Chapter 11:

Material Assets

11.0 MATERIAL ASSETS

11.1 INTRODUCTION

This chapter of the EIAR assesses and evaluates the likely impact of the proposed development on existing surface water and foul drainage, and utility services in the vicinity of the site, as well as identifying proposed mitigation measures to minimize any impacts.

The material assets considered in this chapter include Surface Water Drainage, Foul Drainage, Water Supply, Power, Gas and Telecommunications. A separate chapter on transportation has also been prepared.

This chapter was prepared by DBFL Consulting Engineers - Deirdre Walsh BA BAI MSc, CEng, MIEI and Dermot Grogan MEng MIEI.

11.2 ASSESSMENT METHODOLOGY

The methodology followed for this section is in accordance with EPA *Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (Draft) 2017, *Advice Notes for Preparing Environmental Impact Statements* (Draft) 2015 and 2018 DHPLG *Guidelines on Environmental Impact Assessment for Planning Authorities and An Bord Pleanala*. Information on built assets in the vicinity of the development lands was assembled from the following sources:

- A desktop review of Irish Water Utility Plans, ESB Networks Utility Plans, Gas Networks Ireland Service Plans, Eir E-Maps, BT Telecommunications Maps and Virgin Media Maps;
- Consultation with Irish Water and Meath County Council;
- Submission of a Pre-Connection Enquiry Application to Irish Water;
- Site Inspection / Walkover;

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS);
- IS EN752, “Drain and Sewer Systems Outside Buildings”;
- Irish Water’s Pre-Connection Enquiry Application (water demand and foul water loading);

11.3 EXISTING RECEIVING ENVIRONMENT (BASELINE SITUATION)

11.3.1 Surface Water Drainage

There is an existing 1050mm diameter surface water pipe adjacent to the railway line approximately 70m west of the north-west corner of the site. Refer to Figure 11.1 below.

There is an existing ditch along the northern boundary of the site, which also forms the northern boundary of *Gaelscoil An Bhradáin Feasa* before crossing Mill Road and continuing in a north and easterly direction towards the Stameen River.

There an existing ditch along the south-eastern boundary of the commercial development approved under *LB180620* and adjacent to Colpe Road. The ditch crosses Mill Road in a culvert and continues in an easterly direction to the Stameen River to the north east. This ditch originally drained lands to the south west of the railway line, however following development of these lands the catchment area reduced significantly and runoff to this ditch also reduced, with runoff from the section of Colpe Road between the bridge and Mill Road now being the primary source of runoff. For further details in relation to water infrastructure and drainage, please refer to Chapter 8 of this EIAR.

11.3.2 Foul Water Drainage

The subject site is currently greenfield and therefore has no foul loading.

There is an existing 900mm diameter foul sewer running parallel to the railway line on the eastern side of the railway line before outfalling to Drogheda Wastewater Treatment Plant adjacent to Marsh Road, for treatment and disposal. This foul sewer is adjacent to the railway line approximately 70m west of the north-west corner of the site. Refer to Figure 11.1 below. For further details in relation to water infrastructure and drainage, please refer to Chapter 8 of this EIAR.

11.3.3 Water Supply

There is an existing 200mm diameter watermain on Colpe Road, west of the railway line. The existing 200mmm diameter watermain on Colpe Road is expected to be a suitable water supply location for the proposed development. For further details in relation to water infrastructure and drainage, please refer to Chapter 8 of this EIAR.

11.3.4 Power

There are overhead MV ESB cables traversing the site. A copy of ESB record drawings for the area is included in Figure 11.2.

11.3.5 Gas

There is an existing 250mm diameter 70 bar gas transmission pipe traversing the site with an associated wayleave. A copy of Bord Gais record drawings for the area is included in Figure 11.3.

11.3.6 Telecommunications

There are no existing telecommunications services in the vicinity of the site.

11.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development comprises 357 residential units (169 no. houses, 52 no. duplex units, and 136 no. apartments), a childcare facility and associated infrastructure including a link street and a surface water outfall pipe on a site area of circa 13ha. The application is under consideration through the SHD (Strategic Housing Development) planning process, with An Bord Pleanala. This application also seeks to amend a link street approved under Meath County Council Planning Reference LB180620 (commercial development and link street through the “Mill Road / Marsh Road Framework Plan lands”).

