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7 Material Assets: Built Services

7.1 Introduction

CORA Consulting Engineers, undertook the preparation of this section of the Environmental Impact Assessment Report (EIAR), in association with METEC Consulting Engineers. CORA's lead author is Kevin O'Mahony BA, BAI, C.Eng, MIEI, MIStructE, Chartered Engineer with over 25 years' experience in the industry. The Lead Author for Metec Consulting Engineers is Maurice Ramsay, Chartered Engineer, who received primary and Masters Degrees in Engineering from Trinity College Dublin. He is a Chartered Engineer with Engineers Ireland, and has extensive experience in the servicing of large-scale Residential and Masterplan Areas, including all utility services for the Grange Castle Masterplan, National Stadium Site Selection Study and IDA Ireland Strategic Site Assessments.

Material Assets in this Chapter considers physical resources in the environment which may be of human origin as those of a natural origin are addressed elsewhere in the EIAR. The objective of the assessment is to ensure that these assets are used in a sustainable manner, so that they will be available for future generations, after the delivery of the proposed development.

As part of a desktop study of the existing services infrastructure, serving the development site, the following data was sourced online, for information:

- Public Foul Drainage (Irish Water Records);
- Public Water Main Networks (Irish Water Networks);
- Electricity Supply Networks (ESB Networks);
- Gas Supply (Gas Networks Ireland);
- Telecommunications (Éir, Virgin Media).

With regard to Material Assets, the August 2017 Draft EIAR Guidelines published by the EPA state:

"The meaning of this factor is less clear than others. In Directive 2011/92/EU it included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes roads infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils."

7.2 Proposed Development

The proposal consists of replacing the former Chivers factory with 4 no. proposed blocks (Blocks A1, A2 each with two 12 storey elements, and Blocks B & C ranging from 3 to 7 storeys and associated courtyard spaces). In addition the scheme includes for a service building comprising of a crèche (300 sq. m), café (34 sq. m) and gym (412 sq. m) at the northwest corner of the site, as well as streets, public realm amenity and green open space.

7.3 Methodology

As part of a desktop study of the existing services infrastructure, serving the development site, the following data was sourced online, for information:

- Public Foul Drainage (Irish Water Records);
- Public Water Main Networks (Irish Water Networks);
- Electricity Supply Networks (ESB);
- Gas Supply (Gas Networks Ireland);
- Telecommunications (Éir, Aurora, Virgin Media, BT), and.
- Consultation with Utility Providers (Irish Water, GNI, ESB, etc).

All of the above information was reviewed, in order to gain an appreciation of how the development site is currently served and determine its adequacy in terms of the proposed overall mixed-use development.

The assessment of potential impacts on the built services for the proposed development were assessed through a desktop study of the information provided in consultation with the relevant utility providers, listed above.

A Pre-Connection Enquiry Form was issued to Irish Water, with Confirmation of Feasibility advised by return of letter from Irish Water. Furthermore, Irish Water Codes of Practice were consulted in order to establish the flow rates from the development site's former occupants, which were industrial in nature. This procedure allows Irish Water and the Local Authority to assess the impact of the proposed development against the receiving water and wastewater infrastructure, including the capacity of the receiving treatment plant. Consultation has taken place with the ESB and Gas Networks Ireland with regard to the availability of power and gas supplies and no concerns have been raised.

7.4 Baseline Scenario

7.4.1 Potable Water Supply

The now redundant site, which form the overall development, provide its own individual water supply connection from the public networks.

There is currently a 6-inch uPVC main on Coolock Drive to which the site supply is assumed to connect, given the locations of sluice valves at the site entrance. The site supply has been redundant for many decades and no records exist.

Further details of the existing local watermain infrastructure within the public domain are included in the Engineering Services Report.

7.4.2 Wastewater Services

The now redundant site, which form the overall development, provide its own individual waste water connection to the public networks.

A 450mm diameter concrete public foul sewer passes through the site from west to east. A 300mm diameter concrete foul sewer is located on Coolock Drive and connects to the 450mm diameter sewer near the site entrance.

Further details of the existing local wastewater infrastructure are included in the Engineering Services Report, which contains a copy of Irish Water's infrastructure records.

