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## Engineering Services Report

Radharc Cillín,

Kilfinane,

Co. Limerick.

Client: Limerick City & County Council (LCCC)

Job No. L097L

November 2021





## ENGINEERING SERVICES REPORT

### RADHARC CILLÍN, KILFINANE, CO. LIMERICK.

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**Document;** **Engineering Services Report - RADHARC CILLÍN, KILFINANE, CO. LIMERICK.**

Job Ref.	Author	Reviewed By	Authorised By	Issue Date	Rev. No.
L097L	KC	GC	GC	Nov 2021	0



## 1.0 INTRODUCTION

Cronin Sutton Cotter Consulting Engineers have been commissioned by Limerick City & County Council (LCCC) to prepare an Engineering Services Report for the proposed build of 10no. new dwellings in in Radharc Cillín, Kilfinane, Co. Limerick. In preparing this report Cronin Sutton Cotter Consulting Engineers have made reference to the following:

- Ordnance Survey of Ireland (OSI) historic maps,
- Topographical Survey of the site,
- Office of Public Works (OPW) Historic Flood Mapping & CFRAM study mapping available on [www.floodinfo.ie](http://www.floodinfo.ie).

## 2.0 SCOPE

Refer to the planning and architectural reports submitted as part of this application for a detailed description of the proposed works.

This report addresses the practical implications for the development of the subject lands. Addressed within is a review of the site's drainage/water supply/flood risk/traffic management and a desk top review of past land uses and services in the area.

## 3.0 SITE DESCRIPTION

### 3.1 Existing Site Description

The proposed site is located in Kilfinane, approximately 50km from Limerick City on the R517. The subject lands are directly adjacent to the rest of the Radharc Cillín, Kilfinane, housing development in Co. Limerick which is located to the east of the proposed site. The site's topography is on a descending slope from south to north. See topographical survey attached within Appendix A.

The subject lands have not been developed before and appears to have been a greenfield site going back as far as historic OSI mapping shows.

The subject lands are located in the administrative jurisdiction of Limerick City and County Council. See Fig 1.0 below for site location in red.



Fig 1.0 – Site Location in red (Source Google Maps)

### 3.2 Proposed Site Layout

The proposed development includes 10 no. housing units comprising of 8 no. houses and 2 no. duplex apartment units. See Architect's report for description of units in greater detail. See Fig 2.0 below for Architect's site layout plan.

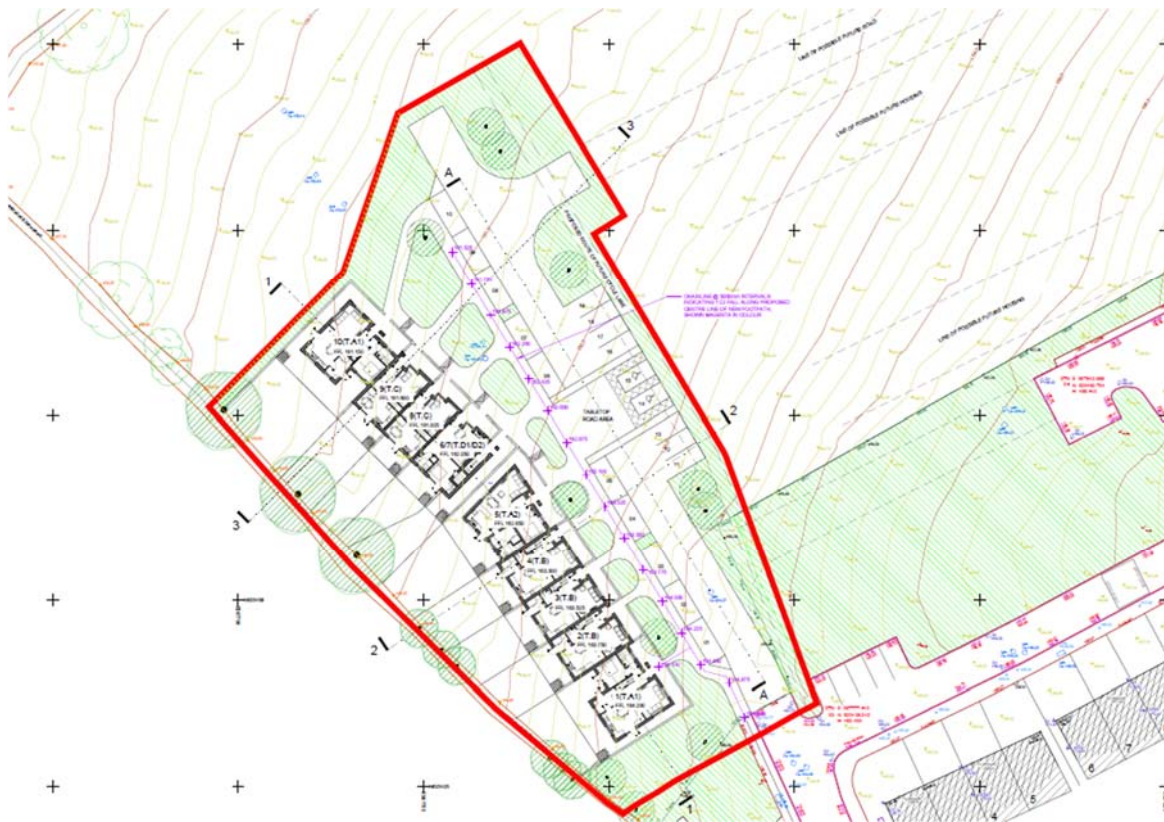


Fig 2.0 – Architect's Site Layout

## 4.0 FOUL DRAINAGE

### 4.1 Existing Foul Infrastructure

According to the GPR Survey, provided by LCCC (attached within Appendix B), the existing site (which can be seen in Fig 1.0) is serviced by a 225mm Ø uPVC foul sewer running south to north where it likely outfalls to the mains sewer on Main Street Lower or Chapel Street.

The main foul sewer, running parallel to the storm sewer, enters the site under the south boundary access road and runs downhill to the northwest of the site, then makes a 90 degree turn in an easterly direction and exits the site at the northeast

corner. This is shown in drawing MSL32976\_U\_Rev.1 in Appendix B (foul sewer shown in an orange colour).

The on-site foul drainage system is uPVC 225mm Ø with 150mm Ø uPVC branches in a number of sections as indicated on the GPR Survey drawing.

This system services all of Radharc Cillin (to the southeast of the site) which has been built previously.

#### **4.2 Proposed Foul Infrastructure**

It is proposed to connect each new dwelling into the existing uPVC 225mmØ foul sewer which runs through the site, approximately parallel to the proposed dwellings. New connections will be made at each dwelling. See Appendix C for site plan showing existing network & proposed connections.

All design and construction works will be in accordance with the requirements of Irish Water for Drainage Works, including the outfall manholes. A Pre-Connection Enquiry has been deemed to be feasible by Irish Water for the proposed development. The pre-connection approval is attached within Appendix D.

### **5.0 STORM DRAINAGE**

#### **5.1 Existing Storm Water Infrastructure**

According to the GPR Survey, provided by LCCC (attached within Appendix B), the existing site is serviced by a local authority storm sewer servicing the existing Radharc Cillin development and is a 225mm uPVC Ø.

The main storm sewer, running parallel to the foul sewer, enters the site under the south boundary access road and runs downhill to the northwest of the site, then makes a 90 degree turn in an easterly direction and exits the site at the northeast corner. This is shown in drawing MSL32976\_U\_Rev.1 in Appendix B (storm sewer shown in a blue colour).



## 5.2 Proposed Storm Water Infrastructure

It is proposed to connect each new dwelling into the existing uPVC 225mm Ø storm sewer which runs through the site, parallel to the proposed dwellings. New connections will be made at each dwelling. See Appendix C for site plan showing existing & proposed storm system.

This existing system also services the existing Radharc Cillín development, to the southeast of the site, which has been built previously.

## 5.3 Sustainable Urban Drainage System (SUDS)

As per the Limerick Development Plan a SUDS is required to be incorporated into the proposed site plan in order to manage surface water run-off accumulated on the site. The approach, where practicable and subject to infiltration testing, will be to minimise hard surfaces and incorporate surfaces which will facilitate the slow down of water run-off and infiltration to ground as the soil characteristics allow. This approach will be implemented through the use of permeable paving/porous asphalt, swales, soakaways, tree pits, rain gardens and possible grey water storage tanks for garden use. These features will also contain an overflow system which, in turn, will be connected to the main storm water network.

## 6.0 POTABLE WATER SUPPLY

According to the GPR Survey, provided by LCCC (attached within Appendix B), the existing section of Radharc Cillín is serviced by local authority watermain and is 100mm Ø. It is unclear from the drawing what material these pipes are made of. See drawing attached within Appendix C (existing watermain is marked in a cyan colour).

It is proposed to connect the new watermain into the existing 100mm Ø public watermain which is located outside and to the south of the site boundary. The

proposed 100mm PE80 SDR Watermain is proposed to run through the site, parallel to the proposed new dwellings and looped at the end of the run. See Appendix C for site plan showing existing & proposed watermain.

Hydrants will be located in accordance with Technical Guidance Document B of the Building Regulations and as per the LCCC Fire Officer's requirement.

It is also noted that an Irish Water Pre-Connection Enquiry has been submitted and the site deemed suitable by Irish Water. This approval for this pre-connection enquiry is attached within Appendix D.

## 7.0 FLOODING

The site is not expected to flood as it is located on a descending slope. The topographical survey, attached within Appendix B, shows a fall from the R517 to the end of the northern site boundary line (and beyond), suggesting that any excess of water is expected to flow past the site boundary line.

According to floodmaps.ie, there has been no past flooding incidents or expected flooding incidents in this area. See Fig 3.0 extract below from floodinfo.ie.

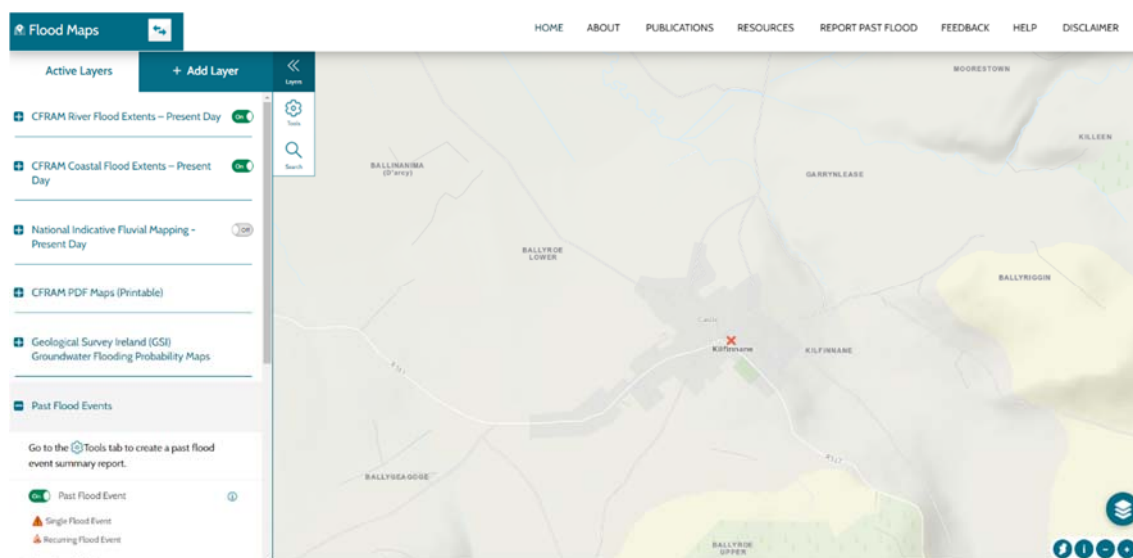


Fig 3.0 – Extract from floodinfo.ie

## **8.0 TRAFFIC MANAGEMENT**

Occupants living within the existing Radharc Cillin scheme enter the estate via the R517. The roadway is a two-way system, which will extend into the new extension of the overall development. See attached drawings within Appendix C for road layout longitudinal section and cross section.

As per the Architect's report it is proposed that there will be 17 no. car parking spaces and 2 no. disabled spaces provided for the development. A turning circle will be provided at the end of the access road.

It should also be noted that the development is to be built on a descending slope and site gradients will have to be agreed in conjunction with the architect.

## **9.0 CONCLUSIONS**

**9.1** It is proposed to connect each new dwelling directly into the existing uPVC 225mm Ø foul sewer which runs through the site.

**9.2** It is proposed to connect each new dwelling directly into the existing uPVC 225mm Ø storm sewer which runs through the site.

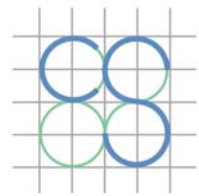
**9.3** It is proposed to connect the new watermain into the existing 100mm Ø public watermain and provide a connection directly to each dwelling.

**9.4** SUDS measures will be incorporated where possible and agreed with LCCC at detailed design stage.

**9.5** From a review of flood risk mapping, the proposed site is not at risk of flooding.

**9.6** It is proposed that there will be 17 no. car parking spaces and 2 no. disabled spaces along the roadway outside the properties. Some of which are parallel and some perpendicular.



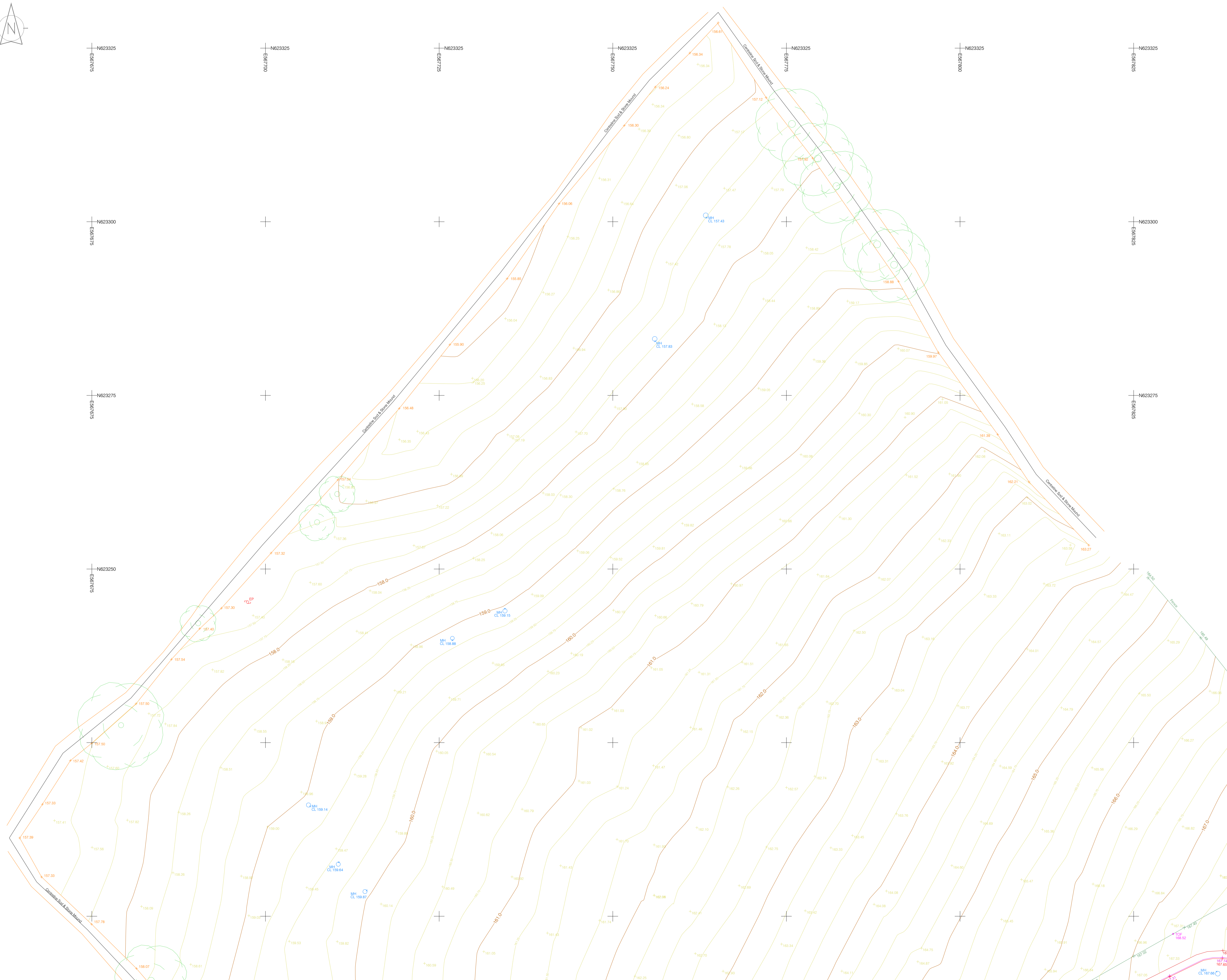
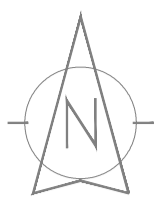


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## Appendix A: Topographical Survey





**LEGEND**

**Street furniture & Services**

5.12 Over Head Wires (LUAS) - Pylon ESB	5.12 Bus Stop	5.12 Road Sign	5.12 Phone Box
5.12 Flowerbed	5.12 Bench Seat	5.12 Duct	5.12
5.12 Pipe	5.12 Bollard	5.12 Kiosk	5.12 Gas Cover
5.12 Lift	5.12 Beacon	5.12 Gully	5.12 CP Box
5.12 Barrier	5.12 Coathole Cover	5.12 UG Work	5.12 UG Car Park Vert
5.12 Pump	5.12 Bare Hole	5.12 Wast Bin	5.12
5.12 Trial Pit	5.12 Electricity Pole	5.12 Hydrant	5.12
5.12 Bus/Tram Shelter	5.12 Telegraph pole	5.12 Fire Hydrant	5.12
5.12 Postbox	5.12 CCTV Pole	5.12 ESB Box	5.12
5.12 Valve - General	5.12 CCTV Camera Pole	5.12 ESB Inspection Cover	5.12
5.12 Water Valve	5.12 Lamp Post	5.12 Traffic Control Box	5.12
5.12 Gas Valve	5.12 Road Manhole	5.12 LUAS Technical Cubicle	5.12
5.12 Sluice Valve	5.12 Surface Water MH	5.12 Ticket Vending Machine	5.12
5.12 Air Valve	5.12 Manholes	5.12 Water Meter Cover	5.12
5.12 Stop Cock	5.12 Air Conditioning Vents	5.12 Telecom Inspection Cover	5.12
5.12 C/P Post	5.12 Services Inspection Cover	5.12 Monument / Toilets	5.12
5.12 Marker Post	5.12 Traffic Inspection Cover	5.12 Tank Storage	5.12
5.12 Traffic Light	5.12 Traffic Light Inspection Cover	5.12 Basement MH Cover & Pipe	5.12
5.12 Parking Meter	5.12 ESAT Inspection Cover	5.12 Distd Aerial Mark	5.12
5.12 Plane Aerial Mark	5.12 NTL Inspection Cover	5.12 Stay for pole	5.12
5.12 Smart Card Validator	5.12 Ecom Inspection Cover	5.12 Pipe Protection	5.12
5.12 Unknown Valve	5.12 Rodding Eye	5.12 Washout	5.12

