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Associates

# Engineering Planning Report - Drainage & Water Services

## EdgeConnex 110kV Duct Route



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Client: EdgeConneX

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Date: 18<sup>th</sup> March 2021

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Job Number: 20\_167

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Civil  
Engineering

Structural  
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Transport  
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Environmental  
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Project  
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Health  
and Safety

CONSULTING ENGINEERS



## Document Control Sheet

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## Table of Contents

1	Introduction.....	4
1.1	Overview.....	4
1.2	Description of the site.....	4
1.3	Permitted Development on Landholding.....	5
1.4	Proposed Infrastructure on Landholding.....	6
2	Surface Water Drainage.....	7
2.1	Overview.....	7
2.2	Existing Storm Water Infrastructure.....	7
2.3	Proposed Surface Water Network.....	7
2.4	Proposed Protection Measures.....	7
3	Foul Water Drainage.....	8
3.1	Overview.....	8
3.2	Existing Wastewater Network.....	8
3.3	Proposed Wastewater Network.....	8
4	Water Supply.....	9
4.1	Overview.....	9
4.2	Existing Wastewater Network.....	9
4.3	Proposed Wastewater Network.....	9
5	Flood Risk Assessment.....	11
6	Accompanied Information.....	12

## 1 Introduction

### 1.1 Overview

The following report is being submitted as part of the Planning Application for the provision of two no. 110kV transmission lines along with associated and ancillary works, that will connect the permitted Coolderrig 110kV Gas Insulated Switchgear (GIS) substation that includes 2 no. transformers and an MV switch room within an overall compound that was granted permission under SDCC Reg. Ref. SD18A/0298 with the Grange Castle - Kilmahud Circuit.

### 1.2 Description of the site

The Proposed Development is to be located on a site of c. 1.49 hectares. The permitted Coolderrig 110kV GIS Substation and Transformers / MV control room compound is located within the north-east of the overall Edgeconnex landholding that is bounded by the R120 and residential properties to the west; the Grand Canal and an access road along its southern bank to the north; the Takeda facility and Grange Castle Business Park to the east (through which the transmission lines will be built); and a Microsoft data centre facility to the south within the townland of Grange, Dublin 22.

#### **110 kV transmission line to the Coolderrig Substation**

The two proposed underground single circuit 110kV transmission lines will connect the permitted and under construction Coolderrig 110kV GIS Substation to the existing Grange Castle - Kilmahud Circuits to the east. The proposed parallel transmission lines cover a distance of approximately 559m and 574m within the townland of Grange, Dublin 22. They will pass outside of the site and along and under the internal road infrastructure within the Edgeconnex site and Grange Castle Business Park; above the culverted Griffeen River and along a wayleave to the north of the Griffeen River to the joint bays where it will connect into the Kilmahud Circuit.



Figure 1.1 Site location of Proposed Development site

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### **1.3 Permitted Development on Landholding**

The proposed development compound is to be located on lands with various permissions the most pertinent to the application being an extant permission -SDCC Planning Register Reference: SD18A/0298.

The Permitted Development (SDCC Planning Register Reference: SD18A/0298) consists of various works that can be summarised as follows:

- Amendment and completion of the permissions granted under Reg. Ref. SD16A/0214, SD16A/0345, SD17A/0141 and SD17A/0392 as well as the construction of two new single storey data halls and associated office areas and plant, with a gross floor area of 5,823sq.m. 1 new single storey data hall (1,857sq.m) plus single storey offices (719sq.m) will be located to the immediate east of the data hall that was permitted and subsequently extended under Reg. Ref. SD17A/0141 and SD17A/0392.
- The new data hall will include plant at roof level; associated support services, 4 standby generators with associated flues (each 15m high) and service road. 1 new single storey data hall (3,005sq.m) plus delivery bay (242sq.m) will be located to the north of the extended data centre granted under Reg. Ref. SD17A/0141 and SD17A/0392 and to the south of the permitted attenuation pond.
- The new data hall will include plant at roof level; associated support services, 8 standby generators with associated flues (each 15m high) and service road. Relocation and redesign of the two storey ESB substation (556sq.m) with associated transformer yard and single storey transformer building (180sq.m) permitted under SD16A/0345 to the immediate north of the entrance into the site from Grange Castle Business Park.
- The development will also include a revised location for the sprinkler tank and pump room permitted under SD17A/0392, as well as a revision and extension to the permitted service road to provide vehicular access to all data halls and relocation of the 3 car parking spaces permitted under SD17A/0392 as well as the creation of 14 new spaces (17 spaces overall) and sheltered bicycle parking to serve this element of the development. The development will also include modifications to the attenuation pond, and to the landscaping previously permitted.
- The development will continue to include ancillary site works, connections to the existing Grange Castle infrastructural services as well as fencing and signage. An Environmental Impact Assessment Report (EIAR) has been submitted with this application.