7.4.3 Electrical Supply

Based on information received from ESB Networks, the existing site was serviced directly from the Medium Voltage Infrastructure in the area. Please refer to ESB Networks drawing 17114 Chivers Site Coolock Appendix 7.1.A – Existing ESB Networks Infrastructure. It is the intention that the development shall be supplied from the local ESB Networks Medium Voltage Network, which includes Medium Voltage Sub-Stations on Coolock Drive (immediately adjacent to the site) and at Castle Elms on Greencastle Road. It is proposed to link to both sides of this Network for security of supply, and to locate 4 No. Substations within the development, one at each boundary. The location and ratings of Sub-Station shall be considered to satisfy architectural and engineering design freedom and also to satisfy the statutory requirements of ESB Networks.

Record drawings of the area indicate that the existing site is free from any major intrusion of existing ESB infrastructure, and it is proposed to disconnect the existing supply to the site prior to any works.

7.4.4 Natural Gas Supply

Based on information received from Gas Networks Ireland, there is a medium pressure supply network running around the development site and that there are no supply issues going forward. Please refer to GNI drawing 17114 Chivers Site Coolock Appendix 7.1B – Existing Gas Networks Ireland Infrastructure. It is intended that a gas distribution network shall be extended by Gas Networks Ireland from the existing gas supply network to supply gas to the various units proposed throughout the whole development. The record maps for Gas Networks Ireland indicate a 90mm diameter medium pressure gas main supplying the existing plant room, which it is proposed to divert to suit the proposed scheme layout.

7.4.5 Information and Communications Technology

Based on information received from ICT providers, the existing site was serviced directly by existing ICT infrastructure immediately adjacent to the site. Please refer to Eir Drawing 17114 Chivers Site Coolock Appendix 7.1 C– Existing OpenEir Infrastructure and 17114 Chivers Site Coolock Appendix 7.1.D – Existing Virgin Media Infrastructure. All main roads / boulevard within the development shall contain ducting / cable ways and chambers as deemed necessary for the servicing of the site.

The immediate surroundings of the site are currently serviced by Eir and Virgin Media infrastructure, which it is proposed to extend within the site to meet the needs of the development. It is proposed to extend Fibre-to-the-Home to each unit within the development to provide the development with high-speed broadband, TV and telecommunication requirements. It is proposed to disconnect the existing supplies to the site prior to any works, and to divert any minor services passing through the site, which may service adjacent sites.

7.5 Difficulties Encountered

The exact location of the existing services infrastructure is reliant upon both the public records obtained, which are indicative, and the results of the topographical surveys at ground level only to locate manhole and access covers. This information gives a good indication of the approximate location of the various built services; however, their exact location remains unknown. This can only be determined by an intrusive survey investigation such as slit trenching; for accuracy and completeness of information.

The existing waste water and water flow rates from the redundant site have been estimated using Irish Water Codes of Practice as no data was available given that the site has been unoccupied for almost 2 decades.

7.6 Impact Assessment

It is not envisaged that the proposed development will result in any significant long-term effects on the environment due to the built services associated with the proposed development. There is however likely to be some minor impact experienced, by way of temporary disruption, during the construction phase of this development.

7.6.1 Do Nothing Scenario

The site is zoned for residential use that is designed to facilitate increased availability of residential use in a largely residential area. In the 'Do Nothing' scenario, the derelict industrial site would likely remain idle; resulting in usage rates of the existing services that would be similar to the site's historical impact i.e. prior to the units becoming redundant., It is highly unlikely that in the absence of the proposed development that the existing buildings would remain completely unoccupied considering the current economic climate.

7.6.2 Construction Phase Impact

There is significant infrastructure throughout the development-site, which served the existing buildings that are to be decommissioned and removed from site. This includes, but is not limited

to, service ducting, water main and waste water infrastructure such as pipes, ducts, manholes and chambers.

The 450mm diameter sewer is proposed to be diverted as part of the development and shall be located under the main access road of the development, providing full wayleave access to Irish Water for maintenance purposes. These works can be managed and phased to ensure there is minimal destruction to the public network.

The new development will require new connections to all service providers as well as to public water supply and waste water networks, which may result in temporary disruption of existing services in the vicinity of the development; in order to facilitate the connection but this disruption, if any, will be brief and not significant.

7.6.3 Operational Phase Impact

The existence of the proposed development is likely to result in an increase in the demand on all required services.

Water Supply

Irish Water have confirmed the feasibility of the proposed development, in terms of water infrastructure capacity, by return of a 'Confirmation of Feasibility Letter' following the submission of a Pre-Connection Enquiry Form.