**Natural Features**

5.12 Surface Change	5.12 Water Level	5.12 Golf
5.12 Land Drain	5.12 Crown Level	5.12 Fair Way
5.12 Bottom of Slope	5.12 Invert level	5.12 Green
5.12 Top of Slope	5.12 Bed Level	5.12 Tree Box
5.12 Dam	5.12 Spotlight	5.12 Other
5.12 Waste Edge / Lake / Pond	5.12 Survey Station	5.12
5.12 Hedge / Trees Dip Line / Vegetation	5.12 Photo point	5.12
5.12 Tree Coniferous	5.12 Tree Deciduous	5.12 Top of Tree

**Built Features**

**Roads & Road Markings**

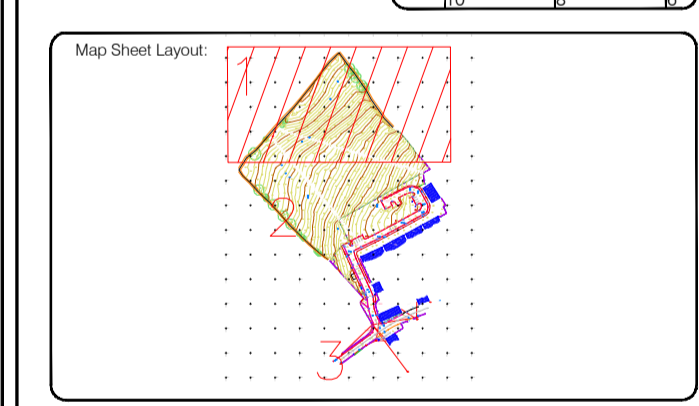
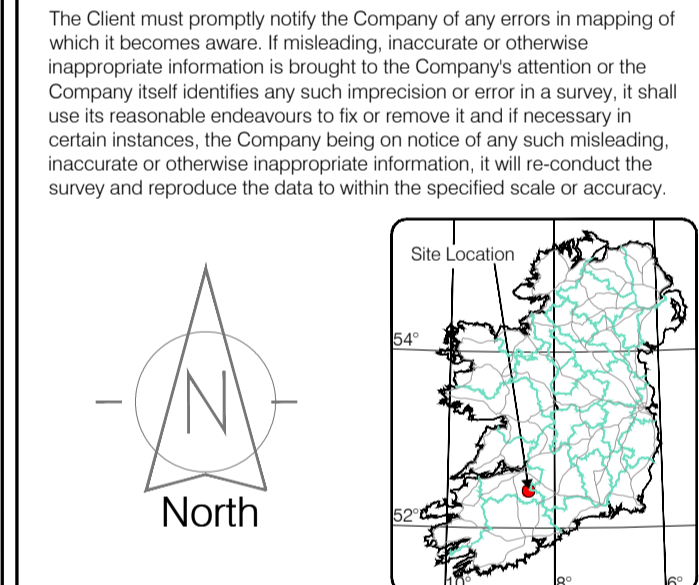
5.12 Building	5.12 Fence	5.12 Floor Level
5.12 Edge of Road	5.12 Gate	5.12 Apex Height
5.12 Kerb Bottom	5.12 Road Centreline	5.12 Eaves Height
5.12 Kerb Top	5.12 Top of Wall	5.12 Parapet Height
5.12 Bridge Abutment	5.12 Hoarding	5.12 Soft Elevation
5.12 Bridge Deck	5.12 Property Line	5.12 Stop Level
5.12 Bridge Parapet	5.12 Road Scar	5.12 Concrete Pad
5.12 Building Facade	5.12 Top of Fence	5.12 Track
5.12 Footpath / Platform Train & Tram	5.12 Wall / Retaining Wall	5.12
5.12 Damp Proof Course / Verge	5.12 Railway / Tram Rail / Gating / Ramp	5.12
5.12 Bridge Pier / Wall & Gate Pillar / LUAS Trackbed	5.12 Building Canopy / Roof / Overhang	5.12
5.12 Cycleway / Private Landing Area	5.12	5.12

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Checked by: JN	Date: 09.10.2019	Scale: 1:250

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1	14.02.2020	Extra MIs Added

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**Client:** Limerick City & County Council

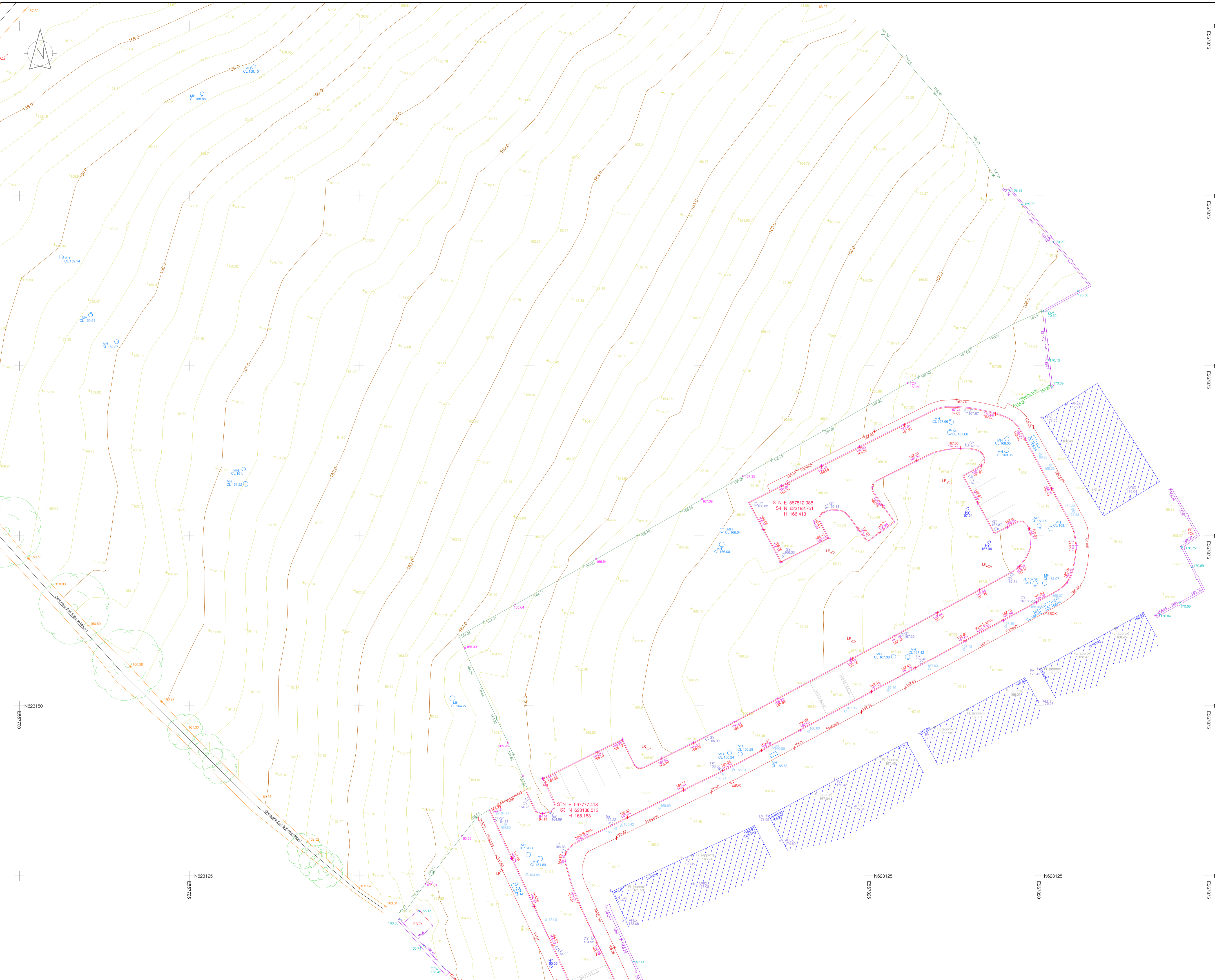
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**Description:** Topographical Survey

**Drawing Number:** MSL32976\_T1\_Rev1

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### LEGEND

#### Street furniture & Services

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5.12 Lift	5.12 Coalface Cover	5.12 UG Car Park Vent	5.12 Waste Bin	5.12 Hydrant
5.12 Barrier	5.12 Bore Hole	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
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5.12 Gas Valve	5.12 Lamp Post	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 Sluice Valve	5.12 Foul Manhole	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 Air Valve	5.12 Surface Water MH	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 Stop Cock	5.12 Manholes	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 C/P Post	5.12 Air Conditioning Vents	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 Marker Post	5.12 Services Inspection Cover	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 Traffic Light	5.12 Cable TV Inspection Cover	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 Parking Meter	5.12 ESB Inspection Cover	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 Plane Aerial Mark	5.12 NTL Inspection Cover	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 Smart Card Validator	5.12 Elcom Inspection Cover	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant
5.12 Unknown Valve	5.12 Rodding Eye	5.12 Fire Hydrant	5.12 Fire Hydrant	5.12 Fire Hydrant

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5.12 Drain	5.12 Spotlight	5.12 Other
5.12 Water Edge / Lake / Pond	5.12 Survey Station	5.12 Survey Station
5.12 Hedge / Trees Dip Line / Vegetation	5.12 Photo point	5.12 Photo point
5.12 Tree Coniferous	5.12 Tree Deciduous	5.12 Top of Tree

#### Built Features

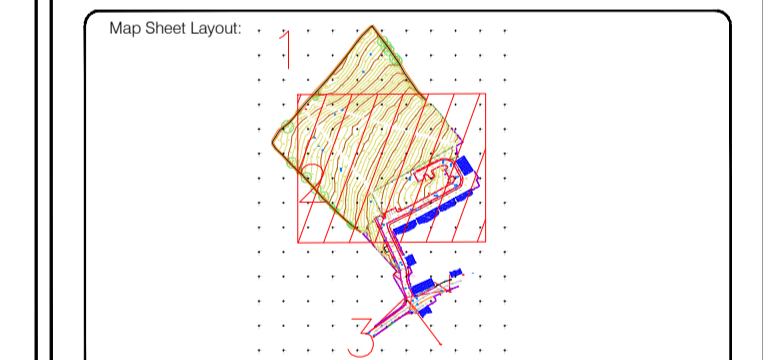
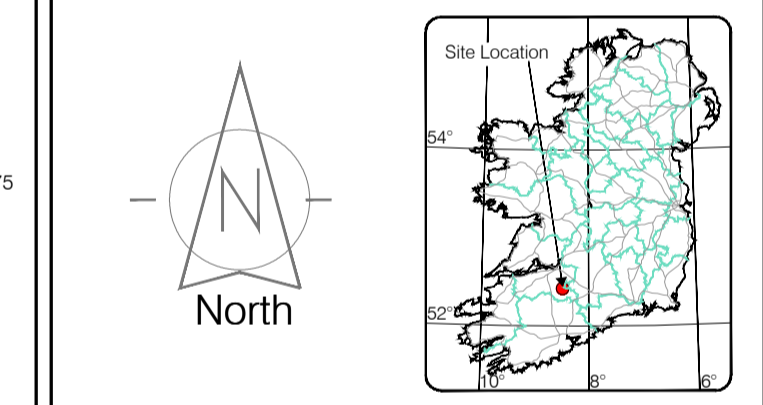
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5.12 Kerb Top	5.12 Top of Wall	5.12 Parapet Height
5.12 Bridge Abutment	5.12 Hoarding	5.12 Bank Level
5.12 Bridge Deck	5.12 Property Line	5.12 Surf Level
5.12 Bridge Pier	5.12 Road Scar	5.12 Concrete Pad
5.12 Building Facade	5.12 Top of Fence	5.12 Track
5.12 Footpath / Platform Train & Tram	5.12 Wall / Retaining Wall	5.12 Wall / Retaining Wall
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5.12 Cycleway / Private Landing Area		

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Checked by: JM	Date: 19.09.2019	Grid System: Irish National Grid (M 2)
	Date: 09.10.2019	

No	Date	Description
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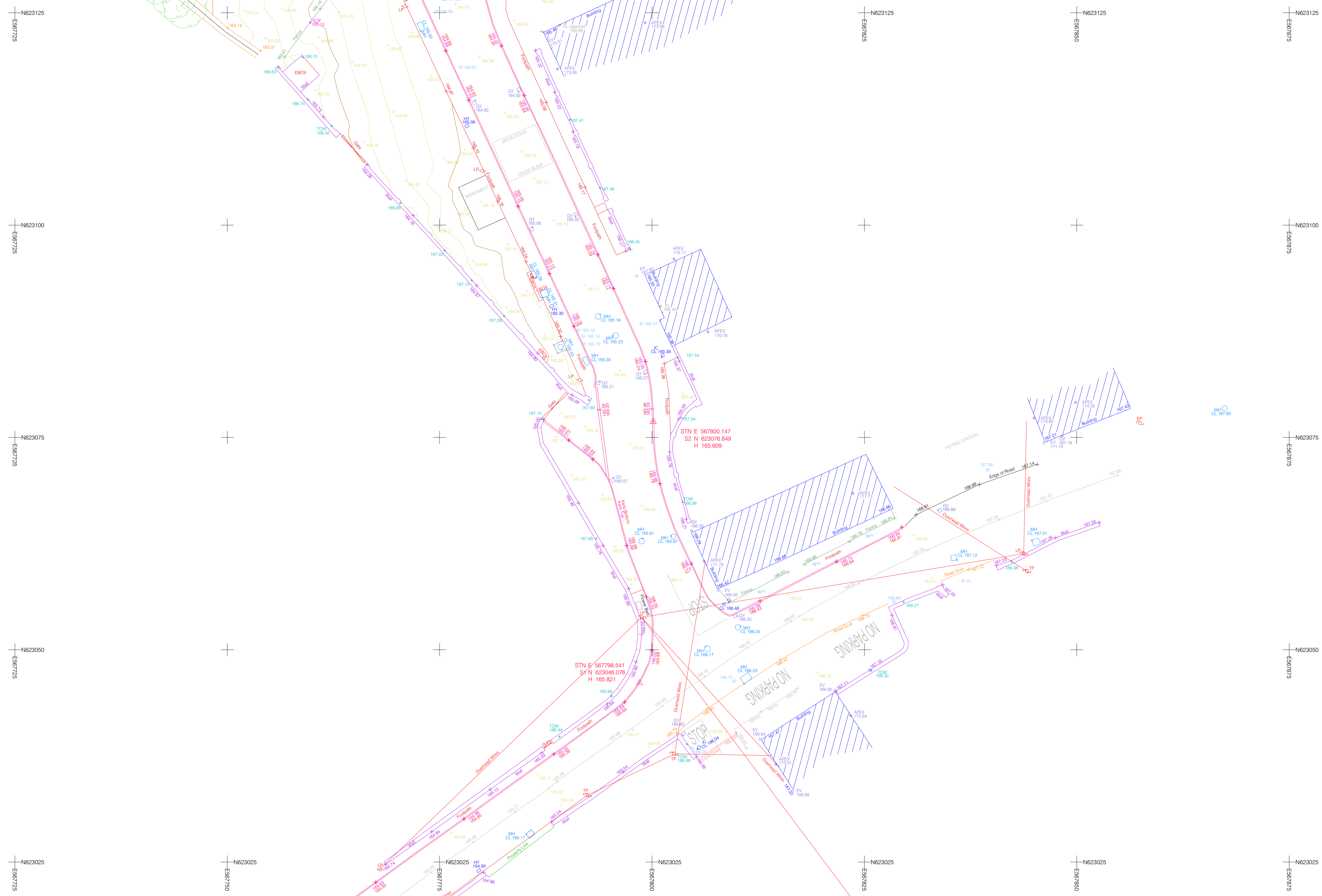
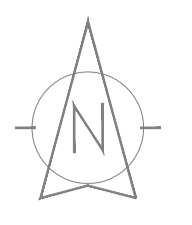
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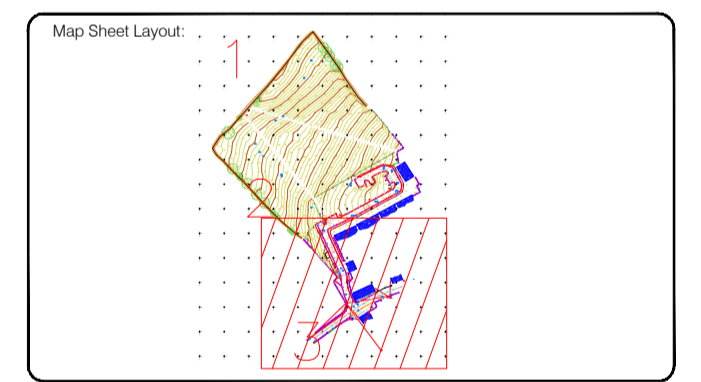
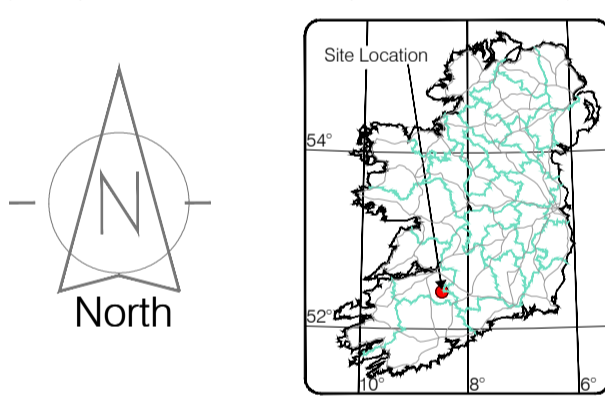
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  - Barrier
  - Pump
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  - Electricity Pole
  - Electricity Pole
  - Electricity Pole
  - CCTV Camera Pole
  - Lamp Post
  - Four Manhole
  - Surface Water MH
  - Manholes
  - Air Conditioning Vents
  - Services Inspection Cover
  - Traffic Inspection Cover
  - Cladding Eye
  - Bench Seat
  - Keek
  - Gully
  - US Co. Park Vent
  - Waste Bin
  - Hydrant
  - Fire Hydrant
  - ESB Box
  - ESB Inspection Cover
  - Traffic Control Box
  - UAS Technical Cabinet
  - Ticket Vending Machine
  - Water Meter Cover
  - Telecom Inspection Cover
  - Monument / Toliers
  - Tank Storage
  - Basement MH, Cover & Pipe
  - Dispersed Aerial Mark
  - Station for sale
  - Pipe Protection
  - Washout
- Natural Features**
- Surface Change
  - Land Drain
  - Bottom of Slope
  - Top of Slope
  - Ditch
  - Water Edge / Lake / Pond
  - Hedge / Trees Dip Line / Vegetation
  - Tree Coniferous
  - Water Level
  - Crown Level
  - Invert level
  - Bed Level
  - Spot Height
  - Top of Tree
- Golf**
- Fair Way
  - Green
  - Tee Box
- Other**
- Survey Station
  - Photo point
- Built Features**
- Roads & Road Markings**
- Building
  - Edge of Road
  - Kerb Bottom
  - Kerb Top
  - Bridge Abutment
  - Bridge Deck
  - Bridge Paving Mark
  - Building Facade
  - Footpath / Platform Train & Tram
  - Damp Proof Course / Verge
  - Bridge Pier / Wall & Gate Piler / UAS Trackbed
  - Cyclway / Private Landing Area
  - Fence
  - Gate
  - Road Centreline
  - Top of Wall
  - Hoarding
  - Property Line
  - Road Scar
  - Top of Fence
  - Wall / Retaining Wall
  - Railway / Train Rail / Gosting / Ramp
  - Building Canopy / Roof / Overhang
  - Floor Level
  - Apex Height
  - Eaves Height
  - Parapet Height
  - Roof Elevation
  - Shop Level
  - Concrete Pad
  - Track

**Murphy Surveys Ltd Disclaimer**

The user or recipient of this survey data understands and acknowledges this data may be inaccurate or contain errors or omissions and the user or recipient assumes full responsibility for any risks or damages resulting from, arising from, or in connection with any use of or reliance upon data displayed herein. Although significant care has been exercised to produce surveys that satisfy survey accuracy standards, these surveys are only as accurate as the source data from which they were compiled. Although all reasonable steps have been taken to locate all features visible at the time of the survey, there is no guarantee that all will be shown on the drawing, as some above ground features may have obstructed the survey. Wherever possible, areas unable to be surveyed will be labelled as "UTS".

