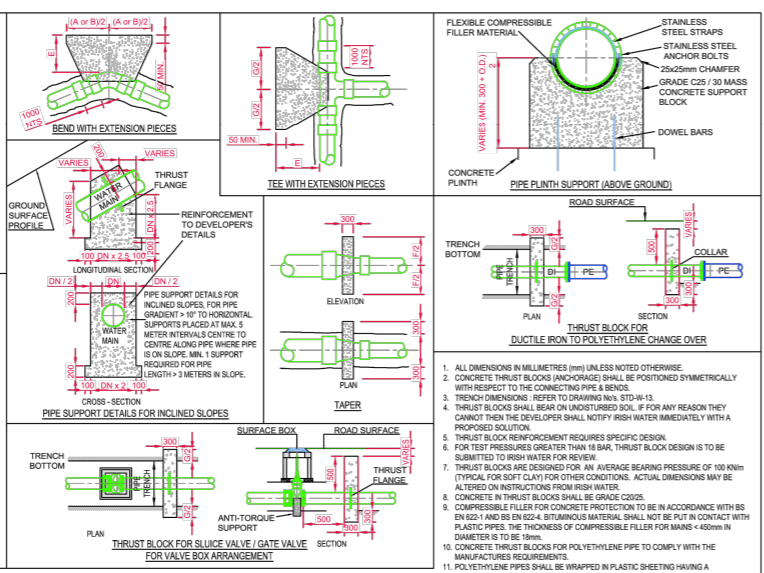
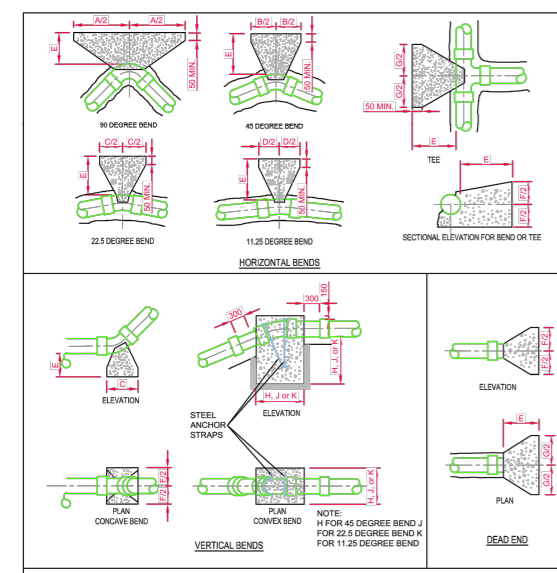
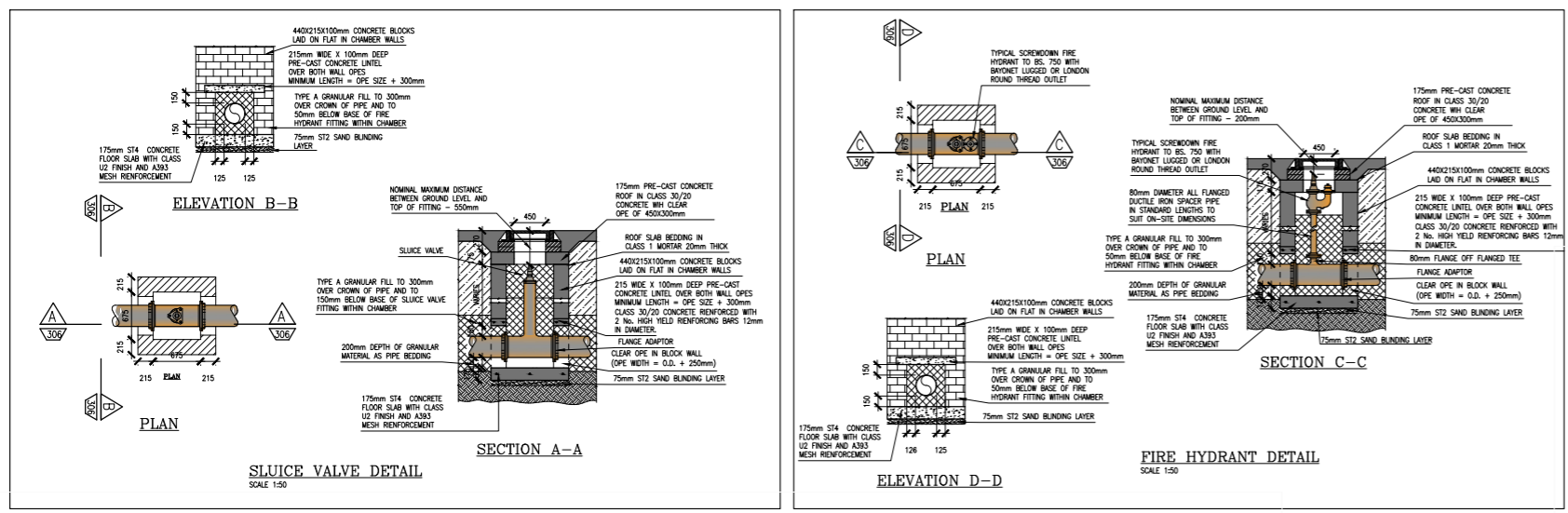
MH Name	EXISTING WATERMAIN	PROPOSED CONNECTION	WATERMAIN LOOP
Hor Scale 100			
Ver Scale 100			
Bottom (m) = 0.000	1.000	1.001	
Dia (mm)	100	100	
Slope (1:X)	PRESSURISED	PRESSURISED	
Cover Level (m)	8.700	8.800	8.800
Invert Level (m)	7.400	7.500	7.500
Length (m)	5.500	8.500	