## 1.4 Proposed Infrastructure on Landholding

The Proposed Development comprises:

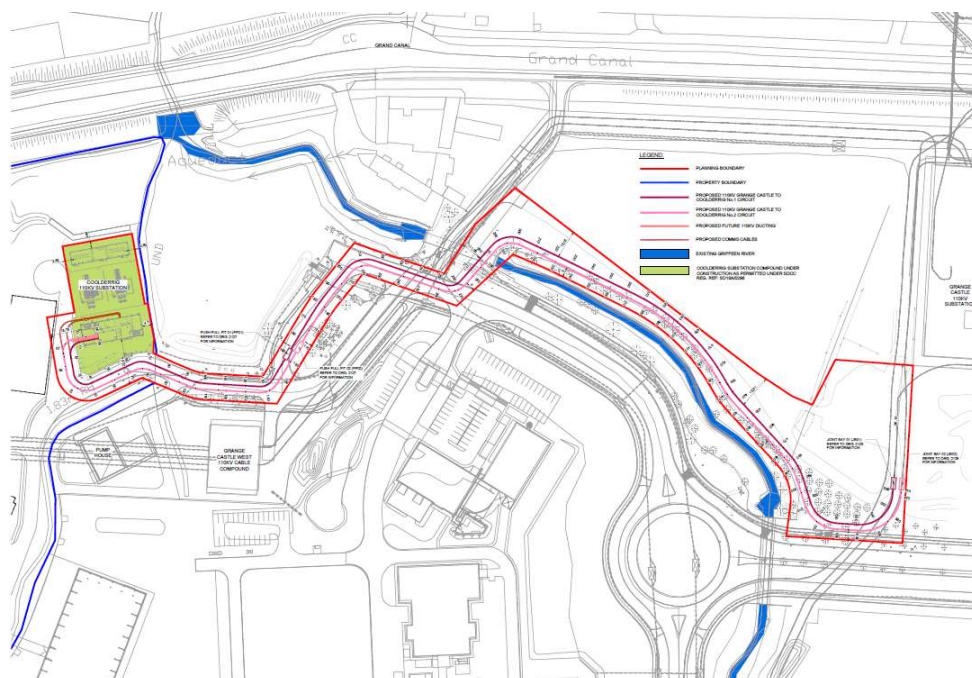
The proposed development primarily comprises the provision of two no. 110kV transmission lines along with associated and ancillary works. The proposed transmission lines will connect the permitted and under construction Coolderrig 110kV Gas Insulated Switchgear (GIS) substation compound that was granted permission under SDCC Reg. Ref. SD18A/0298 with the existing Grange Castle – Kilmahud Circuits. The site of the proposed development has an area of c. 1.49 hectares.

The two proposed underground single circuit 110kV transmission lines will connect the permitted Coolderrig 110kV GIS Substation, within the existing Edgeconnex landholding, to the existing Grange Castle - Kilmahud Circuits to the east. The proposed transmission lines cover a distance of approximately 559m and 574m within the townland of Grange, Dublin 22. The route of the transmission lines will pass along and under the internal road infrastructure within the Edgeconnex site and Grange Castle Business Park; above the culverted Griffeen River and along a wayleave to the north of the Griffeen River to the joint bays where it will connect into the Grange Castle – Kilmahud Circuits.

The development includes the connections to the permitted Coolderrig substation as well as to the Grange Castle – Kilmahud Circuits, as well as changes to the landscaping within the Grange Castle Business Park and all associated construction and ancillary works.

The permitted and under construction Coolderrig 110kV Gas Insulated Switchgear (GIS) substation includes a two storey GIS Substation building (with a gross floor area of 556sqm) (known as the Coolderrig Substation), associated underground services; 2 no. transformers and single storey MV switch room (180sqm) within a 2.6m high fenced compound, and all associated construction and ancillary works.

Figure 1.2 presents a site layout plan showing the route of the proposed underground 110kV transmission line, the Coolderrig GIS substation and the proposed cable bays.