The Company shall not be liable for any inaccuracy of the data provided beyond the specified scale or accuracy, or for any matters resulting from their use for purposes other than that stated in the Contract. No liability shall attach to the Surveyor in respect of any consequential loss or damages suffered by the Client.

The Client must promptly notify the Company of any errors in mapping of which it becomes aware. If misleading, inaccurate or otherwise inappropriate information is brought to the Company's attention or the Company itself identifies any such inaccuracy or error in a survey, it shall use its reasonable endeavours to fix or remove it and if necessary in certain instances, the Company being on notice of any such misleading, inaccurate or otherwise inappropriate information, it will re-conduct the survey and reproduce the data to within the specified scale or accuracy.



Surveyed by: JN, BN	Date: 13.09.2019	Datum: Main Head
Drawn by: JN	Date: 19.09.2019	Grid System: UTM
Checked by: JN	Date: 09.10.2019	Irish National Grid: [ ] [ ] [ ]
Revisions		
No	Date	Description
0	09.10.2019	First Drawing
1	14.02.2020	Extra Mhrs Added

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**EUROPEAN GPR ASSOCIATION**

**RICS**

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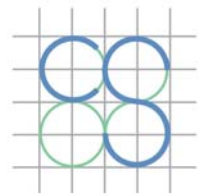
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Kilcullen Co. Kildare  
Ireland

Phone: (+353) 045 484040  
Fax: (+353) 045 484004  
Email: info@murphysurveys.ie

<b>Client:</b>	Limerick City & County Council
<b>Project:</b>	Topo+Utility_Surveys_19099_Kilfinnane_Limerick
<b>Date:</b>	09.10.2019
<b>Scale:</b>	1:250@A1
<b>Description:</b>	Topographical Survey
<b>Drawing Number:</b>	<b>MSL32976_T3-Rev1</b>

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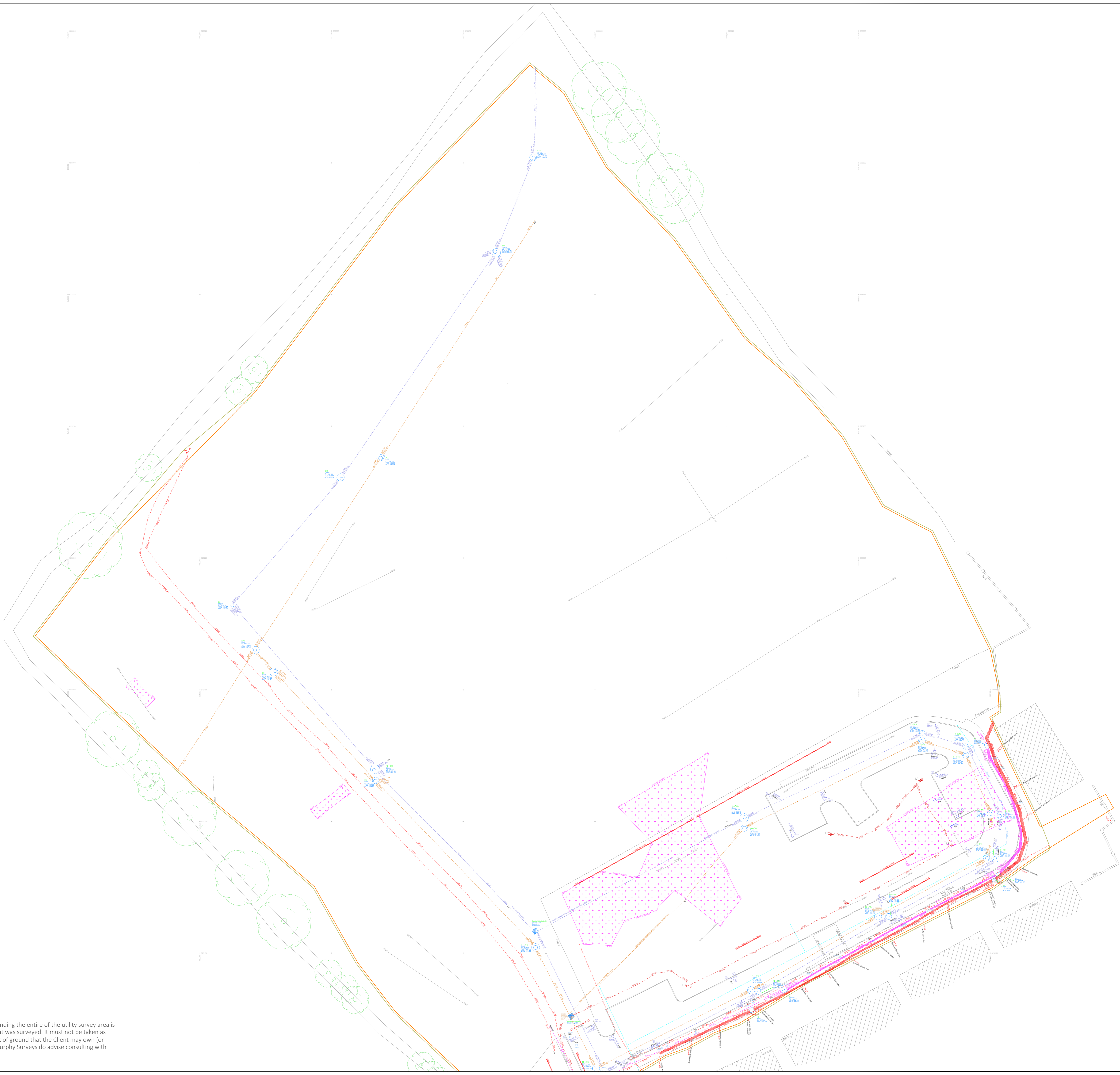
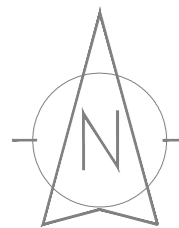


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## Appendix B: GPR Surveys





**LEGEND**  
**Underground Utilities**

Water Main	Gas
Fire Water	Hydrogen Pipe
Process Water	Oil Pipe
Storm Water Drainage	Magnet
Foul Sewer	Adshel
Combined Sewer	Traffic
Manhole Chamber	Heating Pipe
Telecom	Electrical
NTL/Wigh	Public Lighting
ENET/OCEAN	GPR Anomaly
BT/ESAT	Unknown Cable
Cable	Unknown Duct
Bend / Leak	Nitrogen Pipe
Oxygen Pipe	Unidentified Service
Photo point	WELD Weld Point
Depth from ground level to Top of Pipe (GPR Target line)	UTD Manhole / Inspection Cover
Reinforced Concrete (GPR)	Possible Stub (GPR)
Other observations - see description (GPR)	

ST Survey Station

The orange line, as shown, on this particular drawing and bounding the entire of the utility survey area is merely for the purpose of indicating the extent of the area that was surveyed. It must not be taken as being commensurate with the extents of the entire of the plot of ground that the Client may own [or not]. In order to establish the ownership of the survey area Murphy Surveys do advise consulting with your Client and their legal team.

**Murphy Surveys Ltd. Disclaimer**

The survey aims to map all existing utilities and sub surface structures and provide information with respect to pipe size, material type and change connectivity. However GPR surveying is limited by the following guidelines and it may not be possible to accurately survey, define and locate all services and sub surface features.

- Locational accuracy is determined by referring to the manufacturers guidelines for the detectors used.
- Existing record information showing underground services is often incomplete and unknown accuracy; therefore it should be regarded only as an indication.
- In ideal conditions these spatial accuracies for the underground utilities are +/- 5% for the R10000 and +/- 10% for the GPR to 2.5m deep. However, variations within the subsurface may alter this estimated accuracy.
- Although all reasonable steps have been taken to locate all features, there is no guarantee that all will be shown on the drawings as some above ground features may have obstructed the survey.
- GPR surveying operates best within high resistivity material. Clay overburden can impair GPR surveying.
- Due to the attenuation of the radar signal with depth, resolution is restricted, hence making identification of anomalies difficult with increasing depth.
- The depth penetration and quality of the data depends on the ground conditions on the site. Poor data may be a result of areas with high conductivity. Also, high reflective materials close to the surface (i.e. rebar) may hide deeper anomalies.
- It is not always possible to trace the entire length of each underground service.
- It is always our intention to use the Utility providers' details, if supplied prior to survey commencement as a guide for location purposes. However, should we not be able to locate those guided services we shall not be held responsible for the accuracy, or otherwise, of the location of that service, as issued by the utility provider and therefore shown "Taken from Records" on the drawing and we are not liable for any loss that may arise due to the lack of accuracy in the guided information.
- Unless otherwise stated, all services and sub surface structures shown on Murphy Surveys Limited plans/drawings have been surveyed using approved detectors and the connections between manholes, if not traced, are assumed to run straight.
- Plan accuracies of the order of + or - 150mm may be achieved but this figure will depend on the depth of the service below ground level. Where similar services run on close proximity, separation may be impossible. Successful tracing of non metallic pipes may be limited.
- Please note that not all buried pipes, cables and ducts can be detected and mapped in consideration of their depth, location, material type, geology and proximity to other utilities. Even an appropriate and professionally executed survey may not be able to achieve a 100% detection rate.
- Services which have been untraceable are shown from Records where possible.
- DP represents distance from the surface level to the top of the service/radar.

No allowance has been made within our quotation, unless otherwise stated, for the location and mapping of undetected services. Failure to detect or fully map any declared service will be recorded within the notes accompanying our final drawings.

Where technically possible, depth indications will be given. These should be used for guidance only and whenever critical accuracy is required these should be confirmed by the Client by undertaking test excavations or similar. Berds, lateral service connections, or the close proximity of other services and local magnetic, atmospheric or ground conditions, could in certain situations influence the accuracy of the plan and depth indication facility. Depths will not be provided unless we are reasonably confident of their validity.

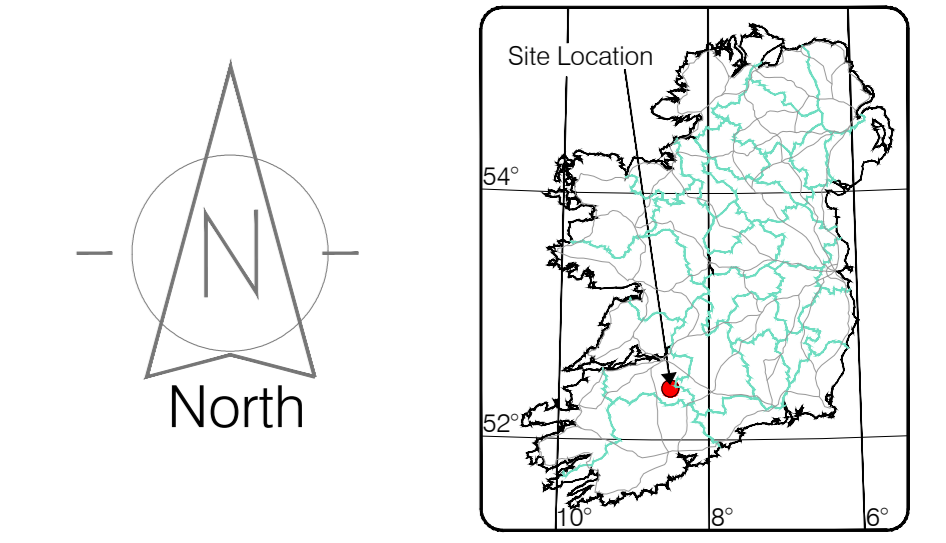
Where Murphy Surveys Limited issues a CAD drawn utility service plan, this should be read in conjunction with all available public utility records etc. As part of our extensive Quality Control procedures, Murphy Surveys Limited Endeavour to add relevant Public Utility record information onto the final issue drawing. An allowance should be made for the width of services, particularly where these are laid in bands or are of significant size etc. For clarification or appropriate easement bands, we would recommend that direct contact is made with the Asset Owner or Statutory Undertaker.

We exclude the following, except where otherwise specified and possible to do so:

- All private service connections, (including water or gas fittings where no through flow of applied signal is possible).
- Flat ended or disconnected cables or terminated short lengths of pipe.
- Internal building services.
- Fibre optic cables (except where laid with a standard communications cable or built in tracer wire or similar conductor system) or can be clearly located using ground penetrating radar.
- Small diameter cables less than 17mm diameter, or pipes less than 38mm diameter.
- Above ground services unless specifically requested.
- Lifting manhole covers which require longer than 10 minute effort using standard heavy duty lifting apparatus.
- Services positioned directly below other pipes or cables etc (i.e. masking signal) - intrusive verification options available on request.
- Deep non metallic pipes, ducts or culverts (unless probing or Pipe Track 3d is specified as part of the fully (remote) survey option).
- Passing through defective pipework (displaced joints etc) or acute bends between access points.

Please note that our Quotation does not allow for location of individual service heads to properties unless reasonable to do so, as access would be required into each property to apply direct connections to riser points and this would significantly increase the scope of work, survey cost and also cause possible disruption to occupants.

All work carried out by Murphy Surveys Limited (MSL) conforms to the guidelines set out by The Survey Association (TSA).



Drawn by: T.J.O.L.	Date: 07.10.2019	Drawn: M.J.H.
Checked by: J.M.	Date: 10.10.2019	Grid System: Irish National Grid
Revision:		
No	Date	Description
0	10.10.2019	First Drawing
1	14.02.2020	Revised Survey by W.S. Additional PIP added from CD Environmental DCU Survey

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**THE SURVEY ASSOCIATION**  
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Phone: (+353) 045 484040  
Fax: (+353) 045 484004  
Email: info@murphysurveys.ie

**Client:** Limerick City & County Council

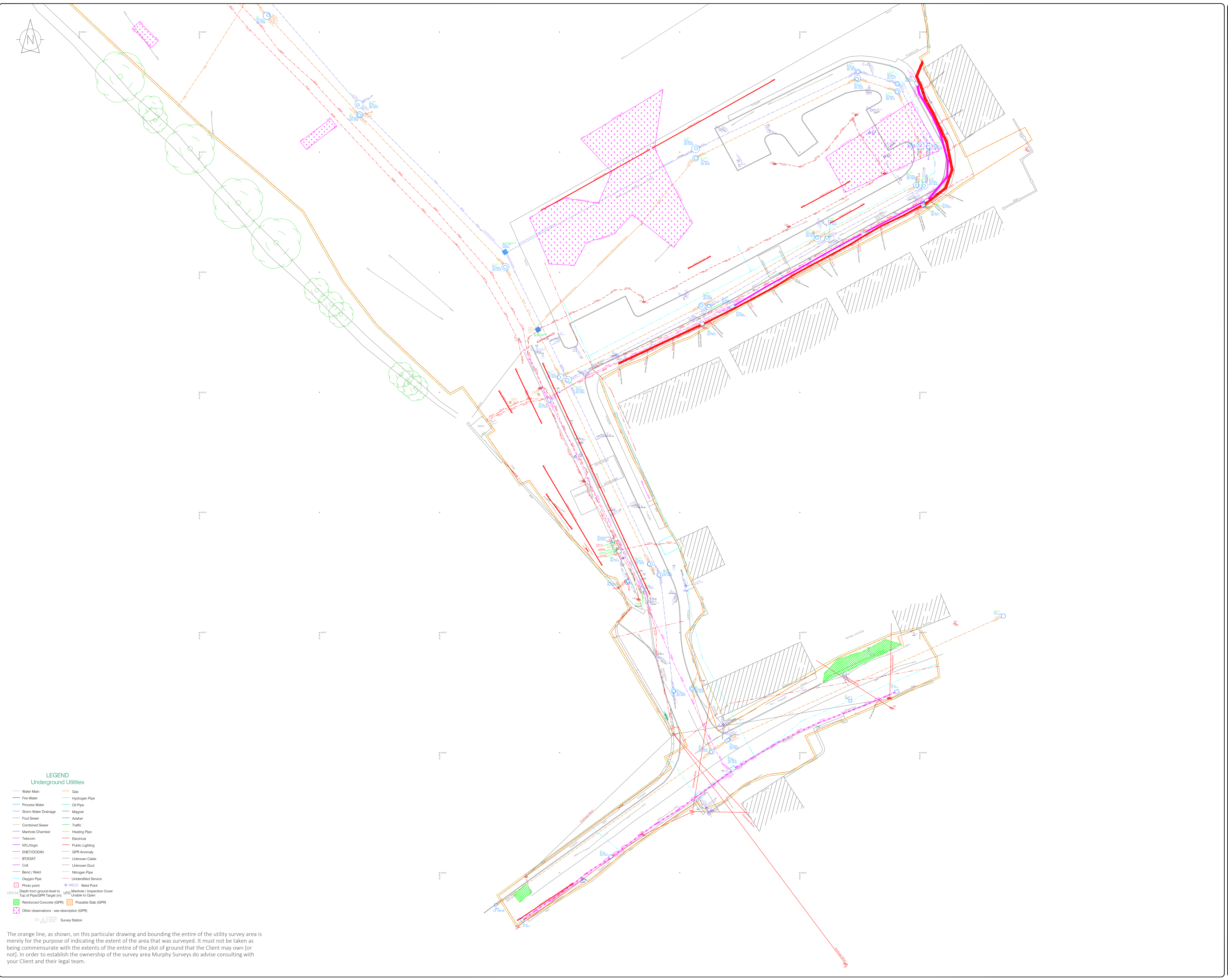
**Project:** Topo+Utility Surveys 19099 Kilfinnane,Limerick

**Date:** 14.02.2020 **Scale:** 1:250@A0

**Description:** Utility Survey

**Drawing Number:** MSL32976\_U\_Rev.1

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**LEGEND**  
Underground Utilities

Water Main	Gas
Fire Water	Hydrogen Pipe
Process Water	Oil Pipe
Storm Water Drainage	Magnet
Foul Sewer	Adshel
Combined Sewer	Traffic
Manhole Chamber	Heating Pipe
Telecom	Electrical
NTL/Wirgin	Public Lighting
ENET/OCEAN	GPR Anomaly
BT/ESAT	Unknown Cable
Cable	Unknown Duct
Bend / Well	Nitrogen Pipe
Oxygen Pipe	Unidentified Service
Photo point	WELD
Weld Point	Weld Point

Depth from ground level to Top of Pipe/GPR Target (m)  
 - Upto Marhole / Inspection Cover  
 - Unable to Open  
 - Possible Stub (GPR)  
 - Other observations - see description (GPR)

Survey Station

The orange line, as shown, on this particular drawing and bounding the entire of the utility survey area is merely for the purpose of indicating the extent of the area that was surveyed. It must not be taken as being commensurate with the extents of the entire of the plot of ground that the Client may own [or not]. In order to establish the ownership of the survey area Murphy Surveys do advise consulting with your Client and their legal team.