WATERMAIN SECTION



PLAN - THRUST BLOCK 'T' CONNECTION TO EXISTING WATERMAIN

SECTION 2-2



NO. DIA (mm)	A	B	C	D	E	F	G	H	J	K
100	100	300	160	80	200	300	300	700	600	400
150	150	510	260	125	450	600	900	750	800	700
200	200	1150	600	310	160	300	650	790	1050	600
250	250	1350	750	380	200	300	800	970	1200	1000
300	300	1580	850	420	220	300	950	1110	1300	1100
350	350	1780	950	450	1000	1400	1500	1200	1500	1200
400	400	2050	1050	700	300	650	790	1050	1200	1000
450	450	2300	1150	720	360	400	1000	1400	1500	1100
500	500	2550	1250	750	420	450	1100	1500	1600	1200
550	550	2800	1350	780	480	500	1200	1600	1700	1300
600	600	3050	1450	810	540	550	1300	1700	1800	1400

REFER TO INDEX SHEET FOR NOTES REGARDING DESIGN RESPONSIBILITY & RISK ASSESSMENT

NO.	DATE	BY	CHK	DESCRIPTION
1	11/17/20	JMCTOC		Anti-torque support note & thrust flange added & notes updated
0	09/18/20	JMCTOC		Initial issue
No.	Date	By	Chk	Description

