Clifton Scannell Emerson Associates

Outline Construction Environmental Management Plan

Clutterland 110 kV GIS Substation & Transmission Lines

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CONSULTING ENGINEERS

Civil Engineering | Structural Engineering | Transport Engineering | Environmental Engineering | Project Management | Health and Safety

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Table of Contents

1 Introduction

This Outline CEMP defines the approach to environmental management at the site during the construction phase. It provides a basis for achieving and implementing the construction related mitigation measures identified in the Environmental Impact Assessment Report (EIAR, Chapter 2, Appendix 2.2 Schedule of Mitigation) and promotes best environmental on-site practices for the duration of the construction phase.

The outline CEMP provides a framework from which a final CMP will be developed to avoid, minimise or mitigate any construction effects on the environment prior to commencement on site.

The contractor will prepare specific method statements which should identify perceived risks to the environment and detail mitigation measures to be employed which will negate the risk to the environment.

The main issues that have been considered within this document are as follows;
- Description of works;
- Construction programme and phasing;
- Site logistics;
- Workforce;
- Public relations and community liaison;
- Construction traffic and access; and
- Safety, health and environmental management.

Preparation of the final CEMP should comply with the Schedule of Mitigation Measures presented in the EIAR (Chapter 2, Appendix 2.2 Schedule of Mitigation) and all additional measures may be added to following consultation with relevant consultees in preparation of specific method statements prior to commencement of works.

2 Description of the Project

Overview
The following report is being submitted as part of the Strategic Infrastructure Development (SID) Application for the provision of two no. 110 kV transmission lines and a 110 kV Gas Insulated Switchgear (GIS) substation compound along with associated and ancillary works.

Description of the site
The Proposed Development is to be located on a site of c. 7.7 hectares that consists of a primarily greenfield site within the Grange Castle South Business Park. The proposed 110kV GIS Substation Compound; the transmission line to the existing 110kV underground Kilmahud Corkagh circuit and the 49kVa (MV) cable installation are located on lands that at the time of making this application are in the control or ownership of SDCC. The transmission line to the existing 220kV / 110kV Castlebaggot Substation to the immediate south is located on lands that are in the control or ownership of SDCC and ESBN. Letters of consent are included within this submission.

Proposed 110 kV GIS Substation
The proposed 110kV GIS substation is located on lands that are bounded by the realigned Baldonnel Road to the west; by the old and new Nangor Road to the north; by agricultural fields and the Grange Castle Motor Company to the east; and by the Grange Castle South Access Road that provides access off the Baldonnel Road into Grange Castle South Business Park and the Castlebaggot Substation to the south.

110 kV transmission line to the Castlebaggot Substation
The route of the underground 110kV transmission line to the Castlebaggot Substation passes around the northern and part of the western boundary of the Castlebaggot Substation before passing into the Substation approximately half way along its western boundary with the Proposed Development site. The length of the 110kV cable route is c. 180m.

110 kV transmission line to the Kilmahud-Corkagh circuit
The route of the underground 110kV transmission line to the Kilmahud-Corkagh circuit passes to the north of two of the permitted two storey data centre buildings (Buildings A and C) as permitted under Reg. Ref. SD20A/0121. It then passes under the former Nangor Road (now cut off at either end) before passing across SDCC owned land before passing under the culverted Griffeen River and under the realigned Nangor Road (R134) and passing along the wayleave on the east side of the Grange Castle Business Park internal access road before looping around to connect to the Kilmahud-Corkagh circuit. The length of the 110kV cable route is c. 1.1kms. A proposed joint bay is to be installed at the connection to the Kilmahud-Corkagh circuit as well as two joint bays along this route.