**Murphy Surveys Ltd. Disclaimer**

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- It is not always possible to trace the entire length of each underground service.
- It is always our intention to use the Utility providers' details, if supplied prior to survey commencement as a guide for location purposes. However, should we not be able to locate those guided services we shall not be held responsible for the accuracy, or otherwise, of the location of that service, as issued by the utility provider and therefore shown "Taken from Records" on the drawing and we are not liable for any loss that may arise due to the lack of accuracy in the guided information.
- Unless otherwise stated, all services and sub surface structures shown on Murphy Surveys Limited plan drawings have been surveyed using approved detectors and the connections between manholes, if not traced, are assumed to run straight.
- Plan accuracies of the order of + or - 150mm may be achieved but this figure will depend on the depth of the service below ground level. Where similar services run on close proximity, separation may be impossible. Successful tracing of non metallic pipes may be limited.
- Please note that not all buried pipes, cables and ducts can be detected and mapped in consideration of their depth, location, material type, geology and proximity to other utilities. Even an appropriate and professionally executed survey may not be able to achieve a 100% detection rate.
- Services which have been untraceable are shown from Records where possible.
- DP represents distance from the surface level to the top of the service/rebar.

No allowance has been made within our quotation, unless otherwise stated, for the location and mapping of unlocated services. Failure to detect or fully map any declared service will be recorded within the notes accompanying our final drawings.

Where technically possible, depth indications will be given. These should be used for guidance only and whenever critical accuracy is required these should be confirmed by the Client by undertaking trial excavations or similar. Berds, lateral service connections, or the close proximity of other services and local magnetic, atmospheric or ground conditions, could in certain situations influence the accuracy of the plan and depth indication facility. Depths will not be provided unless we are reasonably confident of their validity.

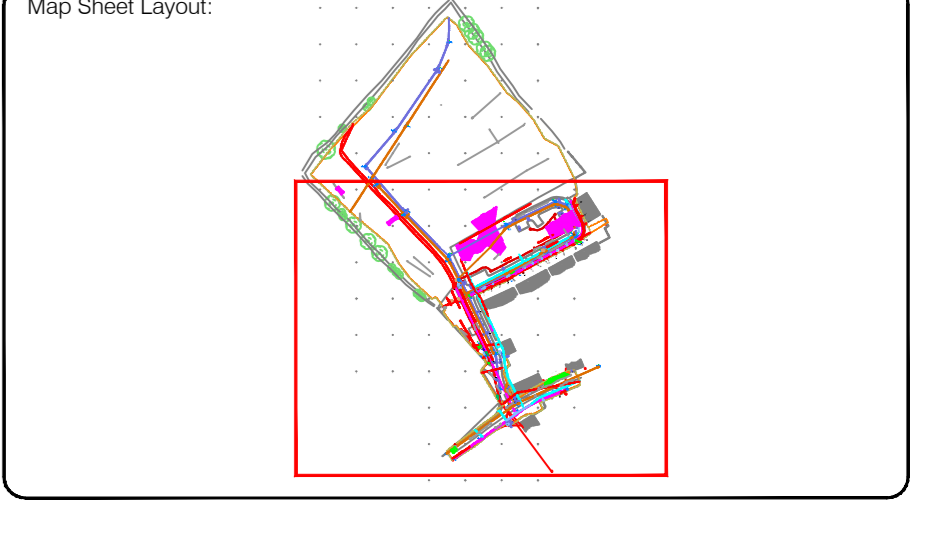
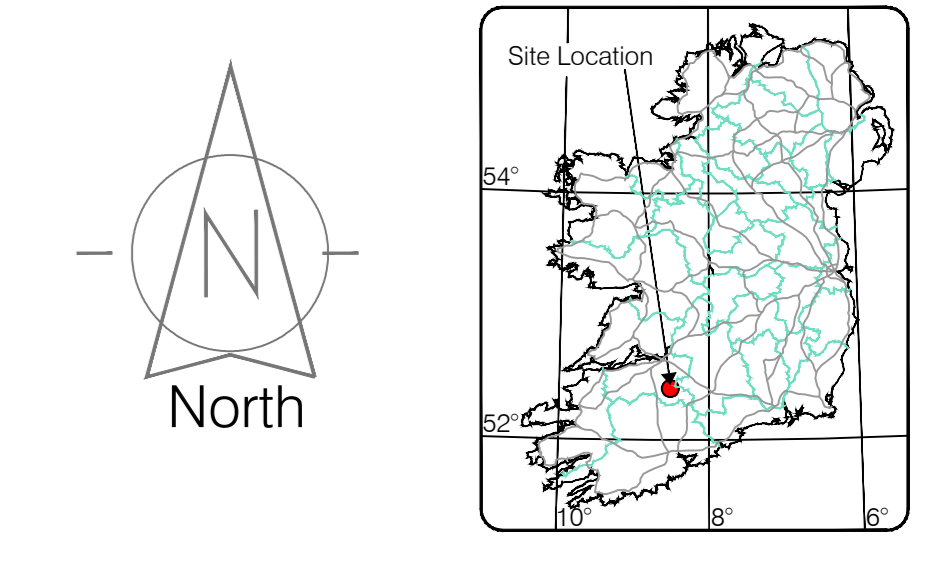
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- Small diameter cables less than 17mm diameter, or pipes less than 38mm diameter.
- Above ground services unless specifically requested.
- Lifting manholes covers which require longer than 10 minute effort using standard heavy duty lifting apparatus.
- Services positioned directly below other pipes or cables etc (i.e. masking signal) - intrusive verification options available on request.
- Deep non metallic pipes, ducts or culverts (unless probing or Pipe Track 3d is specified as part of the fully (invasive) survey option).
- Passing through selective pipework (displaced joints etc) or acute bends between access points.

Please note that our Quotation does not allow for location of individual service heads to properties unless reasonable to do so, as access would be required into each property to apply direct connections to riser points and this would significantly increase the scope of work, survey cost and also cause possible disruption to occupants.

All work carried out by Murphy Surveys Limited (MSL) conforms to the guidelines set out by The Survey Association (TSA).



Drawn by	T.J.O.L.	Date	07.10.2019	Drawn by	T.J.O.L.	Date	07.10.2019
Checked by	J.M.	Date	10.10.2019	Checked by	J.M.	Date	10.10.2019

Revisions

No	Date	Description
0	10.10.2019	First Drawing
1	14.02.2020	Revised Survey by W.L. Addressed RFI raised from CD Environmental DCU Survey

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Phone: (+353) 045 484040  
Fax: (+353) 045 484004  
Email: info@murphysurveys.ie

**Client:** Limerick City & County Council

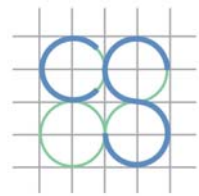
**Project:** Topo+Utility Surveys 19099 Kilfinnane,Limerick

**Date:** 14.02.2020 **Scale:** 1:250@A0

**Description:** Utility Survey

**Drawing Number:** MSL32976\_U\_Rev.1

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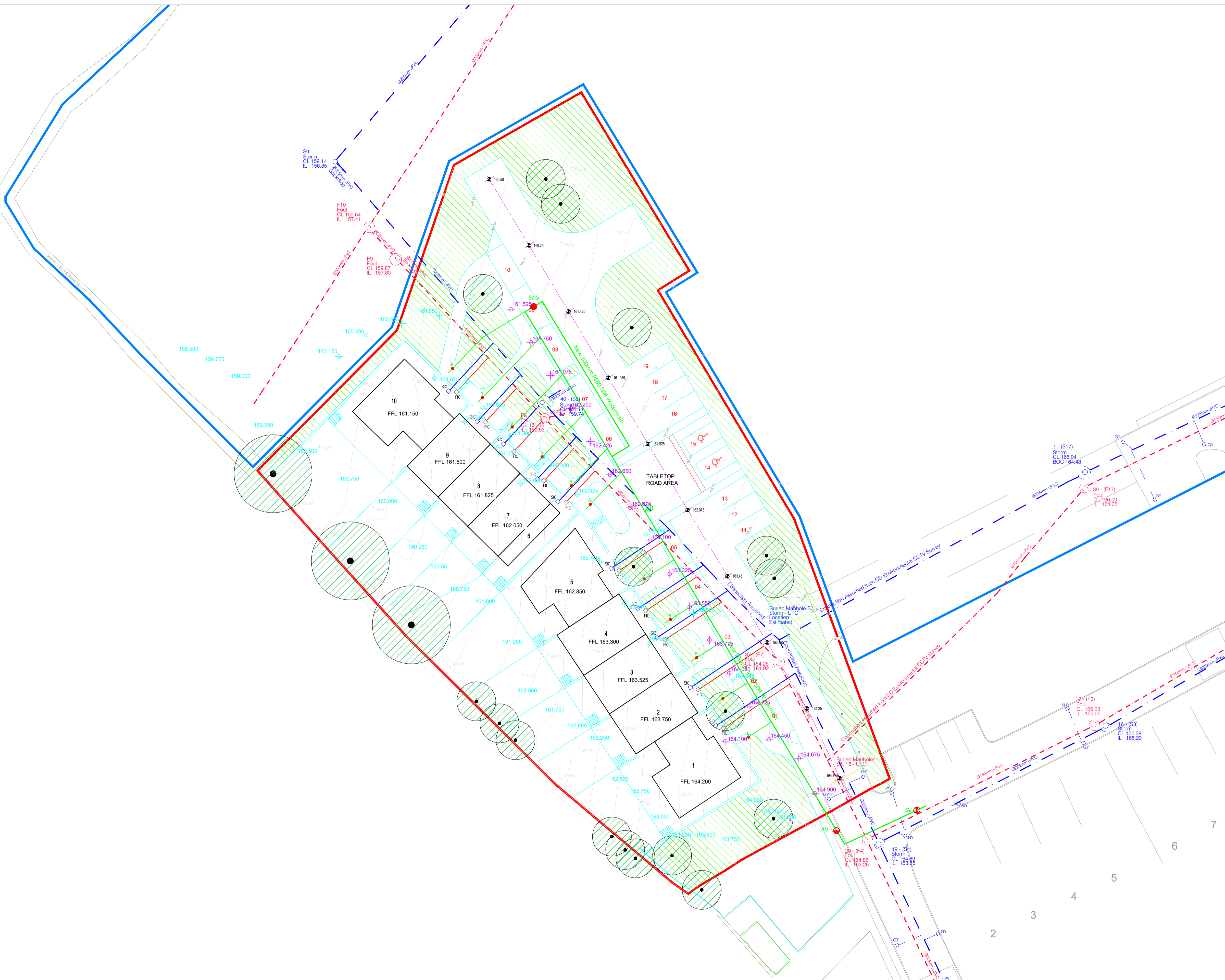


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## Appendix C: CSC drawing no. L097L-001 Site Layout, Drainage & Watermain Layout





**LEGEND**

1. EXISTING PUBLIC WATERMAINS	
2. EXISTING PRIVATE WATERMAINS	
3. PROPOSED WATERMAINS	
4. SLUICE VALVE TO IRISH WATER STANDARD DETAIL STD-W-15	
5. AIR VALVE TO IRISH WATER STANDARD DETAIL STD-W-22	
6. HYDRANT TO IRISH WATER STANDARD DETAIL STD-W-19	
7. SCOUR VALVE TO IRISH WATER STANDARD DETAIL STD-W-30	
8. BULK METER TO IRISH WATER STANDARD DETAIL STD-W-26	
9. THRUST BLOCK	
10. BOUNDARY BOX	
11. EXISTING PUBLIC FOUL SEWER	
12. EXISTING PRIVATE FOUL SEWER	
13. PROPOSED FOUL SEWER	
14. EXISTING STORM SEWER	
15. PROPOSED STORM SEWER	
16. PROPOSED ATTENUATION	
17. MANHOLE REF, COVER LEVEL AND INVERT LEVEL	
18. SITE BOUNDARY	

- WATERMAIN NOTES**
- All pipe work, valves, chambers, network arrangements and all associated watermain works to be in accordance with Irish Water Codes of Practice and Standard Details.
  - All new watermain material shall be in accordance with Section 3.9 of the Irish Water Code of Practice.
  - All manholes in grassed areas to have 200mm wide x 100mm deep concrete plinth/kerb cast to their perimeter to ensure they are not overgrown. Concrete to be grade C20/25.
  - Meters for apartments and similar properties shall be installed internally within the premises in accordance with the Building Control Authority's requirements and subject to review by Irish Water as per section 3.15.2 of the Code of Practice.
  - Proposed watermains to be located a minimum of 300mm from the wastewater infrastructure in accordance with section 3.5.18 of the 3.15.18 of the Irish Water Wastewater Code of Practice.
  - The location of the bulk meter, valves and hydrants shall be designed in accordance with section 3.15.4 of the Irish Water Code of practice.
  - Note the Fire Safety Certificate has not been completed yet, but as part of this development, it is confirmed that hydrants shall not be located any more than 46m from any part of the development.
  - All watermain works to be taken in charge to be air pressure tested in accordance with Irish Water Code of Practice Section 4.10.

- FOUL SEWER NOTES**
- All works will be carried out in accordance with the requirements of Irish Water Codes of Practice for Wastewater.
  - Finished Floor Leves to be finalised with Architect.
  - All manholes in grassed areas to have 200mm wide x 100mm deep concrete plinth / kerb cast to their perimeter to ensure they are not overgrown. Concrete to be grade C20/C25.
  - External face of all proposed manhole chambers to be minimum 0.5 metre from the kerb line and the external face of the sewers to be minimum 1.0 metre from the kerb line.
  - New manholes constructed over existing Irish Water public sewer to be constructed to Irish Water Standards STD-WW-09, STD-WW-10, AND STD-WW-11
  - Concrete surround in accordance with Irish Water standard detail STD-WW-07 and STD-WW-08 to be provided to all sewers where minimum cover (900mm) is not achieved - note the absolute minimum depth of cover above the external crown of the pipe shall be 750mm.
  - All foul sewer pipe materials shall be in compliance with section 3.13 of the Irish Water Code of Practice for Wastewater.

**NOTES**

- For setting out refer to Architect's drawings.
- This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
- DO NOT SCALE THIS DRAWING. Use figured dimensions only.
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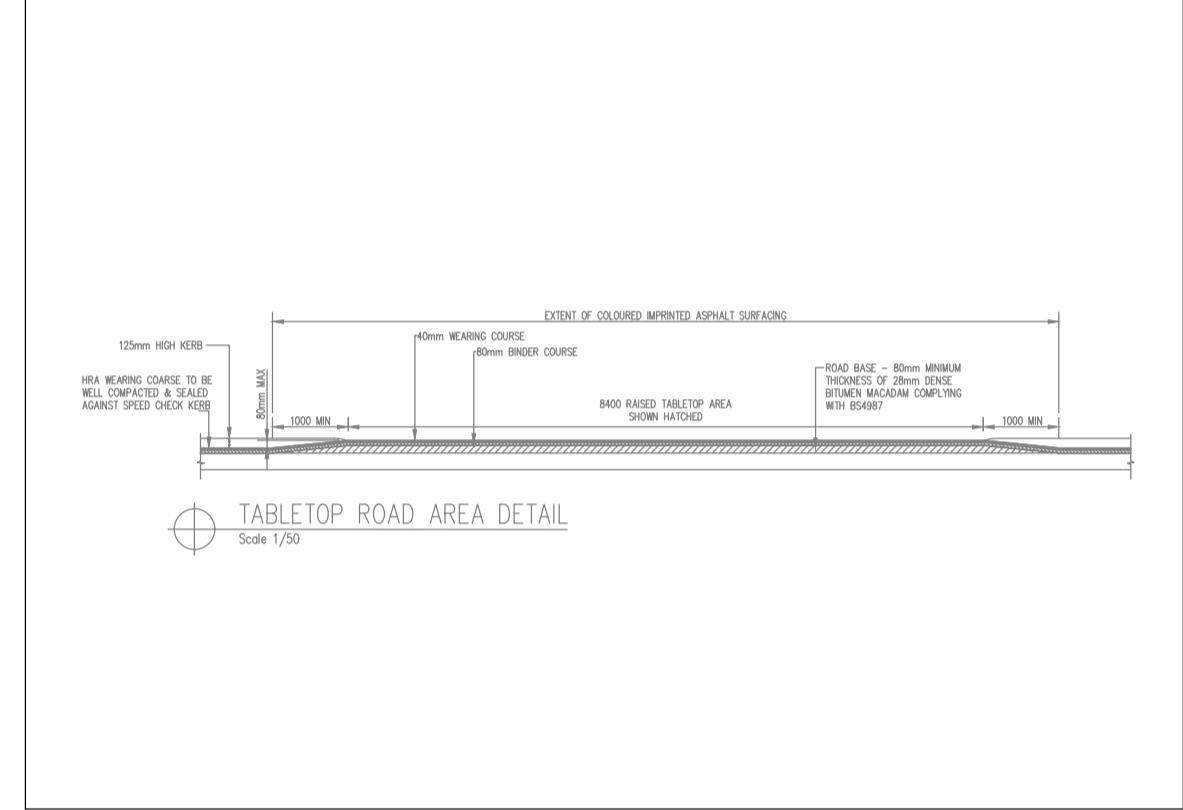
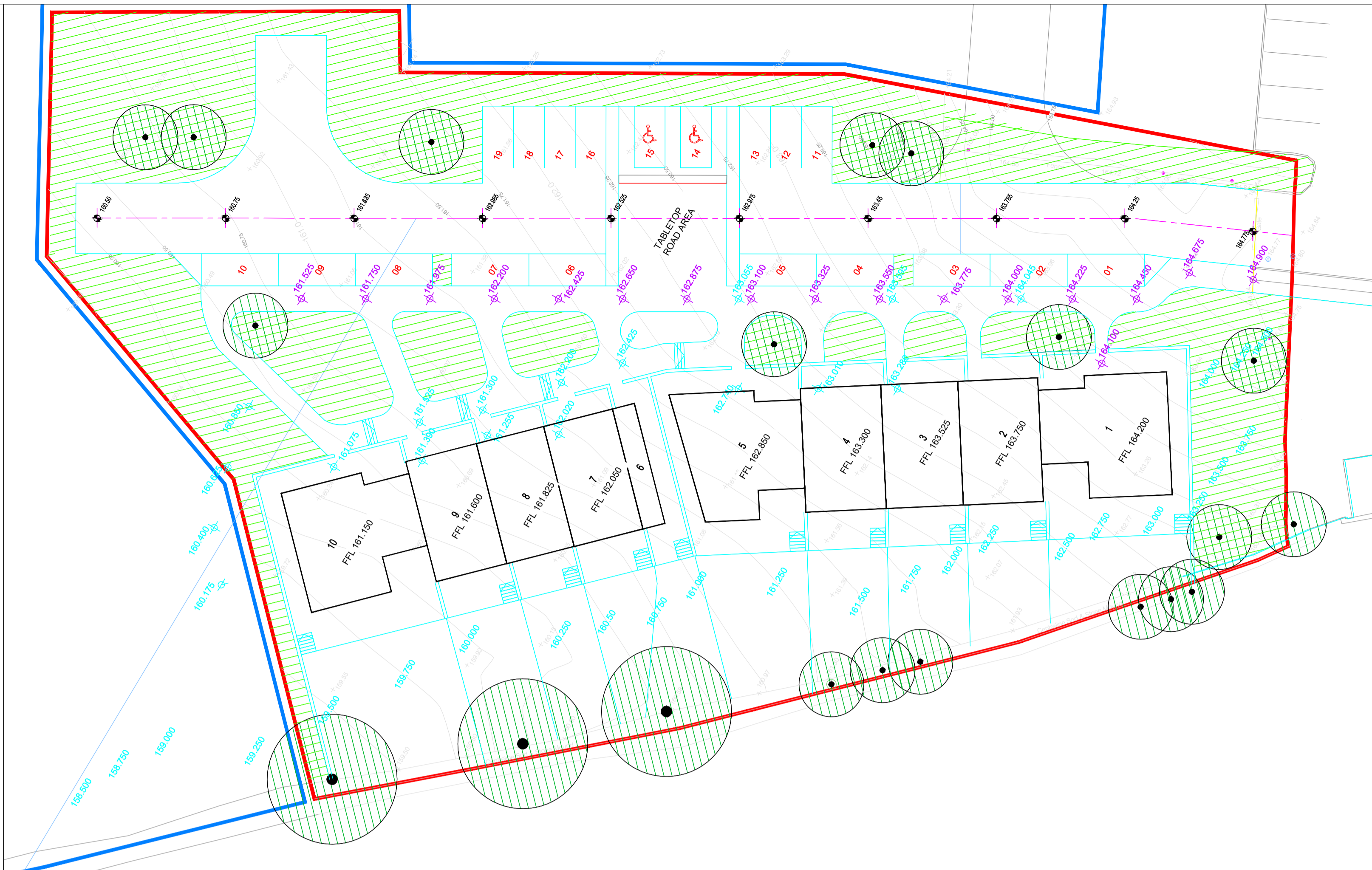
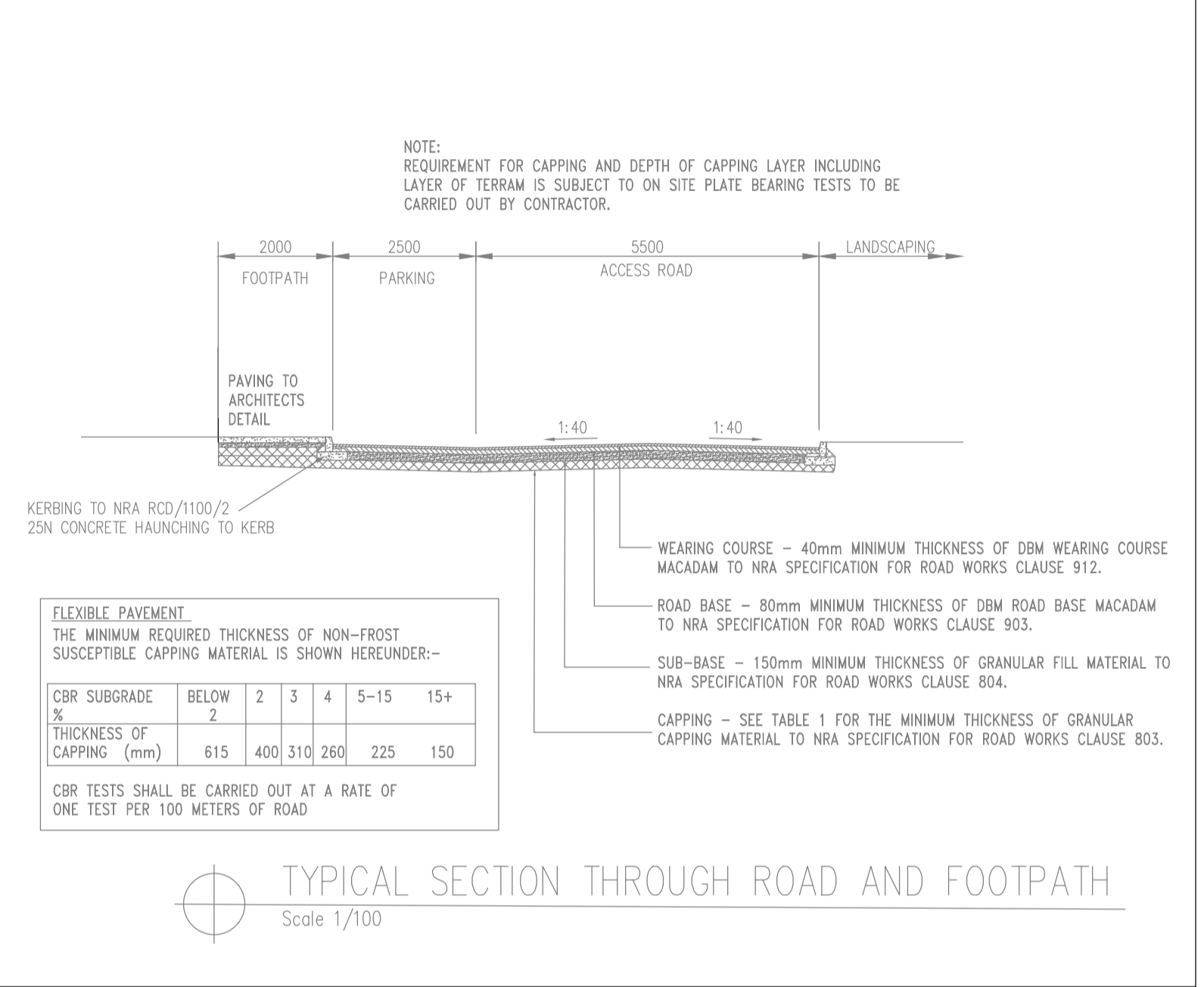
Rev. No.	Date	REVISION NOTE	Drn. By	Chkd. By
P2	17.11.2021	PART 8 SUBMISSION	NQ	GC