For further information regarding the infrastructure demands of the proposed development refer to DBFL “Infrastructure Design Report”.

11.4.1 Surface Water Drainage

The development will include the construction of a surface water sewer network throughout the lands, which will collect surface water runoff from all hard-standing areas. The surface water management strategy for the proposed development is outlined below.

To manage surface water runoff from the development, it is proposed to separate the development into three surface water catchments (“A”, “B”, and “C”) corresponding to each surface water outfall. Each catchment is divided into smaller sub-catchments with surface water storage for a 1% AEP (Annual Exceedance Probability), or 1 in 100-year return period event storm provided within each catchment and sub-catchment.

Catchment "A": Comprises the western portion of the lands and a section of the link street, with attenuated runoff from this catchment discharging to the existing 1050mm diameter surface water sewer, adjacent to the railway line, via a surface water outfall pipe approved under LB180620. Surface water storage for this catchment is provided in the public open space area.

Catchment "B": Comprises the balance of the residential development and is subdivided in catchments "B1", "B2" and "B3". Attenuated runoff from catchment "B" outfalls to the ditch system to the west of Gaelscoil An Bhradain Feasa. Surface water storage for this catchment is provided in open space areas and primarily in the public open space at the eastern end of the site.

Catchment "C": Comprises the balance of the link street and is subdivided into catchments "C1", "C2", "C3" & "C4". Attenuated runoff from catchment "C" outfalls to the existing ditch system adjacent to Colpe Road. Sub-catchment C3 is not included in the application site but refers to attenuated runoff rate from committed development (commercial development approved under LB180620).

The Water chapter of this EIAR (Chapter 8) includes further details in relation to the proposed surface water drainage on site, and the application is accompanied by a detailed Infrastructure Design Report prepared by DBFL Consulting Engineers.

11.4.2 Foul Drainage

It will be necessary to provide a suitably designed foul sewer network for the development lands. Foul flows from the development will outfall to the existing 900mm diameter foul sewer which crosses the railway line adjacent to the north west corner of the site. The connection to this pipe is via the foul sewer approved under *LB180620.* The existing foul outfall sewer continues in a northerly direction to Drogheda Wastewater Treatment Works adjacent to Marsh Road.

The proposed development is separated into two foul drainage Catchments, "1A" & "1B". Catchment "1A" comprises the western section of the site (circa 87 no. houses), with foul flows from this *catchment* discharging by gravity to the existing 900mm diameter foul sewer, at manhole F17, adjacent to the railway line. The balance of the development site is included in Catchment "1B" and comprises circa 270 residential units and a childcare facility and commercial development approved under *LB180620*. Foul flows from Catchment "1B" will discharge to a new temporary foul pumping station located to the east of the lands. The foul drainage for this catchment is designed to enable the foul pumping station to be decommissioned in the future and the foul sewer to continue along the link street to the strategic foul pumping station at Marsh Road which will be designed to drain the *"Mill Road / Marsh Road Urban Design Framework Plan Lands"*. The interim foul drainage arrangement for this catchment will be to pump foul flows from the temporary pumping station to the foul sewer on the link street to discharge by gravity to the 900mm diameter sewer on the eastern side of the railway line.

The foul sewer network has been designed to cater for 6 times average dry weather flow (6 x DWF) and the projected peak effluent discharge will circa 11.5 litres/second.

A daily foul discharge volume from the application site of 160m³ has been estimated with a total BOD loading of 38kg/day.

Individual houses will be connected to the proposed 225mm diameter foul drainage system via individual 100mm pipe connections as per Irish Water, Connections and Developer Services, "*Code of Practice for Wastewater Infrastructure*".

The foul drainage network for the proposed development has been designed in accordance with the Building Regulations and specifically in accordance with the principles and methods as set out in the Irish Water Connection and Developer Services Code of Practice and Standard Details, IS EN752 (2008), IS EN12056: Part 2 (2000), the recommendations of the 'Greater Dublin Strategic Drainage Study (GDSDS)' and the DOE "*Recommendations for Site Development Works for Housing Areas*".