There will be an estimated average water demand of 3.49 l/s however, this was confirmed as feasible by Irish Water and will result in a constant, permanent but not significant impact on the receiving networks.

Wastewater

Irish Water have confirmed the feasibility of the proposed development, in terms of wastewater infrastructure capacity, by return of a 'Confirmation of Feasibility Letter' following the submission of a Pre-Connection Enquiry Form.

There will be an estimated average waste water usage rate of 3.49 l/s however, this was confirmed as feasible by Irish Water with no adverse impact on the receiving networks. All wastewater will discharge to the local public wastewater infrastructure, which is conveyed to the Ringsend Wastewater Treatment Plant via the trunk sewer located within the site. This will result in a constant, permanent but not significant impact on the receiving wastewater networks.

Electrical Supply

It is the intention that the development shall be supplied from the local ESB Networks Medium Voltage Network, which includes Medium Voltage Sub-Stations on Coolock Drive (immediately adjacent to the site) and at Castle Elms on Greencastle Road. It is proposed to link to both sides of this Network for security of supply, and to locate 4 No. Substations within the development, one at each boundary. The location and ratings of Sub-Station shall be considered to satisfy architectural and engineering design freedom and also to satisfy the statutory requirements of ESB Networks.

Natural Gas Supply

It is intended that a medium pressure gas distribution network shall be extended by Gas Networks Ireland from the existing gas supply network to supply gas to the various units proposed throughout the whole development.

Information and Communication Technology

Based on information received from ICT providers, the existing site was serviced directly by existing ICT infrastructure immediately adjacent to the site. Please refer to Eir Drawing 17114 Chivers Site Coolock Appendix 7.1.C – Existing OpenEir Infrastructure and 17114 Chivers Site

Coolock Appendix 7.1.D – Existing Virgin Media Infrastructure in the Appendices. All main roads / boulevard within the development shall contain ducting / cable ways and chambers as deemed necessary for the servicing of the site. The immediate surroundings of the site are currently serviced by Eir and Virgin Media infrastructure, which it is proposed to extend within the site to meet the needs of the development. It is proposed to extend Fibre-to-the-Home to each unit within the development to provide the development with high-speed broadband, TV and telecommunication requirements. It is proposed to disconnect the existing supplies to the site prior to any works, and to divert any minor services passing through the site, which may service adjacent sites.

7.6.4 Risks to Human Health

Infrastructure will be constructed in line with the specifications of the relevant service provider. All wastewater will discharge to the municipal sewer and will be treated at Ringsend Wastewater Treatment Plant prior to discharge. There is no likely significant risk to human health, due to the material assets of built services resulting from the construction or operation of the proposed development.

7.6.5 Cumulative Impacts

The proposed development will increase the impact on the existing built assets. These have been assessed as follows:

Water Supply

A preliminary calculated average water demand of 3.49 l/s will be required to serve the proposed development, should it be approved. A Pre-Connection Enquiry Form has been submitted to Irish Water to assess the feasibility of the additional phase of the development. Confirmation of design acceptance has also been received from Irish Water.

Wastewater

A preliminary calculated average wastewater usage rate of 3.49l/s will result from the proposed development, should it be approved. A Pre-Connection Enquiry Form has been submitted to Irish Water to assess the feasibility of the additional phase of the development.

Electrical Supply

It is the intention that the development shall be supplied from the local ESB Networks Medium Voltage Network, which includes Medium Voltage Sub-Stations on Coolock Drive (immediately adjacent to the site) and at Castle Elms on Greencastle Road. It is proposed to link to both sides of this Network for security of supply, and to locate 4 No. Substations within the development, one at each boundary. The location and ratings of Sub-Station shall be considered to satisfy architectural and engineering design freedom and also to satisfy the statutory requirements of ESB Networks.

Natural Gas Supply

It is intended that a medium pressure gas distribution network shall be extended by Gas Networks Ireland from the existing gas supply network to supply gas to the various units proposed throughout the whole development.

Information and Communication Technology

All main roads / boulevard within the development shall contain ducting / cable ways and chambers as deemed necessary for the servicing of the site. The immediate surroundings of the site are currently serviced by Eir and Virgin Media infrastructure, which it is proposed to extend within the site to meet the needs of the development. It is proposed to extend Fibre-to-the-Home to each unit within the development to provide the development with high-speed broadband, TV and telecommunication requirements.