SCALE: NOT TO SCALE DATE: SEPT. 2015

TITLE: WATER MAIN THRUST AND SUPPORT BLOCKS

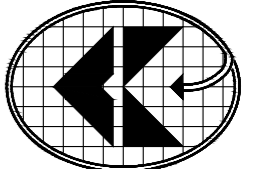
STANDARD DETAILS - WATER

Uisce Éireann - IRISH WATER

- ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
- THE MINIMUM DEPTH OF COVER FROM THE FINISHED GROUND LEVEL TO THE EXTERNAL CROWN OF THE PIPE SHALL BE 900mm WHERE THE PIPE IS TO BE LOCATED IN HOUSING ESTATE ROADS. GREATER DEPTHS OF COVER AND/OR PIPE STRENGTH AND/OR A HIGHER CLASS OF BEDDING MATERIAL MAY BE REQUIRED WHERE HIGH TRAFFIC LOADS ARE ANTICIPATED. THE DESIRABLE COVER FOR A WATERMAIN SHOULD BE 1200mm, WHERE PRACTICABLE & SHOULD NOT EXCEED 3.0m.
- CLAUSE 804 / 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS IS TO BE USED AS BACKFILL MATERIAL WHERE THE WATER MAIN IS LOCATED IN ROADS. FOOTPATHS OR WHEN THE NEAREST PART OF THE TRENCH IS WITHIN 1m OF THE PAVED EDGE OF THE ROADWAY. CLAUSE 804 / 808 IS TO BE COMPLETED AS PER CLAUSE 802 OF THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. CLAUSE 808 IS TO BE USED WITHIN 500mm OF CEMENT BOUND MATERIALS, CONCRETE PAVEMENTS, CONCRETE STRUCTURES OR CONCRETE PRODUCTS. OTHERWISE CLAUSE 804 MAY BE USED. ALTERNATIVE BACKFILL MATERIAL TO THAT DESCRIBED ABOVE CLAUSE 804 OR CLAUSE 808 OF THE PIPE TRENCH WILL ONLY BE ALLOWED BY IRISH WATER WHERE THE ROADS AUTHORITY IN WHOLE FUNCTIONAL AREA THE DEVELOPMENT IS LOCATED. PROVIDES WRITTEN APPROVAL TO THE DEVELOPER TO THE USE SUCH ALTERNATIVE MATERIAL.
- SELECTED EXCAVATED MATERIAL MAY BE USED IN GREEN FIELD AREAS ABOVE GRANULAR PIPE SURROUNDING MATERIAL SUBJECT TO REVIEW BY IRISH WATER.
- PIPE BEDDING SHALL COMPLY WITH SIS 4-08-02 AND ISG 4-08-01 GRANULAR MATERIAL SHALL BE 14mm TO 5mm (6.5%) GRADED AGGREGATE OR 10mm (9.5%) SINGLE SIZED AGGREGATE TO IS EN 12062.
- IN SOFT GROUND CONDITIONS (CBR < 6) THE MATERIAL SHOULD BE EXCAVATED OUT AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 804 / 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS SHALL REPLACE THE EXCAVATED MATERIAL. WRAPPED IN GEO-TEXTILE WRAPPING. ALTERNATIVELY, SPECIAL PIPE SUPPORT ARRANGEMENTS, INCLUDING PILING ETC. MAY BE REQUIRED WHERE THE DEPTH OF SOFT MATERIAL IS EXCESSIVE. SUCH ARRANGEMENTS SHALL BE SUBJECT TO ASSESSMENT BY IRISH WATER BEFORE ADVANCING WITH THE WORK.
- PIPES SHALL NOT BE SUPPORTED ON STONES OR ROCKS, OR ANY HARD OBJECT AT ANY POINT ALONG THE TRENCH. ROCK SHALL BE EXCAVATED TO A DEPTH OF 100mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH CLAUSE 804 / 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. THE GRANULAR MATERIAL SHALL BE LAD ABOVE THIS VOID BACKFILL MATERIAL.
- SHOULD MINIMUM COVER NOT BE ACHIEVABLE, CONCRETE GRADE C20/25 SHALL BE USED AS BACKFILL MATERIAL.
- MARKER TAPE TO BE 400mm WIDE BLUE POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12453. PLASTIC PIPES SHALL HAVE WARNING TAPE INCORPORATED A REINFORCED BAND BRACING WIRE. SERVICE PIPES SHALL HAVE 200mm WIDE MESH TAPE. MARKER TAPE TO BE LAD AT TOP OF PIPE BEDDING LAYER.
- TRENCH WIDTHS FOR PIPE SIZES 400mm MAY BE 400mm, SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH, HEALTH & SAFETY & CONSTRUCTION ACCESS REQUIREMENTS.
- NEW ROAD CONSTRUCTION SURFACE FINISH TO BE TO ROAD AUTHORITY REQUIREMENTS.
- EXISTING ROAD REINSTATEMENT TO COMPLY WITH CURRENT VERSION OF "GUIDELINES FOR MANAGING OPENINGS IN PUBLIC ROADS" BY THE DEPT. OF TRANSPORT, TOURISM & SPORT, OR TRANSPORT INFRASTRUCTURE RELIANT REQUIREMENTS.

REFER TO DRAWING 300 FOR PLAN LAYOUT

F _s - 8/1		
Rev.	Revision	
	Date	
DRAWING STATUS		
P PRELIMINARY	A APPROVAL	T TENDER
C CONSTRUCTION	R RECORD	I INFORMATION

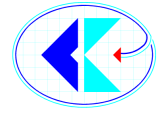


COYLE KENNEDY
Consulting Engineers

GFSC,
Monacageisha Rd,
Galway.
Tel: +353 (0)91 752000
Fax: +353 (0)91 753000
Website: www.coylekennedy.com
email: mail@coylekennedy.com

PROJECT	HOMELESS DAY CENTRE & EMERGENCY ACCOMMODATION
CLIENT	GALWAY CITY COUNCIL
TITLE	WATERMAIN SECTIONS & TYPICAL DETAILS

PROJECT No.	21-147	STATUS - DRAWING No.	P-302
DATE	MAY 2022	DRAWING REV.	
SCALE	1:100, 20:1 1:200, 40:1	BY	AC
		CHECKED	BC



Appendix 2 Irish Water Letter - Satisfactory Response

Brian Coyle & Alan Clancy
 GFSC
 Moneengeisha Road
 Galway
 H91P48P

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

25 January 2022

Re: CDS21008377 pre-connection enquiry - Subject to contract | Contract denied

Connection for Business Connection of 1 unit(s) at Seamue Quirke Road, Westside, Galway