The Water chapter of this EIAR (Chapter 8) includes further details in relation to the proposed foul drainage arrangements, and the application is accompanied by a detailed Infrastructure Design Report prepared by DBFL Consulting Engineers.

11.4.3 Water Supply

Water supply for the application site will be from the existing 200mm diameter watermain on Colpe Road, west of the railway line. The 200mm diameter watermain will be extended along the link street, with 150mm and 100mm diameter watermains provided along proposed local streets.

The watermain layout and connections, valves, hydrants, meters etc. are designed in accordance with Irish Water's Connection and Developer Services Code of Practice / Standard Details and the Department of the Environment's Building Regulations "Technical Guidance Document Part B Fire Safety".

The daily domestic water supply requirement for application site, is estimated at approximately 150m^3. Similarly, the additional average day / peak week water supply requirement for the site is estimated at 16.7l/s. This is based on an average occupancy rate of 2.7 PE (population equivalent) per residential unit and a water usage rate of 150l/person/day.

The new site watermain network will also adequately serve the firefighting requirements of the development.

The Water chapter of this EIAR (Chapter 8) includes further details in relation to the proposed water supply arrangements, and the application is accompanied by a detailed Infrastructure Design Report prepared by DBFL Consulting Engineers.

11.4.4 Power

Power supply, and the requirement for any alterations to the existing power supply network for the development of the subject site, will be agreed with ESB Networks in advance of construction. All power supply related works will be carried out in accordance with ESB Networks relevant guidelines.

Two new sub stations will be required, one on each side of the link street. All necessary cabling and ducting will be from these points.

Micro-pillars required for street lighting will be installed at the outset or during various phases of the development.

11.4.5 Gas

It is intended that the existing gas main traversing the site will remain in place with the existing wayleave maintained.

Gas supply for the proposed development, will be agreed in advance of construction with Gas Networks Ireland, should a gas supply be required. All gas supply related works will be carried out in accordance with Gas Networks Ireland relevant guidelines.

11.4.6 Telecommunications

Telecommunications supply for the proposed development, will be agreed in advance of construction with the relevant telecommunications providers. All telecommunications related works will be carried out in accordance with relevant guidelines.

11.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

11.5.1 Construction Impacts

Potential impacts of the proposed development during the construction phase include:

Surface Water

- The installation of the surface water sewers for the development will be conducted in parallel with the other services. This will mainly involve construction of pipes and manholes using trench excavation. The potential adverse impact on the local infrastructure during the construction phase of the development would therefore be temporary and imperceptible.
- Damage to existing underground and over ground infrastructure resulting in possible contamination of the existing systems (including watercourses) with construction related materials. Any adverse impact would be temporary, short term and slight.

Foul Water

- The installation of the foul sewers will be conducted in parallel with other services. This will mainly involve construction of pipes and manholes using trench excavation. Any potential adverse impact on the local foul sewerage network during the construction phase would therefore be temporary and imperceptible.
- The site compound will require a foul connection. Any adverse impact will be short term and negligible.
- Improper discharge of foul drainage from contractor's compound. This could contaminate groundwater and nearby watercourses through seepage. Any adverse impact on the Stameen River (piped / culverted) would be temporary and slight.

Watermain:

- Provision of a new water main distribution network would involve construction activities within the subject lands mainly involving trench excavations conducted in parallel with the other services. The potential adverse impact on the local public water supply network would be temporary and imperceptible.
- There is a risk of contamination of the public water supply during the construction and in particular the connection of the watermain network for the scheme to the public supply. Any adverse impact on the local public water supply network would be temporary and slight.

- The site compound will require a water connection. Any adverse impact will be short term and negligible.

Power:

- The installation of the utilities will be conducted in parallel with the other services. This will mainly involve construction of ducting and chambers using trench excavation. Any adverse impact on the local network would be short term and imperceptible.
- Relocation or diversions to existing overhead ESB lines may lead to loss of connectivity to and / or interruption of supply from the electrical grid. Potential loss of connection to the Gas Networks Ireland infrastructure while carrying out works to provide service connections. This likely adverse impact may be characterised as a temporary, slight impact.
- The site compound will require a power connection. Any adverse impact will be short term and negligible.