Client	Limerick City & County Council
Project	Radharc Cillín Kilfinane, Co.Limerick.
Title	Site Layout Stormwater, Foul and Water Layout
Drn. by	NQ
Chkd. by	DF
Apprd. by	GC
Date	JUNE 2021
Scale	1:250, 1:50
Drwg. No.	<b>L097L-001</b>
Revision	<b>P2</b>

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 W: www.cscconsulting.ie

Quality Environment Energy Health & Safety  
 I.S. EN ISO 9001:2008  
 I.S. EN ISO 14001:2004  
 I.S. EN ISO 50001:2011  
 OHSAS 18001:2007





CHAINAGE	EXISTING GROUND LEVEL	PROPOSED ROAD LEVEL
90.00	160.035	160.050
80.00	160.750	160.750
70.00	161.250	161.425
60.00	161.600	161.885
50.00	162.150	162.525
40.00	162.650	162.975
30.00	163.250	163.450
20.00	164.200	163.785
10.00	164.550	164.250
0.00	164.750	164.775

DATUM 150.00

**NOTES**

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- This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
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Rev. No.	Date	REVISION NOTE	Drn. By	Chkd. By
P1	17.11.2021	PART 6 SUBMISSION	NQ	GC

Client	Limerick City & County Council	
Project	Radharc Cillín Kilfinane, Co.Limerick.	
Title	Site Layout Road Layout Longitudinal Section and Cross Section	
Drn. by	Chkd. by	Apprd. by
NQ	DF	GC
Date	Scale	1:250, 1:50
Nov 2021		
Design No.	Revision	
L097L-002	P1	

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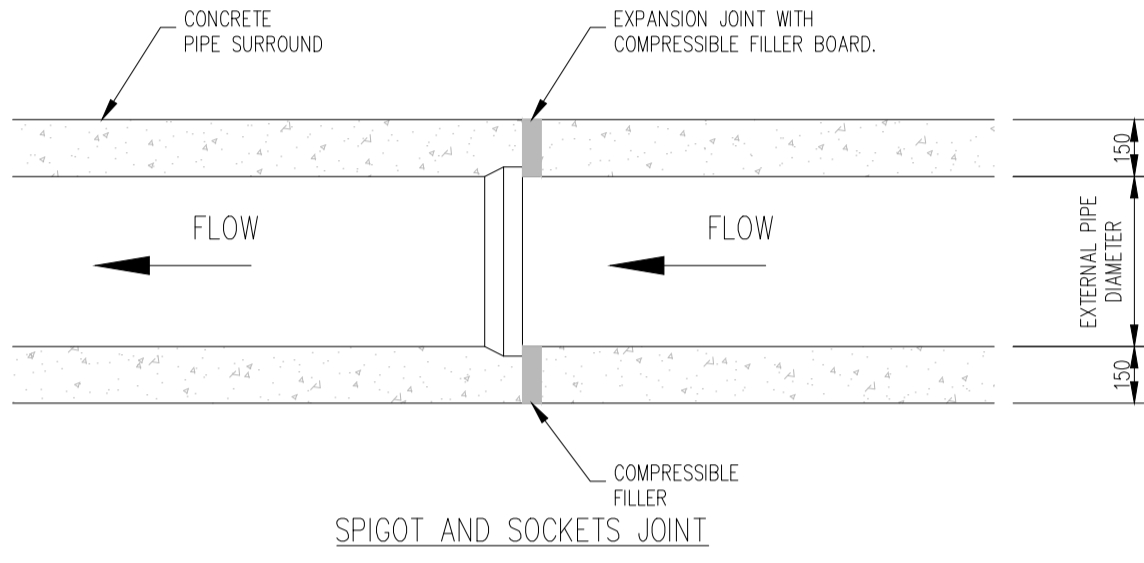
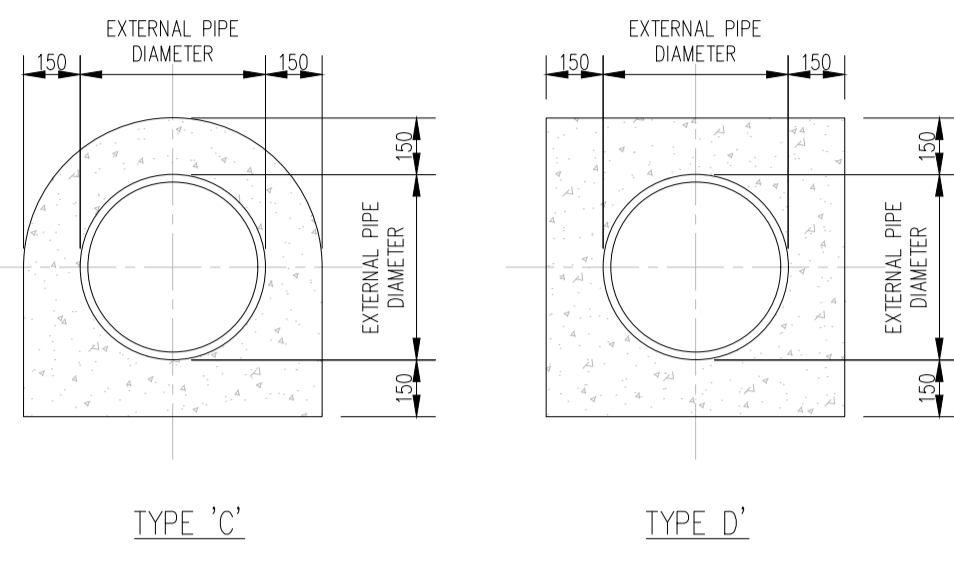
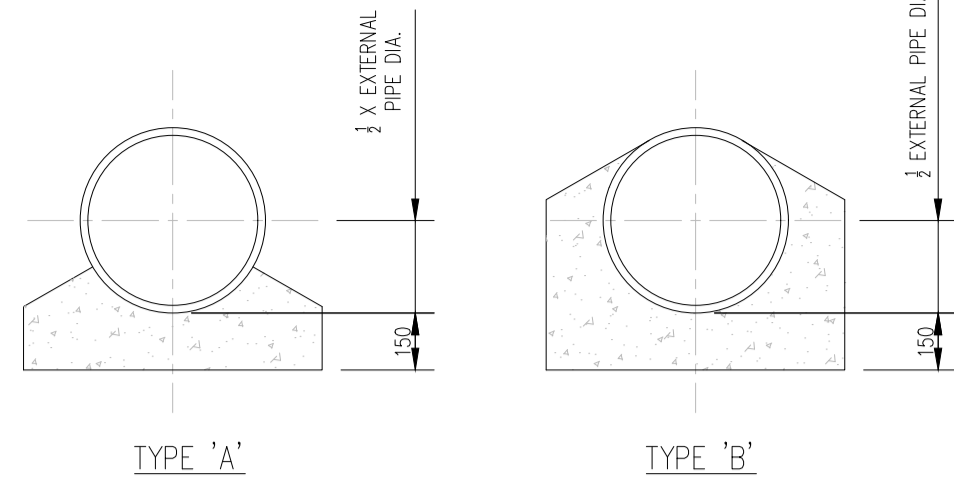
Quality Environment I.S. EN ISO 9001:2008  
Energy I.S. EN ISO 14001:2004  
Health & Safety I.S. EN ISO 50001:2011  
OHSAS 18001:2007

**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
- THE MINIMUM DEPTH OF COVER FROM THE FINISHED SURFACE TO THE CROWN OF GRAVITY PIPES WITHOUT PROTECTION SHOULD BE AS FOLLOWS:
  - A. GARDENS AND PATHWAYS WITHOUT ANY POSSIBILITY OF VEHICULAR ACCESS - DEPTH NOT LESS THAN 0.5M (THIS WOULD NORMALLY RELATE TO DRAINS IN PRIVATE PROPERTY, SHALLOW PIPES OF THIS NATURE ARE UNDESIRABLE AND SHOULD BE INSTALLED IN ACCORDANCE WITH THE CURRENT BUILDING REGULATIONS).
  - B. DRIVEWAYS, PARKING AREAS AND YARDS WITH HEIGHT RESTRICTIONS TO PREVENT ENTRY BY VEHICLES WITH A GROSS VEHICLE HEIGHT IN EXCESS OF 7.5 TONNES - DEPTH NOT LESS THAN 0.75m.
  - C. DRIVEWAYS, PARKING AREAS AND NARROW STREETS WITHOUT FOOTWAYS (EG MEWS DEVELOPMENTS) WITH LIMITED ACCESS FOR VEHICLES WITH A GROSS VEHICLE HEIGHT IN EXCESS OF 7.5 TONNES - DEPTH NOT LESS THAN 0.9m.
  - D. DEPTHS OF SEWERS IN GATED ESTATES SHALL BE SIMILAR TO THAT OUTLINED ABOVE.
  - E. AGRICULTURAL LAND AND PUBLIC OPEN SPACE - DEPTH NOT LESS THAN 0.9m.
  - F. OTHER HIGHWAYS AND PARKING AREAS WITH UNRESTRICTED ACCESS TO VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES - DEPTH NOT LESS THAN 1.2m.
- CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS IS TO BE USED AS BACKFILL MATERIAL WHERE THE SEWER 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 808 IS TO BE COMPACTED AS PER CLAUSE 802 OF THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS.
- PIPE BEDDING SHALL COMPLY WITH IWS 4-08-02 AND IEN 4-08-01 GRANULAR MATERIAL SHALL BE 14mm TO 5mm GRADED AGGREGATE OR 10MM SINGLE SIZED AGGREGATE IS EN 13242. CONCRETE BED, HAUNCH & SURROUND, WHERE REQUIRED, SHALL BE TO STD-WW-08.
- IN SOFT GROUND CONDITIONS (CBR < 5) THE MATERIAL SHOULD BE EXCAVATED AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 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.
- IN GREEN FIELD AREAS, TYPE B BACKFILL (SELECTED EXCAVATED MATERIAL) WILL BE ALLOWED ABOVE THE SIDE HAUNCH GRANULAR MATERIAL IN THE CASE OF RIGID PIPES. A GRANULAR SURROUND OF A MINIMUM DEPTH OF 150mm ABOVE THE CROWN OF THE PIPE IS REQUIRED FOR FLEXIBLE PIPES, AND TYPE B MATERIAL MAY BE USED AS BACKFILL ABOVE THIS. ALL RISING MAINS IN GREENFIELD AREAS SHALL HAVE A MINIMUM COVER OF 300mm OF GRANULAR MATERIAL ABOVE THE EXTERNAL CROWN OF THE PIPE.
- PIPES SHALL NOT BE SUPPORTED ON STONES, ROCKS OR ANY HARD OBJECTS AT ANY POINT ALONG THE TRENCH, ROCK SHALL BE EXCAVATED TO A DEPTH OF 150mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS. THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL.
- NON DEGRADABLE MARKER TAPE SHOULD BE INSTALLED AT TOP OF PIPE BEDDING LAYER. IN THE CASE OF NON-METAL PIPE MATERIAL, THE MARKER TAPE SHOULD INCORPORATE A TRACE WIRE WHICH IS LINKED TO FITTINGS AND TERMINATED AT THE WASTE WATER PUMPING STATION AND THE DISCHARGE MANHOLE.
- TRENCH WIDTHS FOR PIPE SIZES ≤80mm MAY BE <500mm, SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH, HEALTH & SAFETY & CONSTRUCTION ACCESS REQUIREMENTS.

PIPE DIAMETER 'A' (mm)	DEPTH OF BEDDING 'C' (mm)
< 80 RISING MAIN	< SEE NOTE 10.
< 100	100
150 - 450	200

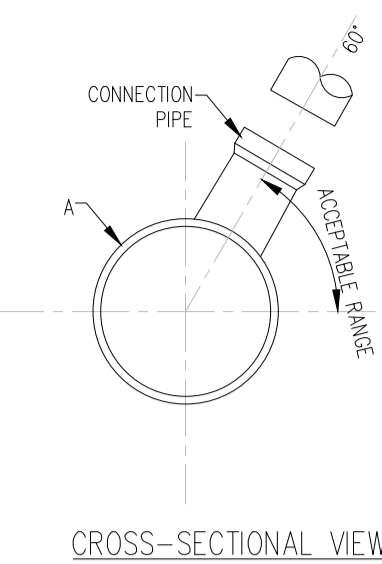
PIPE DIAMETER 'A' (mm)	TRENCH WIDTH 'B' (mm)
< 80 RISING MAIN	< SEE NOTE 10.
100	500
150	600
200	600
250	750
300	750
350	750
400	900
450	900



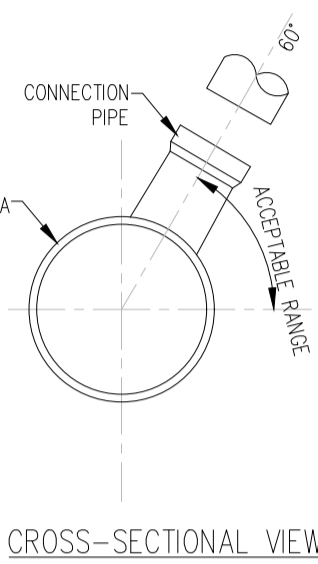
CONCRETE BED, HAUNCH AND SURROUND TO WASTEWATER PIPES. (STD-WW-08) SCALE 1:20

**NOTES:**

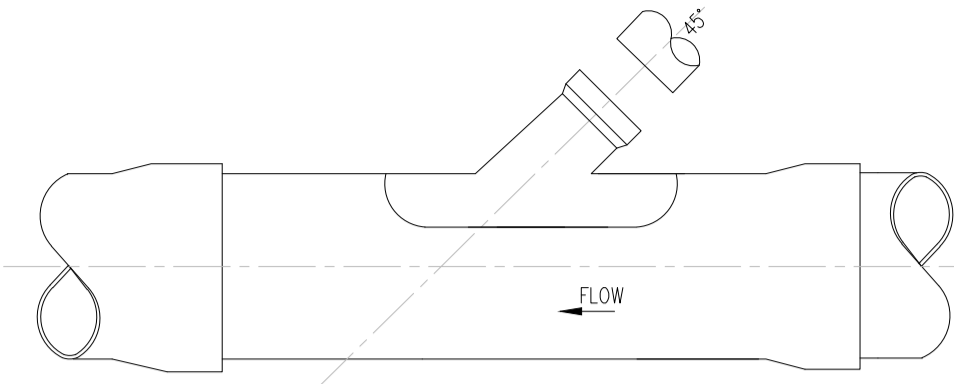
- ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
- CONCRETE PIPELINE BEDS AND HAUNCHES MAY BE REQUIRED TO ADDRESS MINIMUM COVER SITUATIONS AND SHALL BE SUBJECT TO SUBMISSION AND ASSESSMENT BY IRISH WATER BEFORE ADVANCING WITH THE WORKS.
- CONCRETE PIPE BEDS AND HAUNCHES SHALL HAVE A MINIMUM THICKNESS OF 150MM WITH AN ABSOLUTE MINIMUM DEPTH OF COVER ABOVE THE EXTERNAL CROWN OF THE PIPE OF 750MM.
- CONCRETE TO BE IN ACCORDANCE WITH EN 206 AND TO BE CLASSED C16/20.
- THE HAUNCHES AND SURROUNDINGS TO BE FORMED USING FORM WORK TO PROVIDE A ROUGH CAST FINISH.
- EXPANSION JOINTS IN THE CONCRETE SHALL BE PROVIDED AT ALL PIPE JOINTS TO ALLOW FOR PIPE FLEXIBILITY. COMPRESSIBILITY FILLER BOARD TO BE IN ACCORDANCE WITH BS EN 622-1 AND BS EN 622-4, AND TO BE 18mm THICK.
- POLYETHYLENE PIPES SHALL BE WRAPPED IN PLASTIC SHEETING HAVING A COMPLETION WITH ACCORDANCE WITH BS6076 BEFORE BEING CAST INTO CONCRETE.
- BITUMINOUS MATERIAL SHALL NOT BE PUT IN CONTACT WITH PE OR PVC PIPES.