Proposed 49kVa cable installation
The route of the proposed 49kVa cable installation will link from the proposed Clutterland Substation and pass within the SDCC wayleave to the west of the Castlebaggot Substation before connecting into existing MV cabling infrastructure within the SDCC wayleave along the Grange Castle South Business Park access road. The estimated length of the 49kVa cable route is c. 300m.
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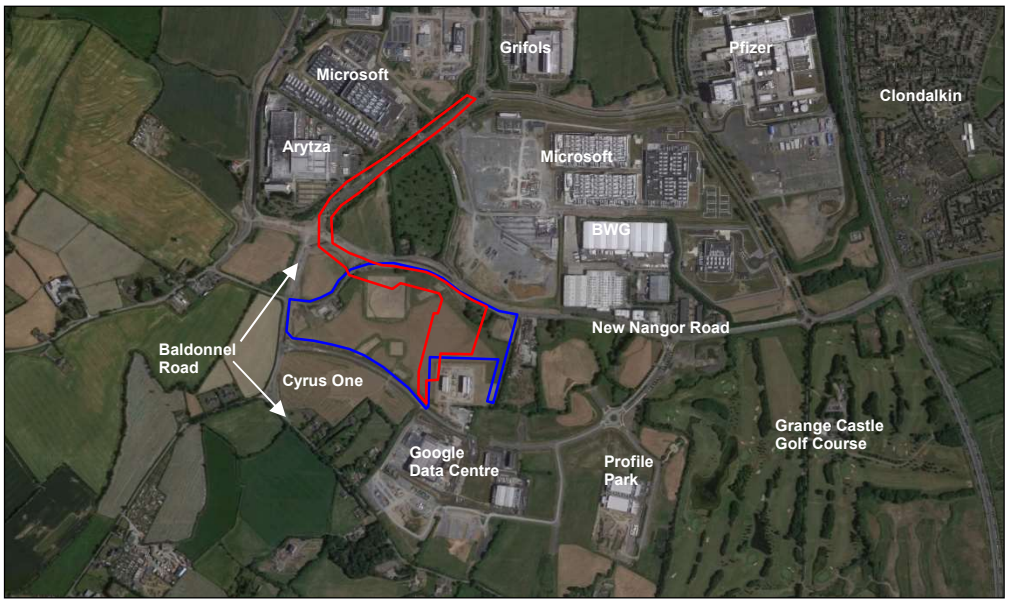

Figure 2.1 *Site location of Proposed Development site*

The Proposed Development comprises:

- the provision of two no. 110kV transmission lines and a 110kV Gas Insulated Switchgear (GIS) substation compound along with associated and ancillary works and is described as follows:

- The proposed 110kV GIS Substation Compound is to be located on lands to the east of the 3 no. data centres permitted under South Dublin County Council Reg. Ref. SD20A/0121, and within an overall landholding bound to the north by the R134 / New Nangor Road; to the west by the realigned Baldonnel Road; to the south by the Grange Castle South Business Park access road; and to the east by the Grange Castle Motor Company within Baldonnel, Dublin 22. The site of the proposed development has an area of c. 7.7 hectares;

- The proposed 110kV Gas Insulated Switchgear (GIS) Substation Compound includes the provision of a two storey GIS Substation building (with a gross floor area of 1,447sqm) (known as the Clutterland Substation), four transformers, a Client Control Building (with a gross floor area of 380sqm), lighting masts, car parking, associated underground services and roads within a 2.6m high fenced compound and all associated construction and ancillary works;

- A proposed underground single circuit 110kV transmission line will connect the proposed Clutterland 110kV GIS Substation to the existing 220kV / 110kV Castlebaggot Substation to the immediate south. The proposed transmission line covers a distance of approximately 180m within the townlands of Ballybane, and Aungierstown and Ballybane;

- A proposed underground single circuit 110kV transmission line will connect the proposed Clutterland 110kV GIS Substation to the existing 110kV underground Kilmahud-Corkagh circuit to the north-west. The proposed transmission line covers a distance of approximately 1.1km within the townlands of Ballybane and Grange and will include 3 joint bays along its length;

- The development includes provision of a unit substation and 49kVa electricity connection (approximately 300m in length to the Grange Castle South Business Park access road to the south of the proposed substation) for the proposed GIS substation building. The development includes the connections to the two substations (existing and proposed) as well as to the Kilmahud-Corkagh circuit, changes to landscaping permitted under SDCC Reg. Ref. SD20A/0121 and changes to planting within Grange Castle Business Park and all associated construction works, and all ancillary works.