Gas

- No new gas mains or additional gas supply is required during the construction phase.
- Potential loss of connection to the Gas Networks Ireland infrastructure while carrying out works to provide service connections or general construction works in the vicinity of the gas main. Any adverse impact will be short term and moderate.

11.5.2 Operational Impacts

Potential impacts of the proposed development during the operational phase include:

Surface Water:

- Adequate capacity exists in the existing surface water drainage network to cater for attenuated surface water runoff from the western portion of the development. Any adverse impact will be permanent and slight.
- Increased impermeable areas will reduce local ground water recharge and potentially increase surface water runoff (if not attenuated to greenfield runoff rate –refer to Chapter 8– Water and Hydrogeology). Any unlikely adverse impact will be permanent and slight.
- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas). Any unlikely adverse impact would be temporary and slight.

Foul Water:

- The impact of the proposed development on the public foul sewerage system will be to increase the quantity of wastewater discharging to Drogheda Wastewater Treatment Plant (WWTP) for treatment and disposal. The estimated discharge from completion and occupancy of the proposed development site would be approximately 160m^3/day. The likely adverse impact would be permanent and slight.
- The development will add to the environmental and financial costs associated with treatment and disposal at the WWTP. Any adverse impact will be permanent and slight.
- There also exists a minor risk associated with the possibility of leakage from damaged foul sewers and drains within the development site. Any foul water leakage could result in minor contamination of groundwater in the area. Any adverse impact would be temporary and slight.

Watermains:

- The impact of the operational phase of the proposed development on the public water supply is likely to be to increase the demand on the existing supply by approximately 145m^3/day for the proposed development. As such additional water quantities would need to be treated and supplied through the existing network to the site. This will require extra cost as well as increasing abstraction volumes from the existing source. Any potential adverse impact of the proposed development on the public water supply network is likely to be permanent and slight.

Power & Gas:

- The impact of the operational phase of the proposed development on the power supply network would be the requirement for two site sub stations. The potential adverse impact of the proposed development on the power supply network is likely to be permanent and slight.
- The impact of the operational phase of the proposed development on the gas supply would be the additional demand on the gas supply (should a gas supply be required). The potential adverse impact of the proposed development on the power supply network is likely to be permanent and slight.

Telecommunications:

- The increased demand on existing telecommunications infrastructure is considered to be imperceptible.

11.6 'DO NOTHING' IMPACT

There are no predicted impacts on these material assets should the proposed development not proceed.

11.7 AVOIDANCE, REMEDIAL & MITIGATION MEASURES

11.7.1 Construction phase

MA CONST1: Mitigation measures proposed in relation to material assets include the following:

- A detailed "Construction Management Plan" will be prepared by the Contractor and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the "Construction Management Plan".
- In order to reduce the risk of defective or leaking sewers, all new sewers should be laid in accordance with the relevant standards, pressure tested, and CCTV surveyed to ascertain any possible defects.
- The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established.
- Where possible backup network supply to any services will be provided should the need for relocation or diversion or existing services be required otherwise relocation or diversion works will be planned to incur minimal impact, with users notified in advance of any works.
- Connections to the existing gas network will be coordinated with the relevant utility provider and carried out by approved contractors.
- All works in the vicinity of the existing gas main and in particular within the wayleave area will be agreed and co-ordinated with Gas Networks Ireland (GNI) prior to commencement.

11.7.2 Operational phase

MA OPER1: Please refer to Chapter 8.0 Water for mitigation measures associated with the surface water treatment.

- All new drainage lines (foul and surface water) will be pressure tested and will be subject to a CCTV survey to identify any possible defects prior to being made operational.
- Chapter 8.0 includes the mitigation measures associated with the surface water system for the development.
- It is envisaged that the development would take place and be occupied over a reasonable time period, and therefore the downstream foul sewerage system (foul sewer network and wastewater treatment facility) would be gradually loaded.
- Similarly, water conservation methods would reduce the loading on the foul sewer network and the treatment works at Drogheda WWTP.
- Regular maintenance of the drainage network including the petrol interceptor, flow control and surface water storage system would ensure that they are operating correctly.
- On completion of the construction phase no further mitigation measures are proposed in relation to the electrical and gas infrastructure.