Impact on Climate
There is likely to be a slight increase in air pollution and carbon dioxide emissions due to the development. However, any such threat is considered negligible in terms of adversely impacting the climate due to the high quality and energy efficiency of the development proposed.

The following accidents & disasters involving built services during construction could potentially give rise to a serious incident putting people and the climate at risk:

- Excavation works coming into contact with live electricity lines
- Excavation works causing damage and leaks to gas mains
- Excavation works causing damage to wastewater pipelines, and resulting in contamination of the surrounding ground

With the implementation of the mitigation measures outlined below, the likelihood of such events occurring would be local and not significant.

The following accidents & disasters involving built services during operation could potentially give rise to a serious incident putting end users at risk:

- Gas explosions. The installation of services is tightly monitored and controlled by Gas Networks Ireland. Therefore, the residual risk effect is not considered significant.

7.7 Mitigation

7.7.1 Design Mitigation

All new-build service infrastructure is to be designed in accordance with the relevant service provider and asset owner's code of practice, which require due cognisance of the receiving environment. Design depths of proposed infrastructure are to be optimised so that excessive excavations are avoided where possible, and by association a reduction in resultant waste and machinery operation time. It is proposed that products and materials are supplied locally, where practicable and available; in order to reduce carbon footprint of travel and production.

7.7.2 Construction Phase

The following mitigation measures are recommended for the construction phase of the development:

- Consultation with relevant services providers in advance of works to ensure works are carried out to relevant standards and specifications including procedures to ensure safe working practices are implemented for works in the vicinity of services such as live gas mains, works in the vicinity of overhead electricity lines and live electricity lines and works to distribution watermains.
- Neighbouring sites are to be advised of construction methodologies in advance of works, in situations which may affect them.
- Protection in place of all underground services for which diversions are not required.
- All decommissioned infrastructure will have to be sent to an accepting landfill for disposal.
- Construction methods used by the contractor are to be tailored to reduce, where possible, dust noise and air pollution; to minimise interference with the environment and the neighbouring areas.
- Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to an accepting licensed waste disposal facility.
- All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines.

- Potable water supply networks and waste water infrastructure are to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Irish Water Requirements.
- Connections to the service providers are to be carried out to the approval and / or under the supervision of the Local Authority or relevant utility service provider, prior to commissioning.
- All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase.
- Prior to the commencement of excavations in public areas, all utilities and public services are to be identified and checked; to ensure that adequate protection measures are implemented to minimise the risk of service disruption.
- All excavations within the public area are to be back-filled in a controlled manner and surface re-instated to the satisfaction of the Local Authority.

With the implementation of these mitigation measures, the severity of the impact of the proposed development on the built services will be minimised, with tie-ins to existing services and installation of new services completed in a satisfactory manner for the relevant service providers.

7.7.3 Operational Phase

The design and construction of the required services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services.

Any additional mitigation measures required for the proposed built services, if required, during the operational phase will be as advised by the relevant service provider.

7.8 Residual Impact

7.8.1 Construction Phase

Residual impacts on the built services during the construction phase is considered to be temporary and occasional in nature and not significant, where service is unavoidably disrupted to facilitate the construction phase.

7.8.2 Operational Phase

Residual impacts on the built services during the operational phase given the new infrastructure and upgrades to the existing networks is considered to be permanent with a constant occurrence, positive and beneficial to all the end users.

7.9 Monitoring

All potable water will be cleaned and tested to the satisfaction of Irish Water prior to the connection to the public potable water. In addition, all connections to the public potable water and foul water sewer will be carried out under the supervision of Irish Water

All new infrastructure, which is to serve the proposed development, is to be routinely inspected with any maintenance carried out, as required. Any monitoring of the built services required during the operational phase of the proposed project will be as advised by the relevant services providers.

7.10 References and Sources

- Irish Water Code of Practice for Wastewater Infrastructure
- Irish Water Code of Practice for Water Infrastructure
- https://www.esbnetworks.ie/staying-safe/contractor-safety/digging-and-excavation-work
- https://www.gasnetworks.ie/corporate/freedom-of-information/make-a-request/
- https://cbyd.emaps.eircom.ie/Eircom-CBYD/
- EPA, (2017), Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Publications, 17 Duke Street