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Information on the Irish Water 'Standard Details' for Water and Wastewater

Contents

1. Introduction

Irish Water is introducing two sets of 'standard details' that Irish Water's Connections and Developer Services Department has developed. These 'standard details' will provide guidance to developers in the provision of water and wastewater infrastructure within developments and that would ultimately be connected to Irish Water's networks and vested in Irish Water.

Irish Water took over responsibility for public water and wastewater services from Local Authorities with effect from 1st January 2014. Since then Irish Water's Connections and Developer Services function has been managing the provision of new and upgraded water and wastewater connections in partnership with the Local Authorities. During this time respective local authority standards and specifications for developer provided water and wastewater infrastructure have been used.

Technical Documentation is currently being developed by Irish Water which outlines the requirements for the water services infrastructure within developments. This comprises 'standard details' and Codes of Practice, which contain design, construction and workmanship specifications.

Irish Water is now rolling out the 'standard details' and in the coming months will make it a requirement for developers to comply with the provisions set out in these standards. The Codes of Practice and specifications will follow in the Summer of 2016.

2. Development of the 'Standard Details'

The 'standard details' are based on best practice within the water industry. They take account of the experience of Local Authorities in the provision of these services to new developments. They have been successfully used by Irish Water's own internal functions for a variety of projects and they are in line with water utility industry norms.

3. The Benefits of Introducing 'Standard Details'

Bringing a standard and high quality approach to the provision of water and wastewater infrastructure within developments is seen as a significant driver in eradicating poor quality infrastructure going forward. This will have the benefit of ensuring consistency in material selection, higher workmanship standards, a higher level of quality assurance, better performing assets, all leading to expediting the taking in charge of these assets and their ease of operation and maintenance by Irish Water. The installation of high quality water and wastewater infrastructure within developments from the outset will, in the long run, save expensive rehabilitation works, reduce the cost of operation and maintenance, reduce the overall lifecycle cost, increase safety standards and provide a better level of service to the users of this infrastructure.

4. The Driver for 'Standard Detail' Rollout

Irish Water has identified the need to address issues with the deficient quality in the provision of water and wastewater infrastructure within developments. There are in excess of 4,000 residential estates which still have to be taken in charge by the Planning Authorities. Once this statutory process is completed the water services assets will transfer to Irish Water. The water and wastewater infrastructure in many of these estates is known to be of poor quality and Irish Water will need to spend an estimated €400 million to address water main leakage, defective sewerage systems, inadequate pumping stations as well as many other defects. The deficiencies

give rise to underperforming assets, challenges in their operation and maintenance, environmental pollution and poor levels of customer service. These deficiencies are often the key factor in estate developments not being taken in charge expeditiously by the Planning Authority.

Many examples of substandard infrastructure exist and the deficiencies are varied and widespread. Some common examples are outlined below for water and wastewater respectively.

Common water supply infrastructure deficiencies would mainly be:

- Substandard water main installations exhibited by high leakage levels in pipe infrastructure causing excessive water loss in the water supply area,
- Infiltration through cracks and defective joints of water mains giving rise to threats to public health due to risk of contamination,
- Water supply systems installed without the ability to withstand system working pressures,
- Water supply systems which are not capable of providing the required level of service to house occupiers, such as inadequate service pressure and poor water quality,
- Inadequate bedding, haunch and surround to water supply pipework giving rise to subsequent breaks, bursts and malfunction of the systems,
- Inappropriate fill around service stop valves leading to freezing of fill and cold bridging causing connections to freeze,
- Water pipes and service connections laid with inadequate depths of cover causing operational difficulties during adverse weather conditions,
- Use of inappropriate material for service connections which degrade over time leading to service connection leakage (e.g. unsuitable brass couplers),
- Bad workmanship at water service connections resulting in kinking of service pipe and restriction of flow to properties,
- Inadequate cleaning, disinfection, scouring and commissioning of water supply networks giving rise to water which is not wholesome or suitable for consumption.

Common sewerage infrastructure deficiencies would mainly be:

- Substandard sewerage network installations exhibited by high levels of infiltration and inflow into sewerage infrastructure giving rise to high volumes of wastewater for subsequent pumping and treatment in the main scheme infrastructure,
- Substandard sewerage network installations exhibited by exfiltration to the groundwater leading to subsoil contamination and environmental impact,
- Sewer systems installed which are not connected to a public sewerage system and which have no on-site treatment systems,
- Sewerage systems installed with flat or with inadequate gradients or back flow gradients,
- Pipes laid with inadequate depths of cover causing damage to the water services infrastructure,
- Inappropriate use of lower grade manhole and chamber covers in trafficked areas which are not suitable for the applied vehicle loads,
- Substandard manhole and access chamber construction giving rise to unsafe working conditions (no or inadequate step irons, ladders, landing platforms, safety chains, etc.)

- Connection of stream or groundwater systems to foul sewerage networks, giving rise to high volumes of wastewater for subsequent pumping and treatment in the main scheme infrastructure,
- Inappropriate cross connection of services to sewerage networks (such as foul service pipe connected to a storm sewerage system or a storm drain, or gully traps connected to the foul sewerage system),
- Defective connection of wastewater service pipes giving rise to structural damage of the main sewers system, infiltration of groundwater to the sewerage system, etc.,
- Protruding sewer service connections into the bore of sewer pipe giving rise to impeded flow and blockage of the network,
- Inappropriate connection of service pipes to other utility service pipes (foul service connection to telecom cable duct, water service connection to cable ducts),
- Presence of building refuse and debris in the water services infrastructure after commissioning, especially in sewerage systems which causes blockages, accumulation in storm water overflows and pumping stations and damage to infrastructure (e.g. reinforcement bar damage to foul pump),
- Water service pipes and other utility ducts and pipework installed through manholes or through sewer pipes giving rise to flow obstructions.