11.8 PREDICTED IMPACT FOLLOWING MITIGATION

Where mitigation measures outlined in Sections 11.7.1 & 11.7.2 are implemented, the residual impact is considered to be imperceptible.

11.9 POTENTIAL CUMULATIVE IMPACTS

11.9.1 Construction Impacts

The cumulative construction impacts of the proposed development, the commercial development approved under LB180620 and the temporary post primary school approved under LB190739, includes the possibility of underground services (watermains) and utilities being constructed at the same time. The cumulative impacts are likely to be adverse slight and temporary.

11.9.2 Operational Impacts

- Surface water drainage in the link street which outfalls to the stream west of Mill Road, includes an allowance for attenuated surface water flow from the commercial development approved under LB180260 (attenuated to existing greenfield runoff). The cumulative impacts are likely to be adverse imperceptible and permanent.
- The hydraulic loading and demand on Drogheda Wastewater Treatment Plant from the proposed development, and other developments in the area has been assessed by Irish Water in their confirmation of feasibility. It likely that this activity would have a slight, permanent, adverse, impact on Drogheda Wastewater Treatment Plant.
- The hydraulic loading and demand on the public Water Extraction and Treatment Facility from the proposed development, and other developments in the area has been assessed by Irish Water in their confirmation of feasibility. It likely that this activity would have a slight, permanent, adverse, impact on the municipal water extraction and treatment facility.
- The cumulative likely impact of the proposed development, the commercial development approved under LB180260 and the temporary post primary school approved under LB190739, on the power supply and gas supply networks would be slight, adverse and permanent.

11.10 MONITORING

11.10.1 Construction phase

Please refer to Chapter 8.0 – Water for the proposed monitoring in relation to the surface water. There is no specific monitoring is proposed in relation to the remaining material assets infrastructure.

- All drainage works will be approved by Meath County Council and will be carried out in accordance with the GDRCOP (Greater Dublin Regional Code of Practice for Drainage Works).
- All foul and surface water sewers will be CCTV surveyed prior to being 'taken in charge' by Meath County Council.
- Watermains, foul sewers and surface water sewers will be pressure tested prior to connection to the public system.

11.10.2 Operational phase

Proposed monitoring during the operational phase in relation to the water infrastructure are as follows:

- The surface water and foul drainage systems will be monitored by way of observation of hydraulic issues with the system and the establishment of a proper maintenance programme for all sewers / Suds features etc.
- Regular cleaning of pipe networks within the development taken in charge will ensure no blockage will obstruct any flow from surface and foul networks.
- On-going water usage within the proposed development will be monitored by bulk water meters. Water usage will be monitored by the relevant authority to avoid waste and leaks etc.

11.11 REINSTATEMENT

Where works are undertaken in existing roadways, footpaths, cyclepaths and other areas required to facilitate the construction of utilities and services, reinstatement would be agreed with Meath County Council.

11.12 INTERACTIONS

- There are interactions between material assets and lands and soils, with the construction of drainage and utilities impacting the quantity of soil, subsoil and rock as these materials will be removed to facilitate construction. The likely impact will be permanent not significant and adverse.

- There are interactions between material assets (built) and material assets (transport), with the delivery of materials for the construction of built assets resulting in additional construction vehicles on roads adjacent to the site. The likely impact will be temporary slight and adverse.

- There are interactions between material assets and water, with attenuated surface water runoff from the western portion of the site outfalling to the surface water drainage network and foul flows from the site discharging to the foul sewerage network. The likely impact will be permanent slight and adverse.

- There are interactions between material assets and water, with potable water for the development supplied from surface water and ground water abstractions. The likely impact will be permanent slight and adverse.

11.13 DIFFICULTIES ENCOUNTERED IN COMPILING

No particular difficulties were encountered in compiling this chapter.