**Figure 1.2** Proposed site layout plan of the Proposed Development site indicating proposed 110kV transmission lines (Source: Drawing no. 20\_167-CSE-00-XX-DR-C-2120, CSEA Consulting Engineers)

## 2 Surface Water Drainage

### 2.1 Overview

During the construction of the proposed cable route, reinstatement works might be necessary to the existing surface water network, such as the reinstatement of manholes, gullies and pipes.

We would note that the underground transmission lines will have no impact on the existing drainage network system.

### 2.2 Existing Storm Water Infrastructure

There are existing storm water sewers 225mm and 300mm in diameter within the proposed cable route. They drain from east to west combine and turn north and discharge into the Griffen River.

### 2.3 Proposed Surface Water Network

No changes to the existing surface water network will be necessary for the construction of the proposed 110kv cable route.

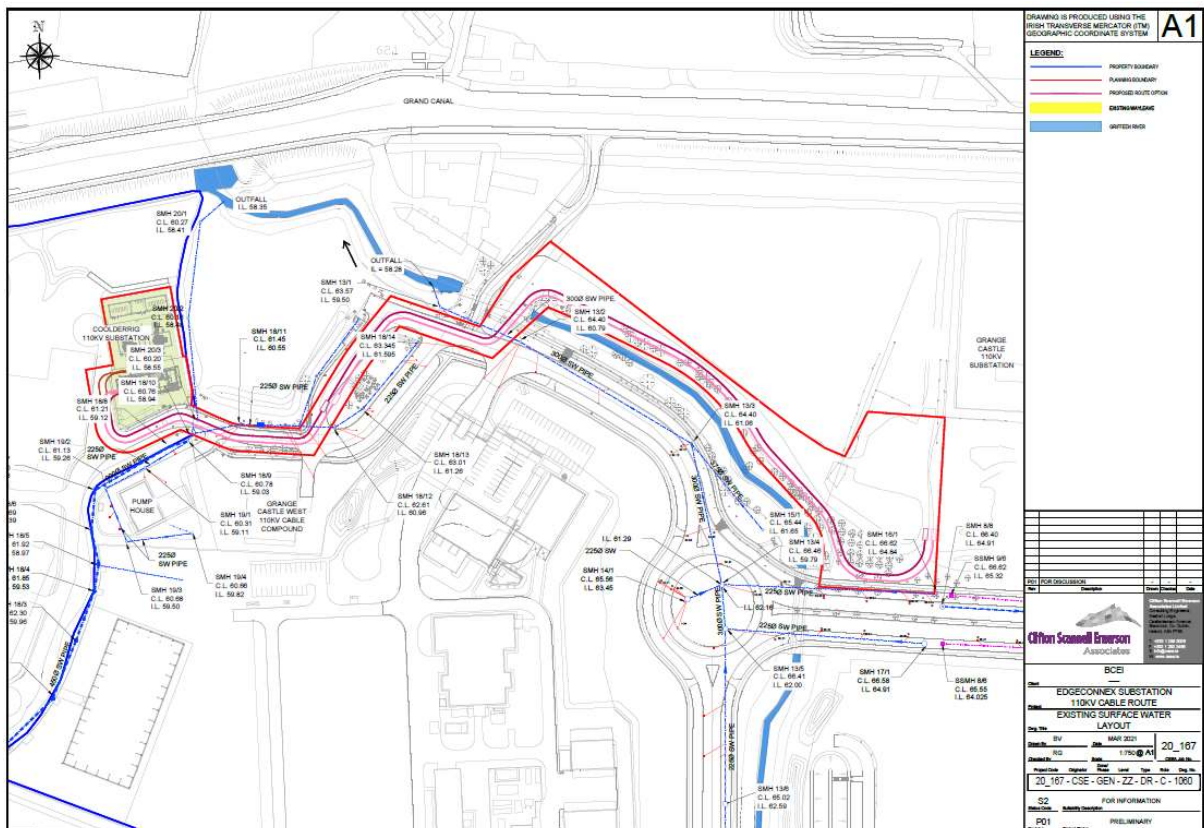


Figure 4.1 Overall Existing Surface Water Layout Plan DWG NO 20\_167-CSE-GEN-ZZ-DR-C-1060

### 2.4 Proposed Protection Measures

- Excavation and infilling will be carried out in small progressive stages;
- Any topsoil that is of use for landscaping will be stored on the site. Where this is required during the construction phase, it will be stored suitably far away from the Griffen River and covered to avoid excessive sediment run-off or wind blow;
- Whilst no significant run off of silt laden run off is anticipated, given the proposed construction methodology, the site will be regularly monitored by construction staff for signs of run-off such