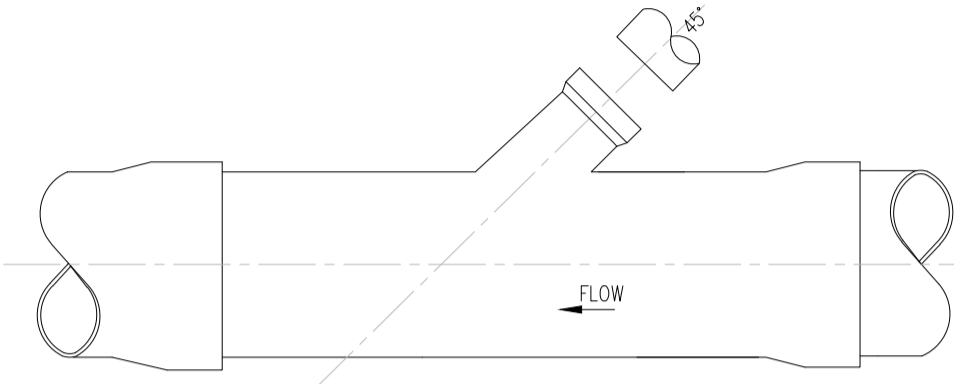
CROSS-SECTIONAL VIEW OF SEWER



CROSS-SECTIONAL VIEW OF SEWER



VIEW IN DIRECTION OF ARROW A



VIEW IN DIRECTION OF ARROW A

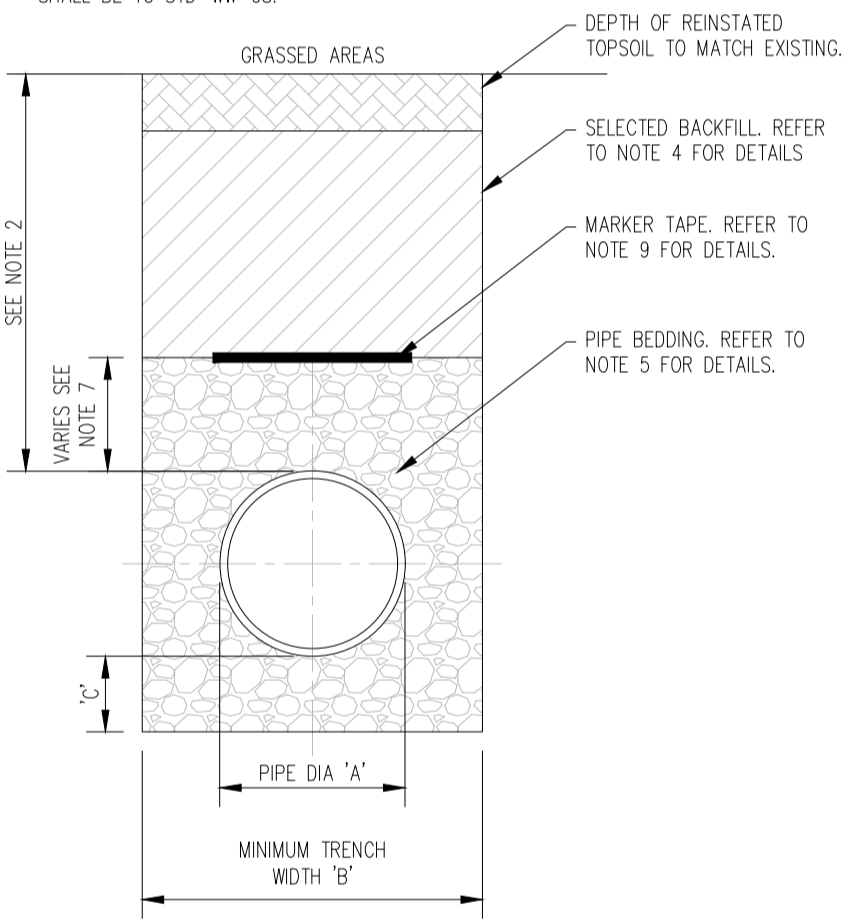
APPROVED 45° SADDLE CONNECTION

APPROVED 45° SADDLE CONNECTION

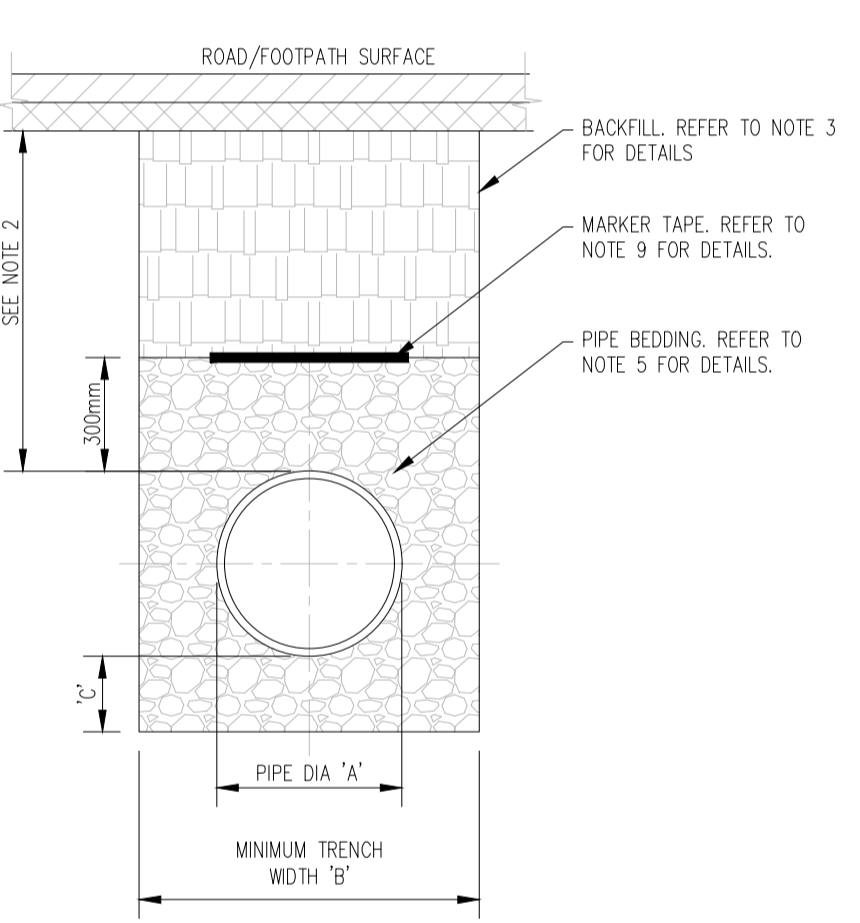
TYPICAL SEWER/SERVICE PIPE (STD-WW-04) SCALE 1:20

**NOTES:**

- ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
- AS FAR AS PRACTICABLE, JUNCTION AND SERVICE CONNECTIONS SHALL BE BUILT IN FOR ALL PLANNED USES WHEN THE SEWER IS BEING CONSTRUCTED. WHETHER IT IS NECESSARY TO MAKE A POST-CONSTRUCTION CONNECTION THE DEVELOPER SHALL BRING THE SEWER TO THE INSPECTION CHAMBER, INSTALL THE INSPECTION CHAMBER AND SEAL THE UPSTREAM END UNTIL THE CONNECTION IS REQUIRED.
- THE VERTICAL ANGLE BETWEEN THE SERVICE CONNECTING PIPE AND THE HORIZONTAL SHALL BE GREATER THAN 0° AND NOT MORE THAN 60°.
- WHERE THE CONNECTION IS BEING MADE TO A SEWER WITH A NORMAL INTERNAL DIAMETER OF 300mm DIAMETER OR LESS, CONNECTIONS SHALL BE MADE USING 45° ANGLE JOINTS.
- WHERE THE CONNECTION IS BEING MADE TO A SEWER WITH NORMAL INTERNAL DIAMETER GREATER THAN 300mm:
  - A) IF THE DIAMETER OF THE CONNECTION PIPE IS GREATER THAN HALF THE DIAMETER OF THE SEWER, AN ACCESS MANHOLE SHALL BE CONSTRUCTED TO FORM THE CONNECTION POINT; OR
  - B) IF THE DIAMETER OF THE CONNECTION PIPE IS LESS THAN OR EQUAL TO HALF DIAMETER OF THE SEWER, THE CONNECTION SHALL BE MADE USING A PREFORMED SADDLE FITTING WITH A SLOW BEND BETWEEN THE SADDLE AND THE CONNECTION SEWER/DRAIN.
- CONNECTIONS MADE WITH THE SADDLE FITTINGS SHALL BE MADE BY CUTTING AND SAFELY REMOVING A CORE FROM THE PIPE AND JOINING THE SADDLE FITTING TO THE PIPE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO ENSURE A WATER TIGHT JOINT. THE CONNECTING PIPE SHALL NOT PROTRUDE INTO THE SEWERS.

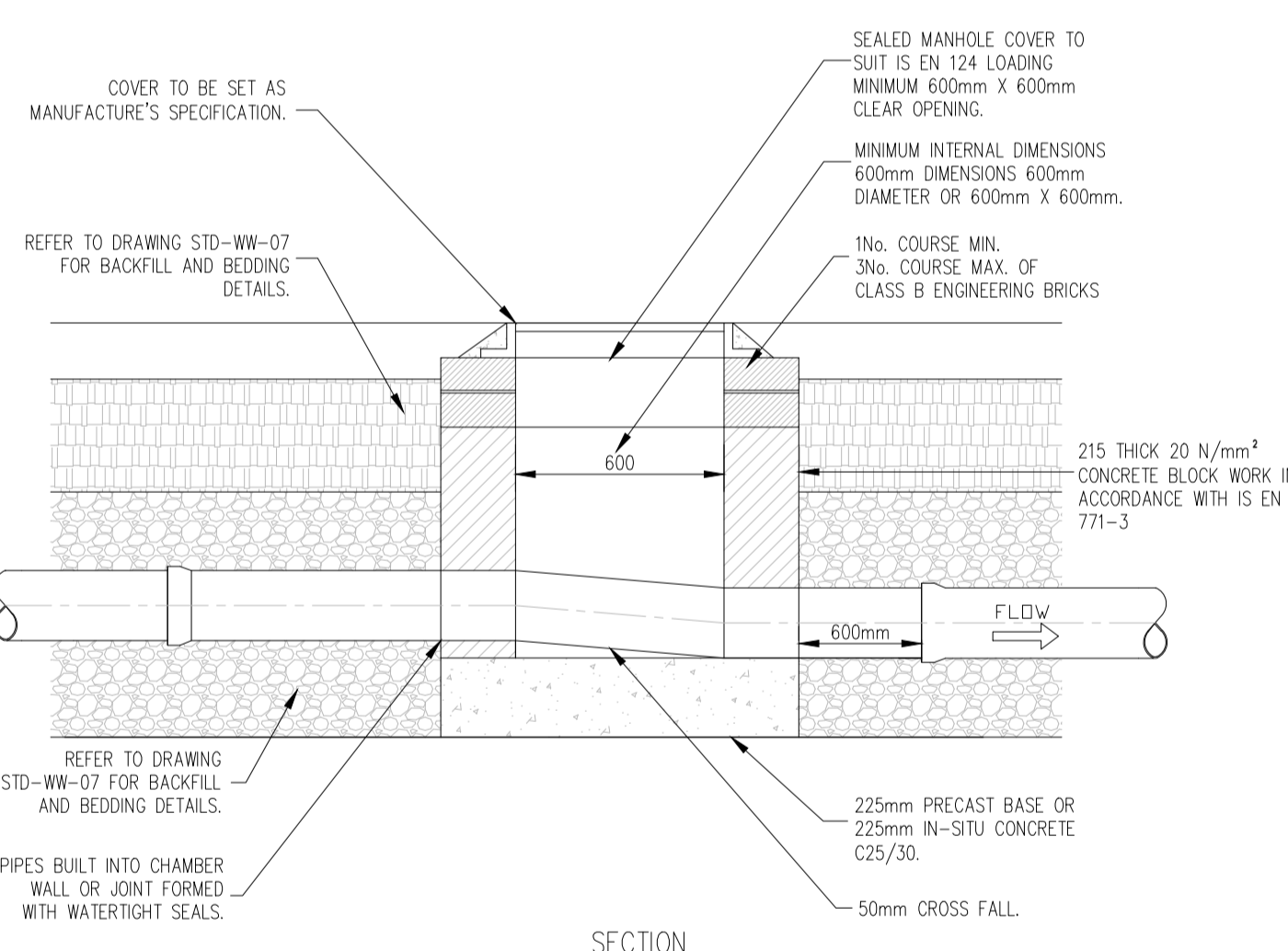


CROSS SECTION IN GRASSED AREAS

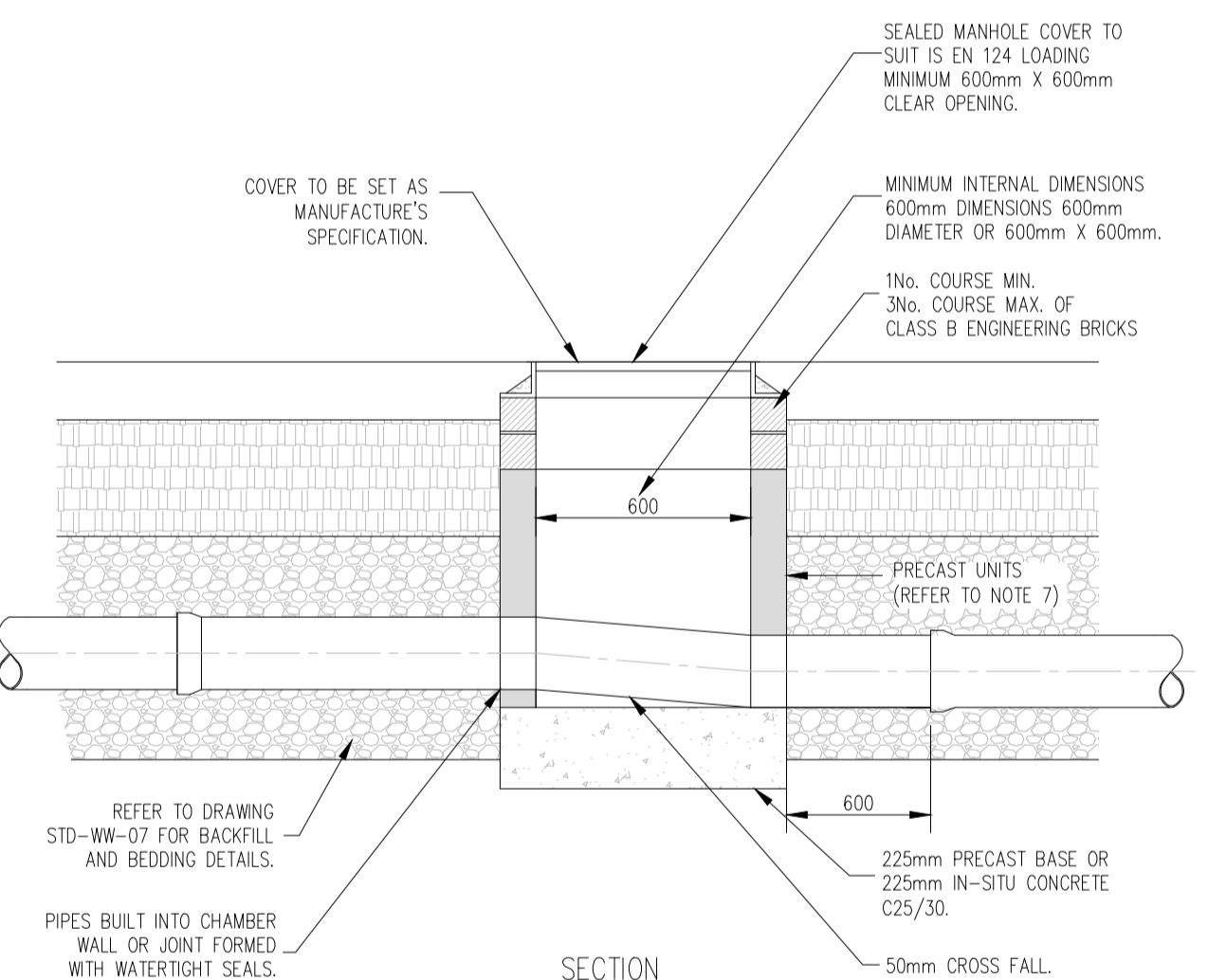


CROSS SECTION IN ROADS

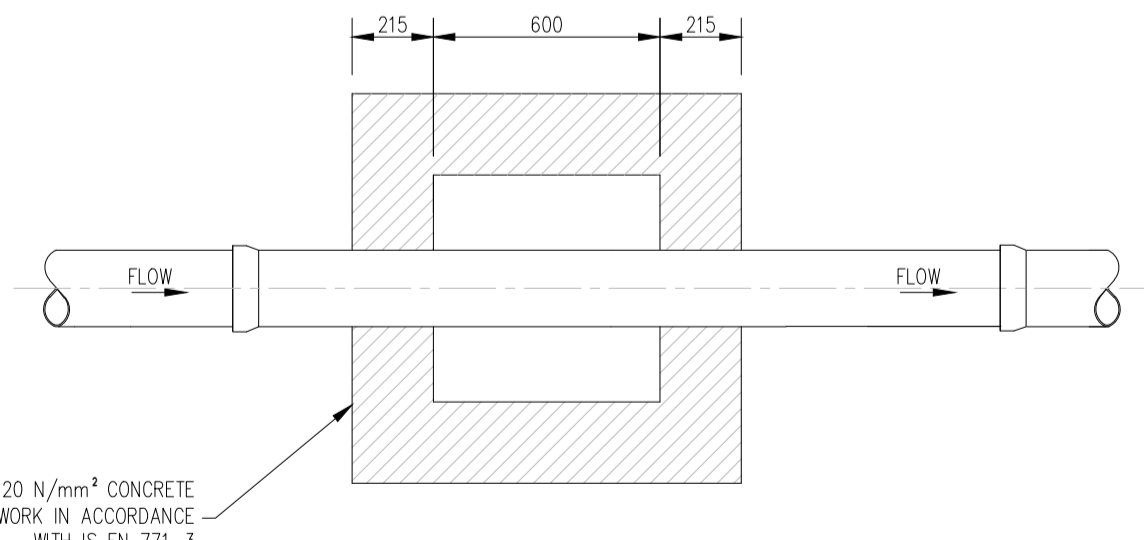
TRENCH BACKFILL AND BEDDING (STD-WW-07) SCALE 1:20