11.14 REFERENCES

- Greater Dublin Regional Code of Practice for Drainage Works, Available at http://www.dublincity.ie/main-menu-services-water-waste-and-environment-drains-sewers-and-waste-water/greater-dublin-regional, Accessed 26th June 2019.
- Water.ie, 2017, Irish Water Code of Practice for Water Infrastructure, Available at https://www.water.ie/connections/Code-of-Practice-for-Water-Supply.pdf, Accessed 1st July 2019. Water.ie, 2017, Irish Water Code of Practice for Water Infrastructure, Available at https://www.water.ie/connections/Code-of-Practice-for-Water-Supply.pdf, Accessed 1st July 2019.
- Building Regulations, 2006, Technical Guidance Document B Fire Safety, Available at https://www.housing.gov.ie/sites/default/files/migrated-files/en/Publications/DevelopmentandHousing/BuildingStandards/FileDownLoad%2C1640%2Cen.pdf, Accessed 1st July 2019.

FIGURES

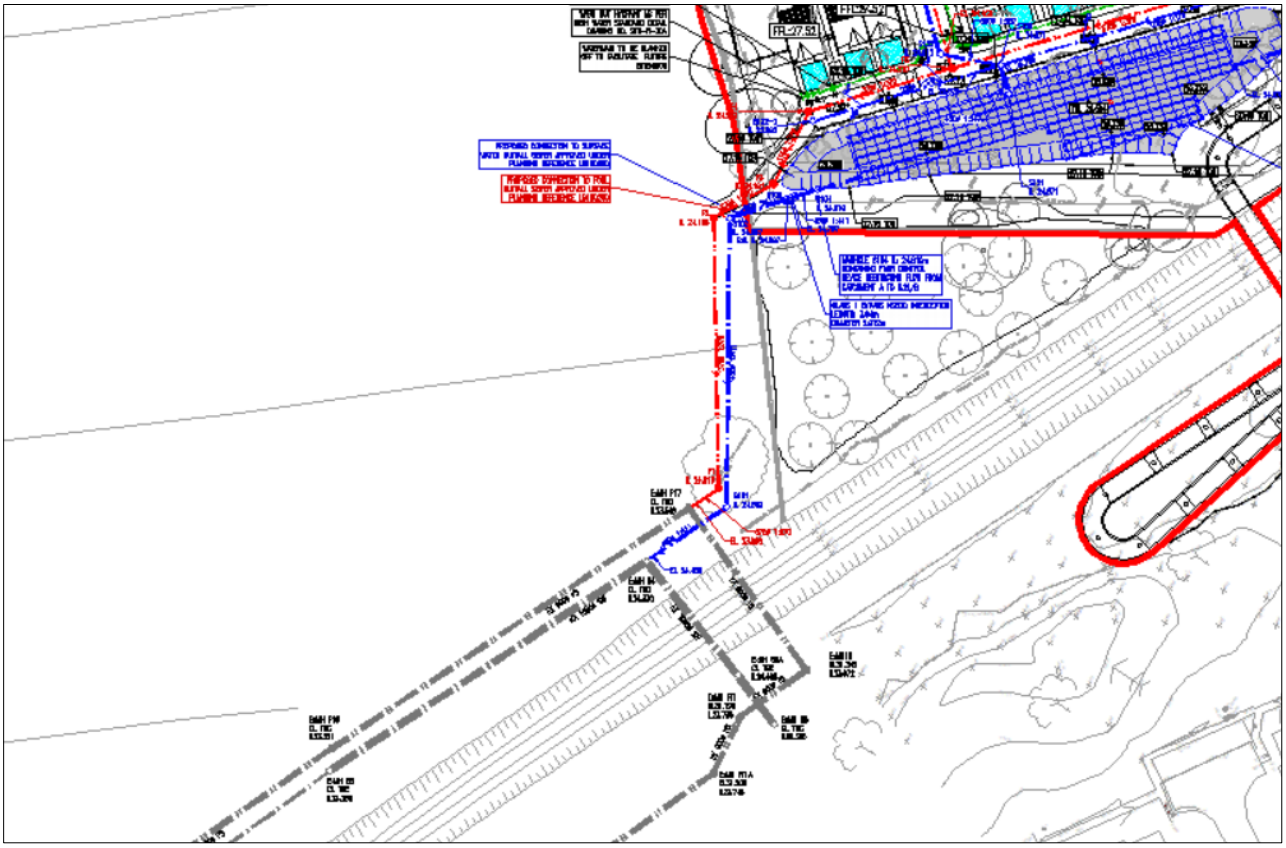

Figure 11.1: Extract of "Site Services Plan" showing drainage connections to existing foul and surface water sewers adjacent to railway line