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as silt in surrounding vegetation and measures will be put in place to prevent this where necessary. This may include the erection of a silt fence. A silt fence may be constructed by attaching a sheet of geotextile membrane to a stock fence and burying the bottom of it into the ground, thus allowing water to pass through but not the heavier fraction of the sediment;

- Excavations will be carried out using a suitably sized excavator and always from the northern bank of the River;
- Any excavated soil that is not re-used will be disposed of to a Local Authority approved waste disposal facility;
- In all circumstances, excavation depths and volumes will be minimised and excavated material will be re-used where possible.

### 3 Foul Water Drainage

#### 3.1 Overview

During the construction of the proposed cable route, reinstatement works might be necessary to the existing foul water network, such as the reinstatement of manholes and pipes.

We would note that the underground transmission lines will have no impact on the existing foul network system.

#### 3.2 Existing Wastewater Network

There is existing foul water sewers 100mm, 200mm, 450mm and 525mm in diameter within the proposed cable route.

#### 3.3 Proposed Wastewater Network

No changes to the existing foul water network will be necessary for the construction of the proposed 110kv cable route.



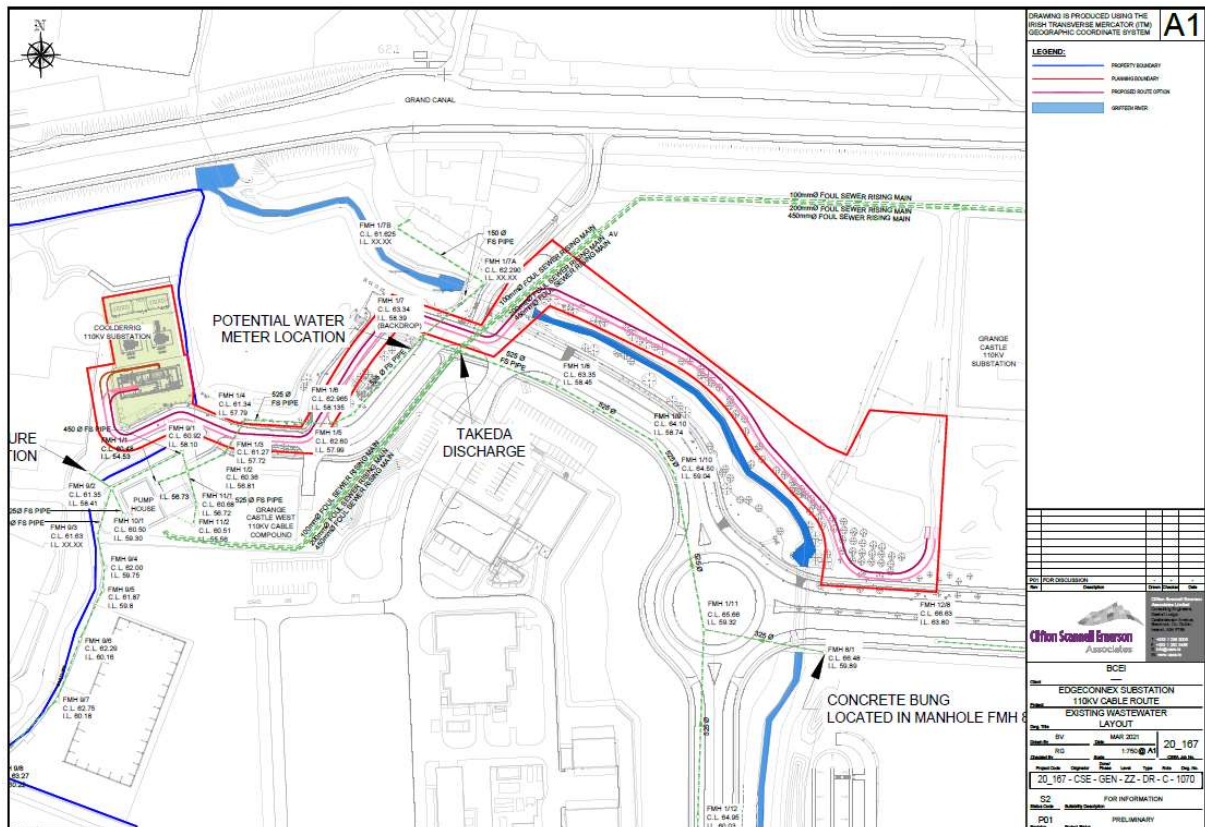


Figure 3.1 Overall Existing Foul Water Drainage Layout Plan DWG NO 20\_167-CSE-GEN-ZZ-DR-C-1070

## 4 Water Supply

### 4.1 Overview

During the construction of the proposed cable route, reinstatement works might be necessary to the existing watermain network, such as the reinstatement of pipes. Any necessary works will be carried out in line with Irish Water standards.