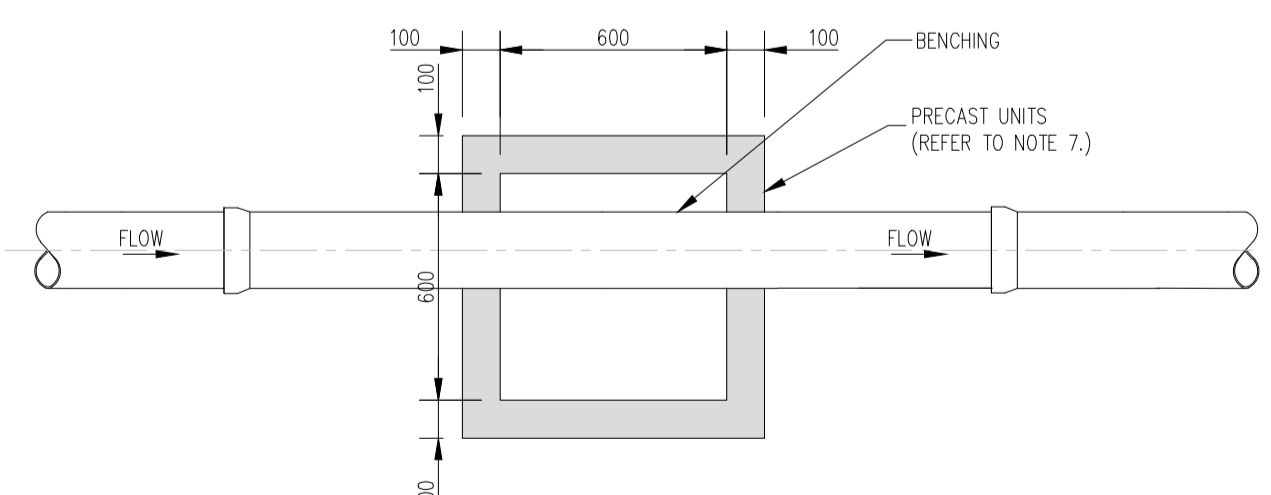
SECTION



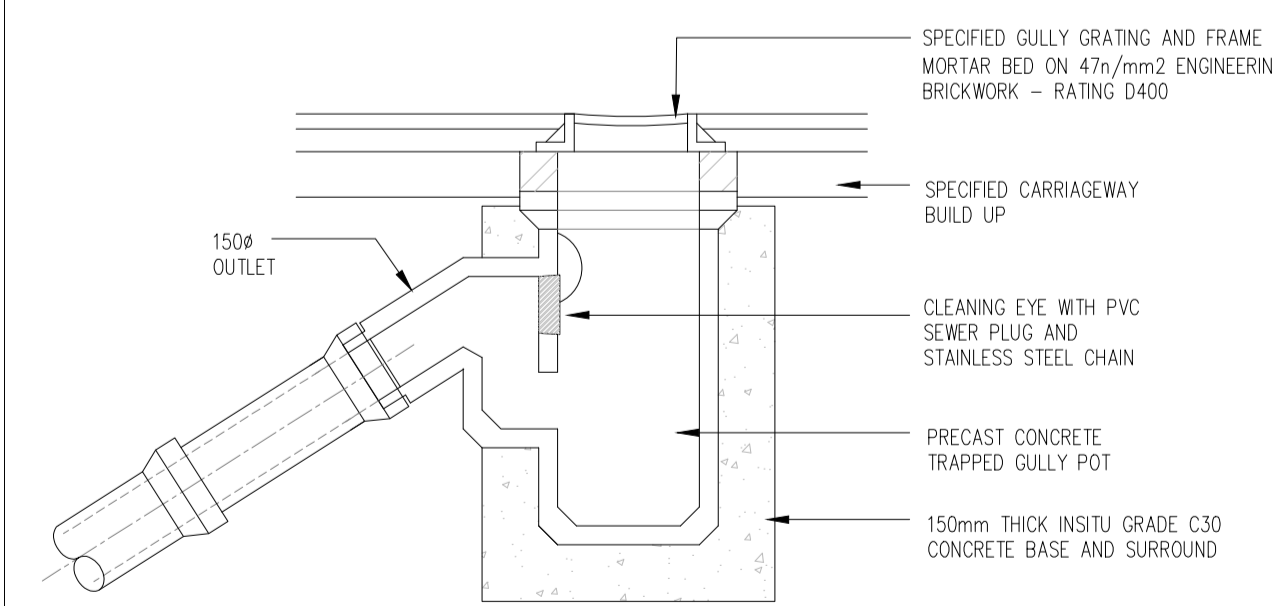
SECTION



PLAN INSPECTION CHAMBER (BLOCKWORK CONSTRUCTION)



PLAN INSPECTION CHAMBER (PRECAST CONCRETE CONSTRUCTION)



PRECAST CONCRETE TRAPPED GULLY POT SCALE 1:20

**NOTES:**

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Rev. No.	Date	REVISION NOTE
P1	17.11.2021	PART 8 SUBMISSION

Client	Project	Title
Limerick City & County Council	Radharic Cillin Kilfnane, Co. Limerick	Irish Water Standard Details Waste Water

Dm. By	Chkd. By	Apvrd. By	Dwg. No.	Revision
NQ	KC	GC	L097L-003	P1

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**NOTES:**

- 1 ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
- 2 THE MINIMUM DEPTH OF COVER FROM THE FINISHED SURFACE TO THE EXTERNAL CROWN OF THE PIPE SHALL BE 750mm FOR SERVICE CONNECTIONS, 900mm FOR WATER MAINS. GREATER DEPTHS OF COVER AND/OR PIPE STRENGTH AND/OR A HIGHER CLASS OF BEDDING MATERIAL MAY BE REQUIRED WHERE HIGH TRAFFIC LOADING IS ANTICIPATED. THE MAXIMUM COVER SHOULD NOT EXCEED 1.2M WHERE PRACTICABLE.
- 3 CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TRANSPORT INFRASTRUCTURE IRELAND 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 808 IS TO BE COMPACTED AS PER CLAUSE 802 OF THE TRANSPORT INFRASTRUCTURE IRELAND SPECIFICATION FOR ROAD WORKS.
- 4 SELECTED EXCAVATED MATERIAL MAY BE USED IN GREEN-FIELD AREAS ABOVE GRANULAR PIPE SURROUND MATERIAL SUBJECT TO THE APPROVAL OF IRISH WATER.
- 5 PIPE BEDDING SHALL COMPLY WITH MS 4-08-02 AND IGI 4-08-01 GRANULAR MATERIAL SHALL BE 14mm TO 5mm GRADED AGGREGATE OR 10mm SINGLE SIZED AGGREGATE IS EN 13242.
- 6 IN SOFT GROUND CONDITIONS (CBR < 5) THE MATERIAL SHOULD BE EXCAVATED OUT AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TRANSPORT INFRASTRUCTURE IRELAND 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.
- 7 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 150mm BELOW

THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH CLAUSE 804 MATERIAL IN ACCORDANCE WITH THE TRANSPORT INFRASTRUCTURE IRELAND SPECIFICATION FOR ROAD WORKS SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL.

8 SHOULD MINIMUM COVER NOT BE ACHIEVABLE, CONCRETE GRADE C30/37 SHALL BE USED AS BACKFILL MATERIAL.

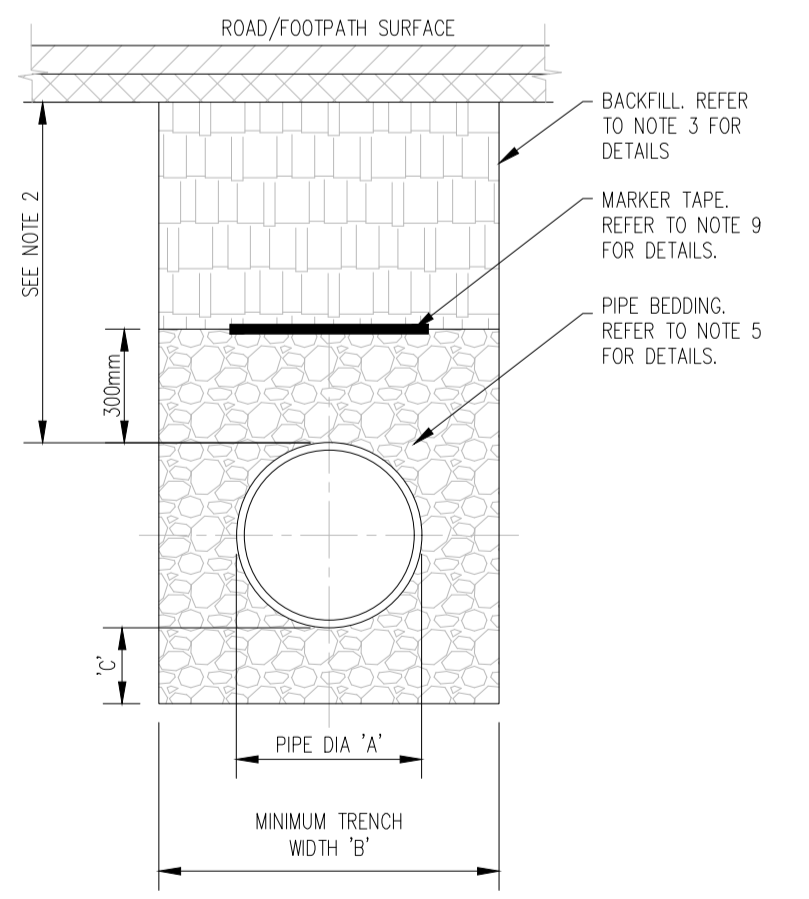
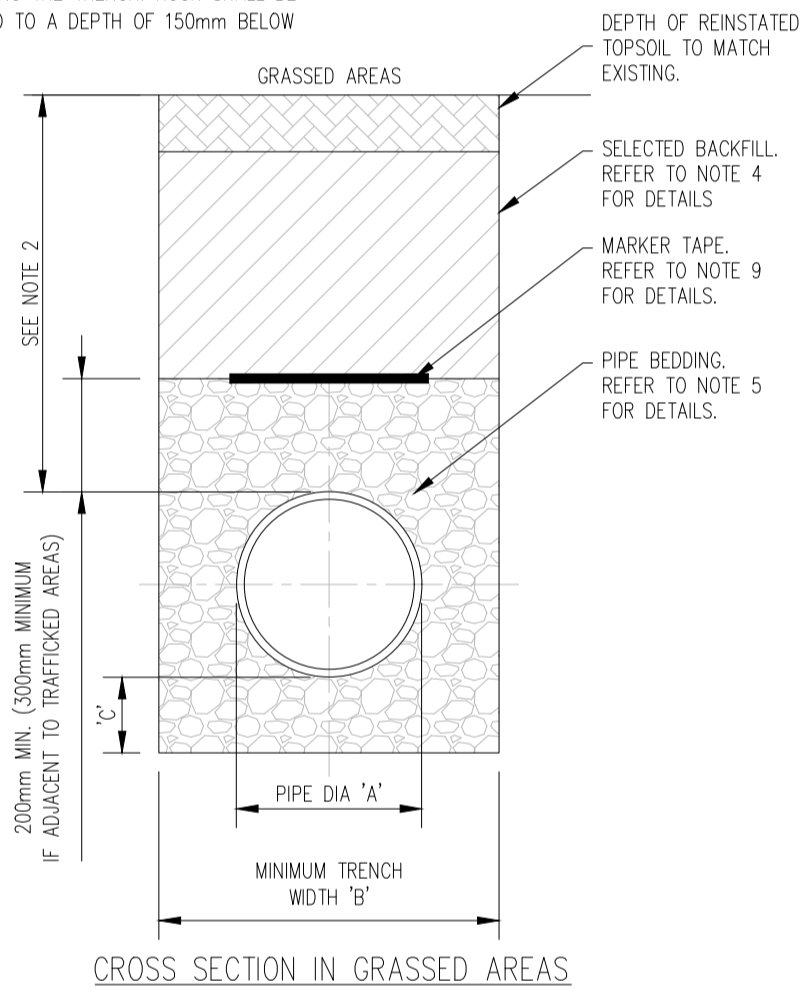
9 MARKER TAPE TO BE 400mm WIDE BLUE POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12163. PLASTIC PIPES SHALL HAVE WARNING TAPE INCORPORATED A REINFORCED BAND BRACING WIRE. SERVICE PIPES SHALL HAVE 200mm WIDE MESH TAPE. MARKER TAPE TO BE LAID AT TOP OF PIPE BEDDING LAYER.

10 TRENCH WIDTHS FOR PIPE SIZES ≤80mm MAY BE <500mm, SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH, HEALTH & SAFETY & CONSTRUCTION ACCESS REQUIREMENTS.

PIPE DIAMETER 'A' (mm)	DEPTH OF BEDDING 'C' (mm)
< 200	150
> 250	200

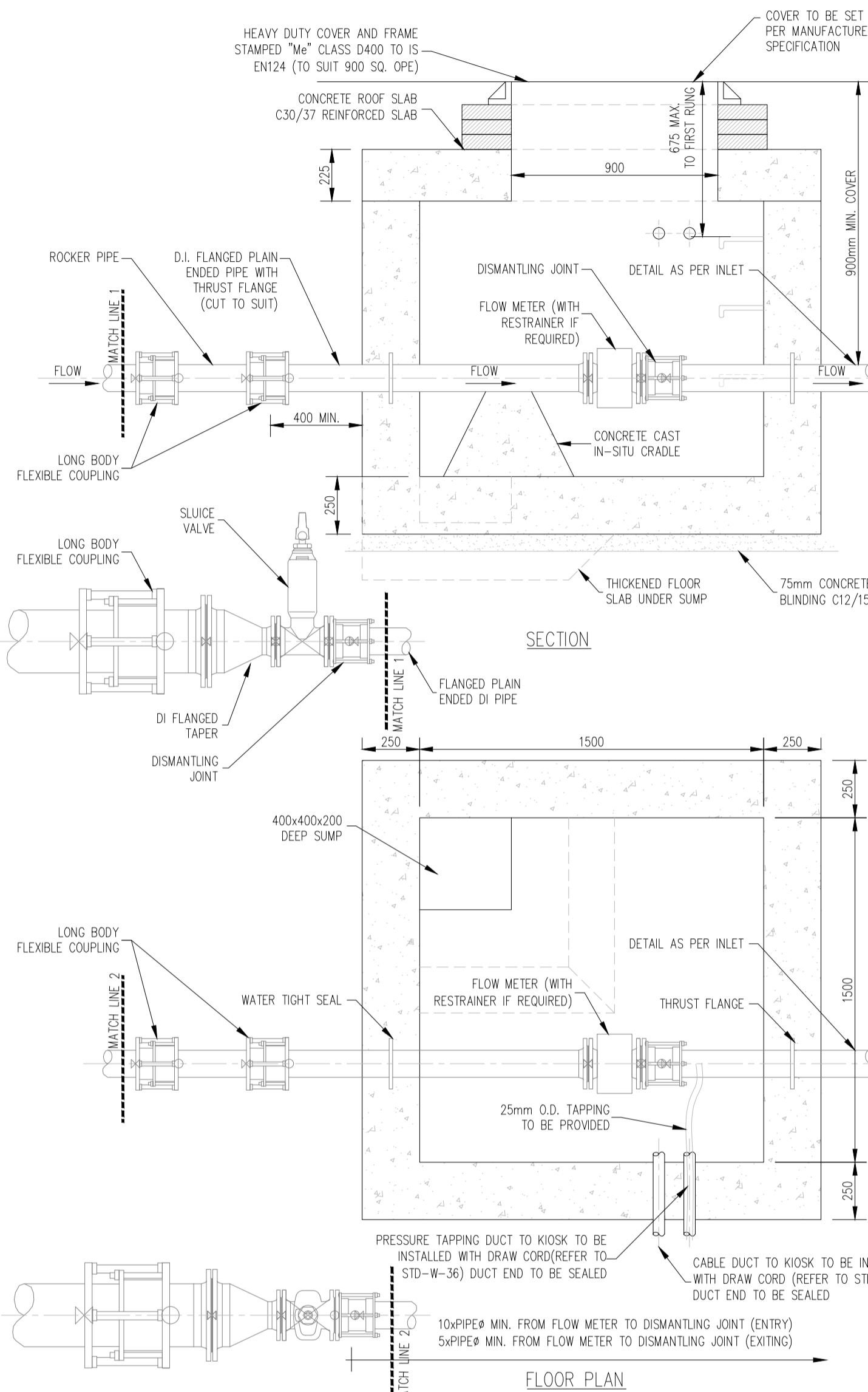
PIPE DIAMETER 'A' (mm)	TRENCH WIDTH 'B' (mm)
< 80	< SEE NOTE 10.
100	500
150	600
200	600
250	750
300	750
350	750
400	900
450	900