110kV GIS Substation Compound

The proposed 110kV Gas Insulated Switchgear (GIS) Substation Compound is to be located on lands which are currently greenfield in nature, to the east of Permitted Development granted under SDCC Planning Reg. Ref. SD20A/0121, and within an overall landholding bound to the north by the R134 / New Nangor Road; to the west by the realigned Baldonnel Road; to the south by the Grange Castle South Business Park access road; and to the east by the Grange Castle Motor Company within Baldonnel, Dublin 22.

The proposed 110kV GIS Substation Compound includes the provision of a two storey GIS Substation building (with a gross floor area of 1,447sqm) (to be known as the Clutterland Substation), four transformers, a Client Control Building (with a gross floor area of 380sqm), Lighting Masts, Car Parking, associated Underground Services and Roads within a 2.6m high fenced compound and all associated construction and ancillary works.

The two storey 110kV GIS Substation building (with a gross floor area of 1,447sqm) will accommodate a cable room, control room, mess room, generator room, battery room and workshop at ground floor level, with a storeroom and substation room at first floor level. The 110kV GIS substation building will also include a small (less than 1MWth) generator and 1,000 litre diesel tank within a bunded room of the GIS Substation building to provide back-up emergency power to the GIS substation.

The single storey Client Control Building (with a gross floor area of 380sqm) will accommodate 4 number electrical switchrooms and a control room. The 110kV GIS Substation building and the Client Control building are rectilinear in form, and finished in metal cladding to compliment the Permitted Development (SD20A/0121).

The proposed transformers will be located centrally within the substation compound, set out in a row running north-south within the compound area. The Substation compound will be accessed from the permitted internal circulation roads and infrastructure permitted under SDCC Planning Reg. Ref. SD20A/0121. A main access gateway to the compound will be provided on the southern side of the substation compound, providing for vehicular and pedestrian access to the substation area.

110kV transmission lines

The design of each underground 110kV transmission line will comprise a single 110kV circuit installed underground in high-density polyethylene (HDPE) ducting. The 110kV cables will be a standard XLPE (cross-linked polyethylene) copper cable. XLPE does not contain oil, therefore there is no risk of migration of oil into the ground in the event of a failure (such as a short circuit, a joint fail, a termination failure etc.). These types of failures would not have the potential to result in a perceptible environmental impact.

The installation of the HDPE ducting will require the excavation of one trench along each of the routes; each containing one 110kV circuit. The optimum depth of excavation of the trenches will typically be 1.3m below ground level but may increase up to c. 3.5m at utility crossings. The typical width of each trench is 0.85m, however this may vary depending on ground conditions and the location of existing services. Between five and separate ducts will be installed in each trench. For the purposes of this assessment, reference to the ‘transmission lines’ refers to both the transmission line to the Castlebaggot substation and the transmission line to the Kilmahud-Corkagh circuit.

Horizontal directional drilling is proposed for a c. 100m length of the 110kV transmission line from the Kilmahud-Corkagh circuit. The location of the directional drilling is under the culverted Griffeen River where the 110kV transmission line from the Kilmahud-Corkagh circuit crosses under the New Nangor Road. The depth of the drilling is expected to be c. 6m in depth and will require four separate directional drillings that will be c. 1m apart.

49kVa transmission line

The design of the 49kVa underground cable will comprise a looped 10kV circuit installed underground in PVC ducting. The 10kV cables will be a standard XLPE (cross- linked polyethylene) Aluminium cable. XLPE does not contain insulating fluid, therefore there is no risk of migration of insulating fluid into the ground in the event of a failure (such as a short circuit, a joint fail, a termination failure etc.).

The installation of the PVC ducting will require the excavation of one trench along the route; the trench will contain one 10kV circuit. Two separate 160mm outside diameter ducts will be installed in the trench. The optimum depth of excavation required to facilitate installation of the ducting is 0.95-1m below ground level (bgl). The optimum width of the trench is c. 0.525m, however this may vary depending on ground conditions and existing services to up to c. 1-2m.

Figure 2.2 presents a site layout plan showing the route of the proposed underground 110 kV transmission line, the proposed GIS substation, the 49kVA underground cable installation and the proposed cable bays.