Deficiencies that are common to both water supply and sewerage infrastructure would mainly be:

- Inadequate backfilling of pipe trenches with unapproved backfill material resulting in the breakdown of road surfaces, subsidence and damage to pipe networks and adjacent structures,
- Pipework installation in close proximity to buildings and structures and, in some instances, under structures, giving rise to structural damage to infrastructure and/or inability to access the systems for maintenance,
- Installation of other utility service ducts, chambers in close proximity or above water services pipes (e.g. ESB Network power ducts in same trench as water or sewer services),
- Inadequate road surface reinstatement giving rise to potholes, subsidence, unravelling of road surfaces and other road surface deficiencies,
- Manhole covers and water supply fitting chambers overlaid with road surfacing material (manholes and chamber covers cannot be located subsequently or lifting eyes are filled with bitumen material),
- Pipes installed adjacent to trees and bushes that subsequently are impacted by root intrusion at joints, giving rise to impeded flow and blockage.

5. Connection and Developer Services Technical Documentation

The Connection and Developer Services' aim in the development of the Technical Documentation, comprising the 'standard details and Codes of Practice', is to provide typical details to developers for water and wastewater infrastructure, which will outline design and construction guidance to ensure consistency in the provision of materials, equipment and workmanship. The 'standard details' and Codes of Practice will also provide the basis for developers' detailed design proposals for water and wastewater infrastructure, leading to the provision of infrastructure that is suitable for connection to Irish Water's networks and easy operation and maintenance of the new infrastructure.

6. Scope of Standard Details

There are two sets of ‘standard details’, 38 details dealing with water supply infrastructure and 34 details for wastewater collection infrastructure, covering all aspects of such infrastructure.

The ‘standard details’ for water supply infrastructure cover the following areas:

- Ownership/responsibility of infrastructure,
- Service connection and distribution system details,
- Typical layout for water mains within developments,
- General pipeline connection details for various scenarios,
- Typical utility service layout indicating separation distances,
- Restriction on tree/shrub planting adjacent to water mains,
- Trench, backfill and pipe bedding/haunch/surround details,
- Sluice valve and chambers for DI/PE materials,
- On-line and off-line hydrant and chamber details for DI/PE materials,
- On-line and off-line air valve and chamber details for DI/PE materials,
- Pressure reducing/sustaining valve and chamber details,
- Booster pumping station details,
- Meter chamber details,
- Marker post and plate details for water supply fittings,
- Water main thrust and support block details,
- Cable duct and duct chamber details,
- Scour chamber and outfall headwall details,
- Typical ditch/stream crossing arrangements,
- Typical culvert and bridge crossing arrangements
- Security fencing and access gate details,
- Control, telemetry and wet kiosk details,
- Details of lamp bollard and lamp standards.

The ‘standard details’ for wastewater infrastructure cover the following areas:

- Ownership/responsibility of infrastructure,
- Service connection to public sewer details,
- Typical layout for sewers within developments,
- Typical utility service layout indicating separation distances,
- Restriction on tree/shrub planting adjacent to sewers,
- Trench, backfill and pipe bedding/haunch/surround details,
- Concrete bed/haunch/surround details for pipes,
- Manhole details for pre-cast concrete, cast in-situ concrete and block-work scenarios,
- Backdrop manhole details,
- Private side inspection chamber details,
- Sluice valve and chambers for rising mains of DI/PE materials,
- Rising main thrust and support block details,
- Scour valve and scour chamber details for rising mains,
- Air valve and chamber details for rising mains,
- Pumping Station emergency overflow outfall headwall details,
- Cable duct and duct chamber details,

- Typical ditch/stream crossing arrangements,
- Typical culvert and bridge crossing arrangements,
- Indicative submersible pump station,
- Indicative pump station site layout details,
- Security fencing and access gate details,
- Site hard standing area details,
- Control, telemetry and wet kiosk details,
- Flow meter chamber details,
- Rising main discharge manhole details,
- Details of lamp bollard and lamp standards,
- Vent-stack details.

7. Design Risk Assessments

Each set of 'standard details' is accompanied by a Design Risk Assessment (DRA), which outlines the residual health and safety responsibilities of developers and their designers/contractors in the provision of such infrastructure. The requirements of the DRAs has to be taken into account by developers and their designers in the preparation of detailed designs of water supply and wastewater collection infrastructure within developments. The DRAs are separate documents which will also be made available in the rollout to support the 'standard details'.

8. 'Standard Details' Rollout Proposal

Irish Water has now rolled out the 'standard details'. The Codes of Practice, including design and workmanship specifications, will be made available in late July 2016.

The 'standard details' are now available to water industry stakeholders, including developers via the Irish Water website (http://www.water.ie/help-centre/connections). It is intended to make the use of 'standard details' mandatory in all new Irish Water Connection Agreement Offers that will issue after 6th June 2016. It is also intended to make compliance with the Codes of Practice mandatory from August 2016 onwards.

Where development infrastructure design is at an advanced stage or where water/wastewater infrastructure installation is underway, an exemption may be sought from Irish Water to relax the requirement to use the 'standard details'. This exemption will only be available until 7th October 2016.

9. Further Information

More information on the 'standard details' can be provided on request. A briefing on the 'standard details' and their use can also be provided on request.

Queries on the 'standard details' should be directed to Irish Water through the e-mail address standarddetails@water.ie.

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