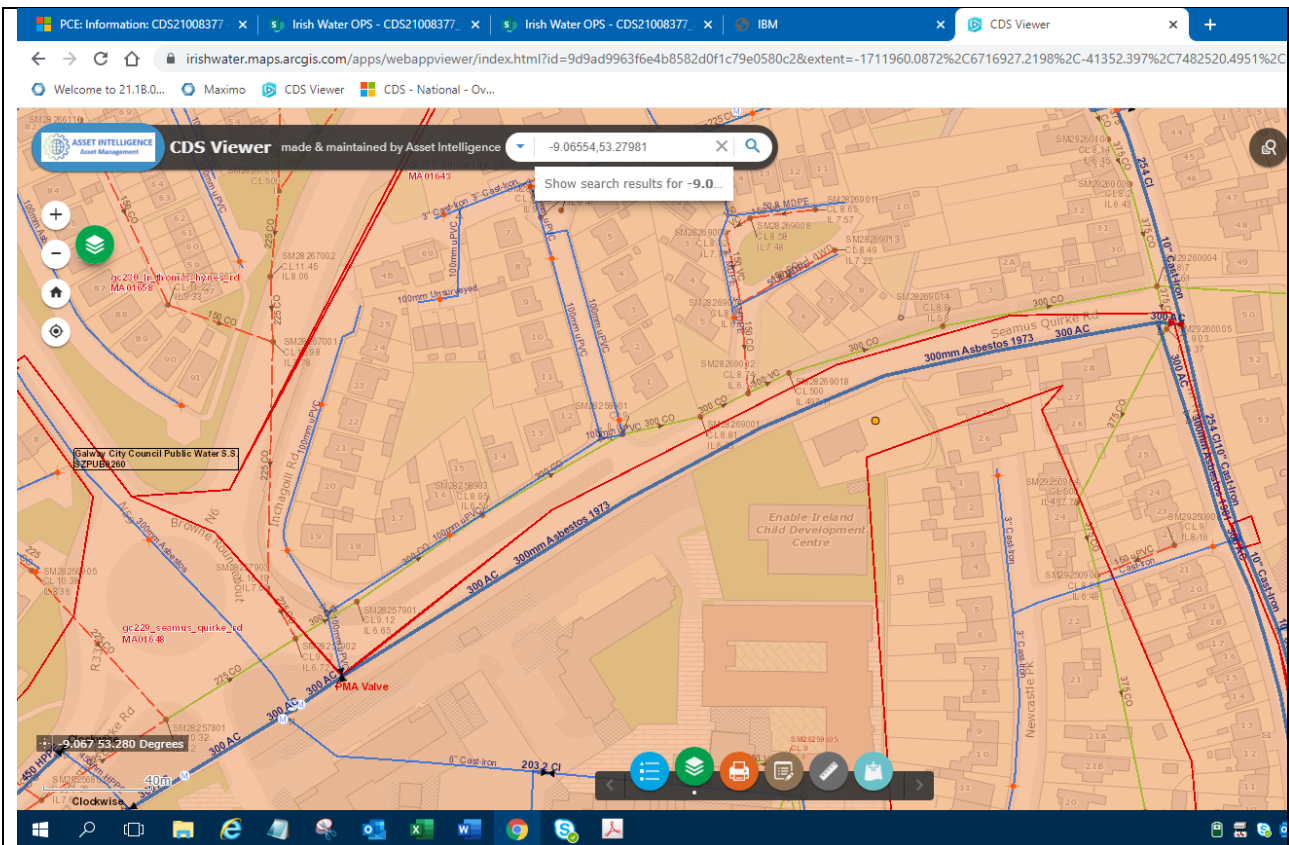
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Seamue Quirke Road, Westside, Galway (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 Subject to upgrades
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	<p>Based on current Irish Water records, the nearest Irish Water owned distribution water main appears to be located approx. 60m from your property boundary.</p> <p>To facilitate a connection to your premises, a network extension of approximately 60m would be required. The cost for the provision of this network extension will give rise to a quotable charge based on the Commission for Regulation of Utilities (CRU) approved Connection Charging Policy. Any such network extension would have to be entirely funded by you. The connection will also involve the application of a standard connection charge for the provision of the service connection off of the network extension. The network extension and service connection will be installed by Irish Water or its Agents. For indicative costs associated with a network extension of this length, please refer to https://www.water.ie/connections/information/connection-charges/.</p>

	<p>There is a 300mm diameter watermain in the public Road, North of the development but the main is a Truck main and no single connections are permitted to trunk mains.</p> <p>If you have any questions about the above or would like to discuss further, please let me know.</p>
<p>Wastewater Connection</p>	<p>Based on current Irish Water records, there is a 300mm diameter combined sewer in the public road, opposite the site entrance. the watermain is Irish Water owned and managed and has the capacity to service the proposed development.</p>
<p>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 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.</p>	

The map included below outlines the current Irish Water infrastructure adjacent to your site:



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

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the

information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact 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 Barry Butler from the design team by email barry.butler@water.ie For further information, visit www.water.ie/connections.

Yours sincerely,



Yvonne Harris

Head of Customer Operations