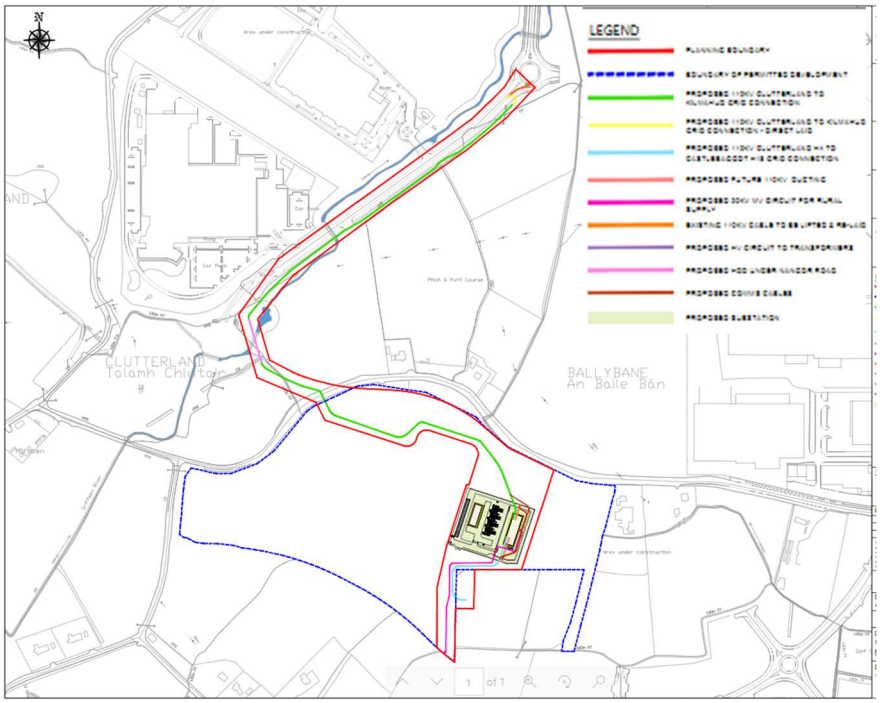

Figure 2.2 Proposed site layout plan of the Proposed Development site indicating proposed 110 kV transmission lines (Source: Drawing no. CLDHV-CSE-00-XX-DR-C-2102, CSEA Consulting Engineers)

3 Construction Programme and Phasing

The construction of the Proposed Development will form Phase 2 of the overall development of the site as outlined as part of the Permitted Development (granted permission under SDCC Planning Ref. SD20A/0121). The Proposed Development will be undertaken at the same time as, and will be completed prior to completion of Phase 1 of the Permitted Development. Phase 1 of the Permitted Development comprises construction of Building A, a temporary substation, as well as 2 no. attenuation ponds and landscaping to the south, west and north of the site. Phase 1 of the Permitted Development will be constructed over a three and a half year period.

The Proposed Development would be constructed during the end of the first and during the second year of construction on the overall site. Two further attenuation ponds that form part of the Permitted Development under Reg. Ref. SD20A/0121 are located to the immediate north and east of the Proposed Development. One of these will be constructed prior to completion of the Proposed Development with the other being constructed following completion of the Proposed Development. This will ensure that the permitted landscape and drainage attenuation design for the site as granted under Reg. Ref. SD20A/0121 is in place within the first two years following the commencement of construction on the Permitted Development site, and within one year of the commencement of the Proposed Development.

The subsequent phases of the Permitted Development comprise the construction of the data centre (Building B) located to the north-west of the site (Phase 3); and the construction of the data centre (Building C) to the east of Buildings A and B (Phase 4).

The construction works associated with the development consist of the following principal elements:

The construction of the proposed 110 kV GIS substation will comprise four main stages, namely;
- Site preparation works;
- Building Structure Construction;
- Building Envelop Construction; and
- Fit Out Including M&E fit-outs and commissioning.

The construction of the 110 kV transmission line and 49kVA cable installation will comprise three main stages, namely;
- Site preparation works and excavations;
- Cable installation, jointing, testing; and
- Reinstatement.

The construction of the new joint bays will be undertaken as part of the 110kV transmission line works to the Kilmahud-Corkagh circuit.

Site Preparation

It is proposed that the accesses and haul roads for vehicles, the contractors' compound and fencing that have been established for the construction of the permitted development will be utilised for the proposed development, where possible.