We would note that the underground transmission lines will have no impact on the existing water supply system.

### 4.2 Existing Wastewater Network

There is existing watermain pipes 100mm and 150mm in diameter within the proposed cable route.

### 4.3 Proposed Wastewater Network

No changes to the existing water supply network will be necessary for the construction of the proposed 110kv cable route.



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## 5 Flood Risk Assessment

A site Flood Risk Assessment was carried out by Pinnacle Consulting Engineers.

Below is an extract from the above noted FRA:

*“The proposed development will be carried out in a wholly sustainable manner, as described, and will not pose any flooding issues. This holds true for the developable area itself or for any lands / properties downstream of the proposed development.*

*The fluvial flooding which occurred on a section of the northern end of the permitted Edgeconnex campus site, is considered to be of an extreme nature, i.e. 1:1000 year storm event and would not jeopardise the proposed sub-station compound development of the site, due to the fact that compensatory storage has been adequately provided and that the site will be positively drained and surface water will be contained within the overall sites drainage network and managed in a sustainable manner, in accordance with all relevant guidelines and specifications.*

*Further to the above, based on the indicative flood mapping, a small portion of the northern end of the Edgeconnex campus is located within Flood Zone C “Low Probability”. Additionally, as mentioned, the site is classified as “Less Vulnerable” and therefore the development is classified as appropriate.”*

## 6 Accompanied Information

### 6.1 Planning Drawings:

This report should be read in conjunction with the following planning drawings issued in support of this application:

**Table 3 Planning Drawings list**

Drawing Number	Title
20_167-CSE-GEN-ZZ-DR-C-2102	OSI MAPPING & EXISTING WAYLEAVES
20_167-CSE-GEN-ZZ-DR-C-2117	MASTER PLAN
20_167-CSE-GEN-ZZ-DR-C-2118	OVERALL PROPOSED GRID ROUTE PLAN
20_167-CSE-GEN-ZZ-DR-C-2119	OVERALL PROPOSED GRID ROUTE PLAN SHEET 1
20_167-CSE-GEN-ZZ-DR-C-2120	OVERALL PROPOSED GRID ROUTE PLAN SHEET 2
20_167-CSE-GEN-ZZ-DR-C-2121	PROPOSED GRID CONNECTION CABLE ROUTE SHEET 1
20_167-CSE-GEN-ZZ-DR-C-2122	PROPOSED GRID CONNECTION CABLE ROUTE SHEET 2
20_167-CSE-GEN-ZZ-DR-C-2123	PROPOSED GRID CONNECTION CABLE ROUTE SHEET 3
20_167-CSE-GEN-ZZ-DR-C-2124	PROPOSED GRID CONNECTION CABLE ROUTE SHEET 4
20_167-CSE-GEN-ZZ-DR-C-2126	PROPOSED JOINT BAYJB01 & JB02
20_167-CSE-GEN-ZZ-DR-C-2127	PROPOSED PULL PIT PP01 & PP02
20_167-CSE-GEN-ZZ-DR-C-2130	GRID ROUTE CONNECTION CABLE – ROUTE CROSS SECTIONS
20_167-CSE-GEN-ZZ-DR-C-2140	TYPICAL REINSTATEMENT DETAILS SHEET 1
20_167-CSE-GEN-ZZ-DR-C-2160	TYPICAL JOINT BAY DETAILS
20_167-CSE-GEN-ZZ-DR-C-2161	LINK BOX & COMMUNICATIONS CHAMBER G.A. AND DETAILS
20_167-CSE-GEN-ZZ-DR-C-1060	EXISTING SURFACE WATER DRAINAGE LAYOUT
20_167-CSE-GEN-ZZ-DR-C-1070	EXISTING FOUL WATER DRAINAGE LAYOUT
20_167-CSE-GEN-ZZ-DR-C-1080	EXISTING WATER SUPPLY LAYOUT

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