TRENCH BACKFILL AND BEDDING (STD - W - 13) SCALE 1:20

**NOTES:**

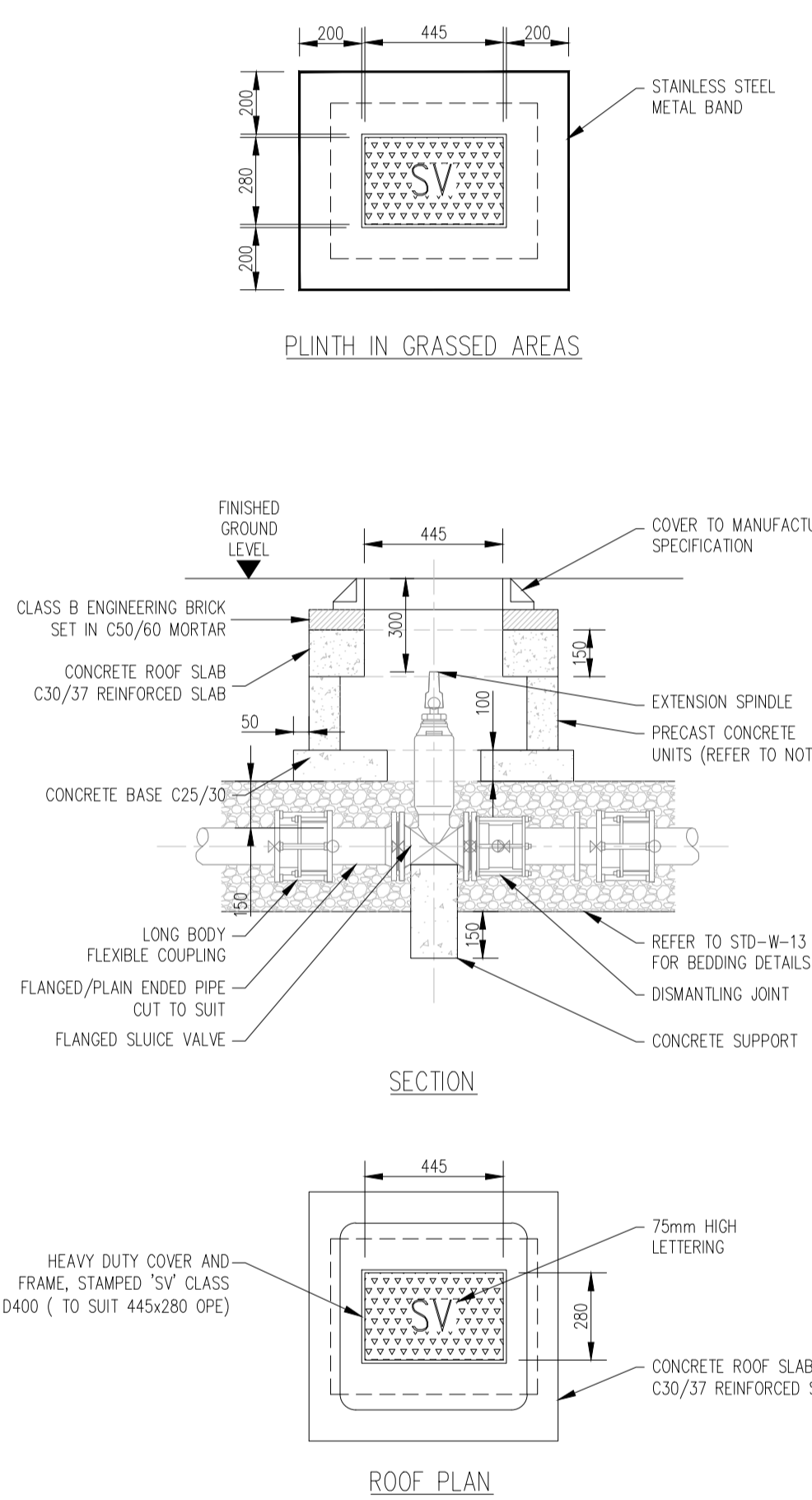
1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. STRUCTURAL DESIGN AND REINFORCEMENT DETAIL TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO IRISH WATER FOR REVIEW.
3. CONCRETE FOR FLOW METER CHAMBER TO BE C30/37.
4. PRECAST METER CHAMBER (WITH CONCRETE SURROUND) MAY BE USED SUBJECT TO IRISH WATER APPROVAL.
5. METER CHAMBER SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS EN124 RATING D400. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO APPROVAL FROM IRISH WATER.
6. 200mm ALL ROUND, 100mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS STEEL METAL BAND AROUND COVER IN GRASS AREAS.
7. ANTI CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
8. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN545. PE PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 12201:2011.
9. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLOATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM IRISH WATER.
10. PIPEWORK TO BE DOWN SIZED TO ACCOMMODATE THE REQUIRED RANGE OF THE FLOW METER. STRAIGHT PIPE LENGTHS UPSTREAM AND DOWNSTREAM OF THE METER TO BE PROVIDED IF THE METER IS NOT CAPABLE OF ACCURATE NIGHT FLOW MEASUREMENTS, A BY-PASS FLOW METER SHALL BE PROVIDED WITH APPROPRIATE VALVES, FITTINGS AND PIPEWORK.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN206.



METER CHAMBER (<300mmø) (STD - W - 26) SCALE 1:20

**NOTES:**

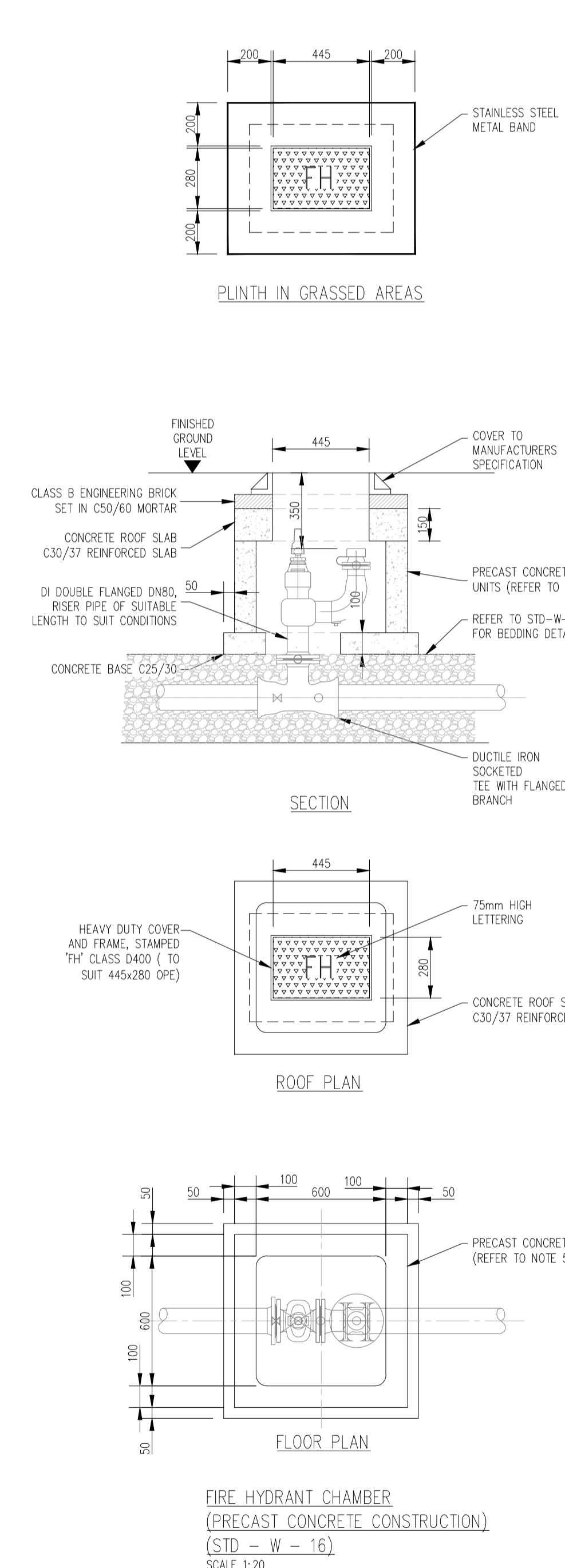
1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. SLUICE VALVE CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 OR BS 5834. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO THE APPROVAL OF IRISH WATER.
3. SLUICE VALVES SHALL BE RESILIENT SEATED AND SHALL COMPLY WITH BS 5163-1, BS 5163-2, IS EN 1074-1, IS EN 1074-2, OR EQUIVALENT EU SPECIFICATIONS.
4. ALL SLUICE VALVES SHALL BE ANTI-CLOCKWISE CLOSING.
5. VALVE CHAMBER TO BE CONSTRUCTED OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVELY PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED SUBJECT TO APPROVAL FROM IRISH WATER.
6. CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL AS PER STD-W-13.
7. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545.
8. 200mm ALL ROUND, 100mm DEEP CONCRETE PLINTH WITH PROTECTIVE STEEL METAL BAND AROUND COVER IN GREEN AREAS.
9. THRUST BLOCKS (NOT SHOWN ON DRAWING) TO BE PROVIDED AS PER STANDARD DRAWING STD-W-28 AT ALL TEES AND BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
10. ANTI CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
12. ALL THRUST FLANGES TO BE ADEQUATELY RESTRAINED BY THRUST BLOCKS AS PER DRAWING No. STD-W-28. THRUST BLOCKS NOT SHOWN FOR CLARITY.



SLUICE VALVE CHAMBER (PRECAST CONCRETE CONSTRUCTION) (STD - W - 14) SCALE 1:20

**NOTES:**

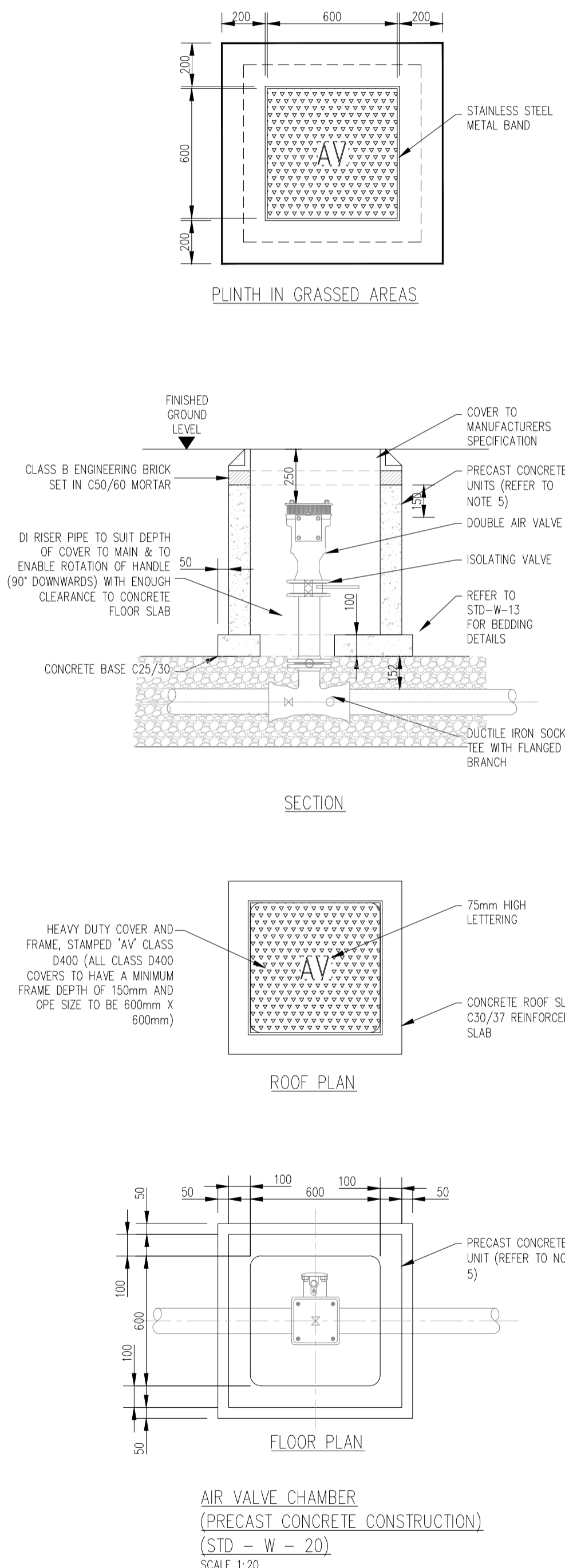
1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. HYDRANT CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 OR BS 5834. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO THE APPROVAL OF IRISH WATER.
3. ALL HYDRANTS, SURFACE BOX FRAMES AND COVERS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF IS EN 14339, IS EN 1074-6 & BS 750. FIRE HYDRANTS SHALL BE TYPE 2. THE HORRANT INLET SHALL BE 80mm DIAMETER WITH PN16.
4. ALL HYDRANTS SHALL BE CLOCKWISE CLOSING.
5. VALVE CHAMBER TO BE CONSTRUCTED OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVELY PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED SUBJECT TO APPROVAL FROM IRISH WATER.
6. CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL AS PER STD-W-13.
7. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545.
8. 200mm ALL ROUND, 100mm DEEP CONCRETE PLINTH WITH PROTECTIVE STEEL METAL BAND AROUND COVER IN GREEN AREAS.
9. THRUST BLOCKS (NOT SHOWN ON DRAWING) TO BE PROVIDED AS PER STANDARD DRAWING STD-W-28 AT ALL TEES AND BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
10. ANTI CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
12. ALL THRUST FLANGES TO BE ADEQUATELY RESTRAINED BY THRUST BLOCKS AS PER DRAWING No. STD-W-28. THRUST BLOCKS NOT SHOWN FOR CLARITY.



FIRE HYDRANT CHAMBER (PRECAST CONCRETE CONSTRUCTION) (STD - W - 16) SCALE 1:20

**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. AIR VALVE CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS EN 124 RATING D400. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO THE APPROVAL OF IRISH WATER.
3. AIR VALVES SHALL COMPLY WITH THE REQUIREMENTS OF IS EN 1074-4. AIR VALVES SHALL BE DOUBLE ORIFICE TYPE AND SHALL INCLUDE AN ISOLATING VALVE. THE ISOLATING VALVE SHALL BE A GATE VALVE CONFORMING TO IS EN 1074-2 AND SHALL BE OF A BOLTSLESS BONNET DESIGN.
4. THE AIR VALVES SHALL OF BODIES AND COVERS OF CAST IRON TO BS EN 1563 WITH FLANGES DRILLED TO PN 16 IN ACCORDANCE WITH BS EN 1092. EACH VALVE SHALL HAVE A LARGE AND A SMALL AIR ESCAPE ORIFICE WITH AN ISOLATING VALVE.
5. SERVICE CONNECTIONS SHALL NOT BE PROVIDED WITHIN 2m OF THE AIR VALVE LOCATION.
6. AIR VALVE CHAMBERS TO BE OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVELY PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED, SUBJECT TO APPROVAL FROM IRISH WATER.
7. PRECAST CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL AS PER STD-W-13.
8. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545.
9. 200mm ALL ROUND, 100mm DEEP CONCRETE PLINTH WITH PROTECTIVE STEEL METAL BAND AROUND COVER IN GREEN AREAS.
10. THRUST BLOCKS (NOT SHOWN ON DRAWING) TO BE PROVIDED AS PER STANDARD DRAWING STD-W-28 AT ALL TEES AND BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
11. ANTI CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
12. THE LOCATION OF THE AIR VALVE SHALL BE THE SUBJECT OF PARTICULAR AGREEMENT WITH IRISH WATER TO ENSURE THAT THE RISK OF CONTAMINATION THROUGH THE VALVE IS ELIMINATED.
13. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.



AIR VALVE CHAMBER (PRECAST CONCRETE CONSTRUCTION) (STD - W - 20) SCALE 1:20

**NOTES**

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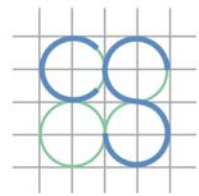
Rev. No.	Date	REVISION NOTE	Dm. By	Chkd. By
P1	17.11.2021	PART 8 SUBMISSION	NQ	GC

Client		Limerick City & County Council	
Project		Radharc Cillín Kilfinane, Co.Limerick.	
Title		Watermain Details	
Dm by	Chkd by	Apnd by	Dwg No.
NQ	KC	GC	L097L-004
Date	Scale	Revision	P1
Nov 2021	1:10		

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CS CONSULTING  
GROUP

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## Appendix D: Irish Water Pre-Connection Feasibility



Billy Lynch

Limerick City and County Council,  
 Merchants Quay,  
 Limerick  
 V94EH90

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](http://www.water.ie)

26 January 2021

**Re: CDS21000192 pre-connection enquiry - Subject to contract | Contract denied**

**Connection for Housing Development of 10 unit(s) at Radharc Cillin, Kilfinnane, Co. Limerick**

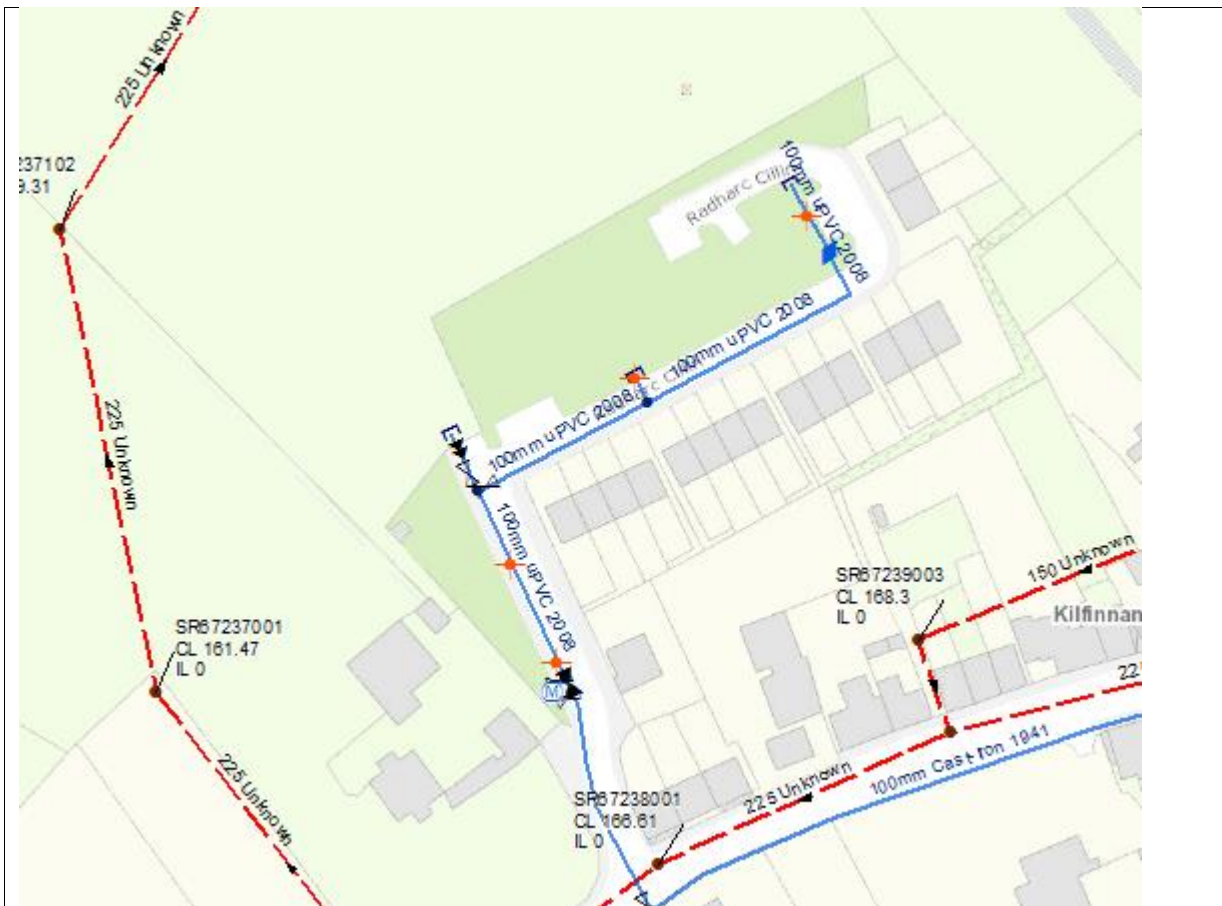
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Radharc Cillin, Kilfinnane, Co. Limerick (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	<b>OUTCOME OF PRE-CONNECTION ENQUIRY</b> <b><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></b>
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
<b>SITE SPECIFIC COMMENTS</b>	
Water Connection	This Confirmation of Feasibility to connect to the Irish Water infrastructure also does not extend to your fire flow requirements. In order to determine the potential flow that could be delivered during normal operational conditions, an on site assessment of the existing network is required. Please note that Irish Water cannot guarantee a flow rate to meet fire flow requirements and in order to guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development.
Wastewater Connection	

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.

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



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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](mailto: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 John Hennessy from the design team on 022 52256 or email [jhennessy@water.ie](mailto:jhennessy@water.ie) For further information, visit **[www.water.ie/connections](http://www.water.ie/connections)**.

Yours sincerely,



**Yvonne Harris**

**Head of Customer Operations**