The construction compound will facilitate office, portable sanitary facilities, equipment storage, parking etc. for contractors. It will be used for the duration of the works.

The primary activities that will be required during the site preparation phase for the GIS substation will be site clearance, excavations and levelling of the site to the necessary base level for construction, surveying and setting out for structures and any rerouting of services/connections to services.

A combination of excavators, trucks and other soil shifting plant will commence the main site clearance and levelling aspects.

The site preparation required for the 2 no. 110 kV transmission line and the 49kVA cable installation will be limited with minimal site clearance required.

Building Construction Works

Foundations and Structure

Following the completion of site clearance and levelling, all structures will require foundations to structural engineer specifications. Building structures will comprise standard structural steel frames.

It is anticipated that foundations will require moderate scale excavations. Due to the shallow depth of bedrock, some rock breaking may be necessary. Local minor dewatering may be required during excavation works and groundworks (depending on the time of year development works are carried out).

Levelling/Cut and Fill

It is predicted that all of the spoil generated during site preparation/levelling will be removed from site.

The importation of fill will be required to facilitate construction of the transmission lines.

Contractors will be required to submit and adhere to a method statement (including the necessary risk assessments) and indicating the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

Any temporary storage of spoil required will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment etc.

Building Envelopes and Finishes

The outer finishing of the building envelopes are intended to be of a similar quality and appearance to the permitted developments.

Reinstatement along the 2 no. 110 kV transmission line and 49kVA cable installation route, this will include road reinstatement, grassed areas in greenfield sites and hardstand along paved areas.

Roads, Services and Landscaping

The internal road system will be completed as part of the Building A permitted development.

Landscaping will be undertaken in accordance with the landscape masterplan for the proposed development (refer to Chapter 11 of EIAR).

4 Excavation

4.1 Archaeological and Architectural Heritage

The purpose of the site assessment was to identify any archaeological, architectural or cultural heritage features or areas of archaeological potential within the site.

There are no direct or indirect (visual) impacts on the architectural heritage features identified within the desktop assessment due to their distance from the site, local topography and intervening developments.

Potential impacts on archaeological and cultural heritage associated with the proposed development involves ground disturbance associated with the construction of the proposed GIS substation compound and the excavation of the trench for the proposed cable installations.

Archaeological testing will be required at the site of the GIS substation compound and at the site where the route crosses the boundary between the townlands of Castlebaggot and Kilmahud.

Archaeological monitoring will be required in areas where open cut methodologies will be used to excavate the cable trench.

Should archaeological features or material be uncovered during archaeological testing or any phase of construction, ground works will cease immediately and the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht should be informed. Time must be allowed for a suitably qualified archaeologist to inspect and assess any material. If it is established that archaeologically significant material is present, the National Monuments Service may require that further archaeological mitigation be undertaken.

4.2 Ground Condition

Ground works will be required to clear the site and to facilitate construction of building foundations, access roads, utilities and landscaping. The Land, Soils, Geology & Hydrogeology Chapter of the EIAR details the existing ground conditions at the site and provides a summary of the anticipated stratigraphy of the soil beneath the site.

It is concluded that the site is underlain mostly by topsoil, cohesive deposits, granular deposits and weathered limestone/shale bedrock. Topsoil and subsoil will be excavated to facilitate the construction of the proposed transmission cable installation route and other ancillary works.

Suitable soils and stones will be reused on site as backfill in the grassed areas, where possible. However, it is currently envisaged that majority of the excavated material will require removal offsite. Soil tested and classified as hazardous or non-hazardous in accordance with the EPA Waste Classification has been completed and results confirm that the soil tested is “inert”.

The surplus soils and stones may be suitable for acceptance at either inert or non-hazardous soil recovery facilities/landfills in Ireland or, in the event of hazardous material being encountered, be transported for treatment/recovery or exported abroad for disposal in suitable facilities.

5 Site Logistics

5.1 Site Establishment and Security

The site office and welfare facilities will be situated in an onsite compound. All the sub-contractors as well as the main contractor and project managers will occupy offices in the same area. The site parking for all staff, contractors and visitors will also be located in this area.