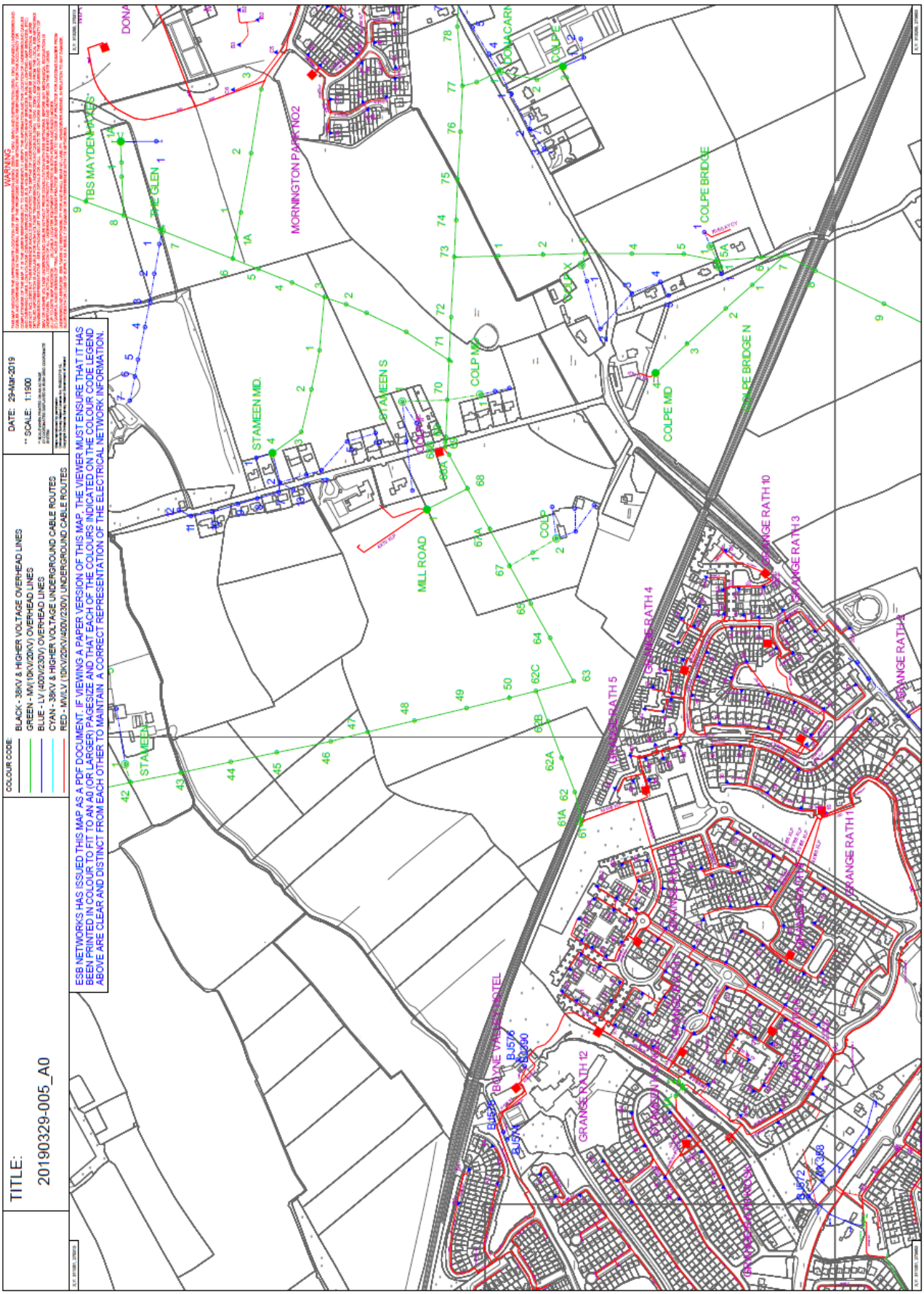

Figure 11.2: ESB Records

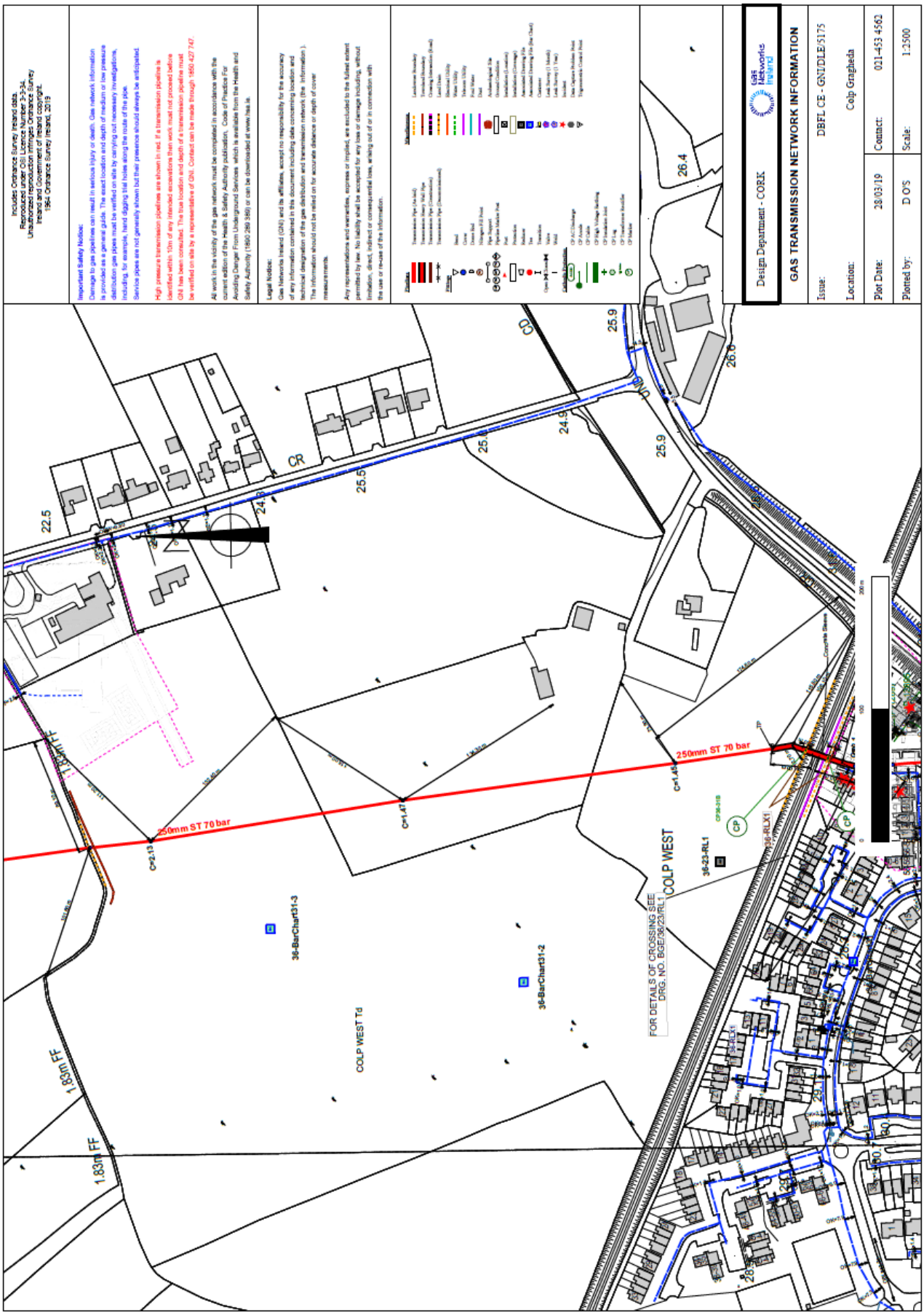

Figure 11.3: Gas Networks Records