5.2 Consents and Licences

All statutory consents and licences required to commence on-site construction activities will be obtained ahead of works commencing, allowing for the appropriate notice period. These will include, but are not limited to:

- Site notices;
- Construction commencement notices; and
- Licence to connect to existing utilities and mains sewers, where required.
- Road opening licences.

5.3 Service and Utilities

Welfare facilities (canteens, toilets etc.) will be available within the construction compound on site. The watermain from the Nangor Road will be utilised in order to serve the proposed development during the construction.

5.4 Material Handling and Storage

Key materials will include cables, steel structure, concrete and piping, apart from cables which are ordered by specific order for the project, a 'Just in Time' delivery system will operate to minimise storage of materials, the quantities of which are unknown at this stage.

Where possible it is proposed to source general construction materials from the Dublin area to minimise transportation distances.

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles in a secure compound area within the contractors' compound on site. Liquid materials will be stored within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006) to prevent spillage.

Construction materials will be brought to site by road. Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent the escape material along the public roadway.

The majority of construction waste materials generated will be soil from excavation works. Soil requiring removal offsite will be removed from site regularly to ensure there is minimal need for stockpiling.

5.5 Visitor Management

Visitors will only be allowed to enter the main site compound at the southern boundary of the site from the Baldonnel Road or via designated pedestrian access gates. A dedicated, secured footpath to the security office is established at the gate for registration and obtaining PPE prior to entering the site. A log will be maintained by security to control access to the site. Visitors will be required to attend a site-specific induction to allow access to the site unless being accompanied by an inducted member of the site team.

Visitors will then be taken by an inducted member of the construction team to the required area of the site.

5.6 Site Working Hours

Construction of the proposed development would take place over a period of approximately 14 months from the commencement of construction for site development works.

Majority of works are to be done off-road, with the exception of a short section of the route of the 110 kV transmission line in the vicinity of the roundabout junction outside of Grifols Worldwide Operations in Grange Castle Business Park, New Nangor Road, Dublin 22, which may require the incremental closure of one or more lanes for the 110 kV transmission lines. This will be managed via the T2 road opening licence application process with South Dublin County Council.

During the off-road section of works, no construction vehicles will access the Clutterland site (or commence work) before 7.30 a.m. and all construction vehicles departing the site will do so before 7.00 p.m. Construction activities will be carried out Monday to Saturday, with no on site construction activities to take place on Sundays or Bank Holidays.

However, it is possible that the appointed contractors may wish to carry out certain operations outside these hours i.e. evening hours during long summer days etc. Such occurrences will be notified to the local authority, where required and generally kept to a minimum. Where they do occur, contractors will ensure they take place over as short a timeframe as possible and as such are unlikely to cause excessive disturbance.

The section of works requiring lane closures will be subject to a T2 road opening licence application to South Dublin County Council, which will inform the construction methodology and timing for these works.

5.7 Employment and Management Workforce

In general, the civil works element of work will require a higher number of staff and construction vehicles compared to the cable installation, jointing and testing. The following construction data has been used to estimate peak daily construction traffic:

- Average construction staff: 15-20;
- Peak construction staff (peak staff levels during Civil Works): 30;

All employees working on the site will be required to have a Safe Pass Card (or similar approved Construction Health & Safety card), manual handling training and the necessary certificates to operate machinery, as required. The details of training required, records maintained, and induction procedures will be outlined in the Main Contractor's Health and Safety Plan(s).

6 Construction Traffic and Site Access

Majority of works are to be done off-road, with the exception of a short section of the route of the 110 kV transmission line in the vicinity of the roundabout junction outside of Grifols Worldwide Operations in Grange Castle Business Park, New Nangor Road, Dublin 22, which may require the incremental closure of one or more lanes for the 110 kV transmission line .

During construction of the proposed development, construction traffic will travel to and from the site via the construction site access located on the southern section of the site. It is expected that the origins and destinations of construction traffic will continue to match the distribution of traffic currently using the surrounding road network.

The following measures will be put in place during the construction works:

- The contractor will be required to provide wheel cleaning facilities, and regular cleaning of the main access road;
- Temporary car parking facilities for the construction workforce (30 no. spaces) will be provided within the site for and the surface of the car park will be prepared and finished to a standard sufficient to avoid mud spillage onto adjoining roads;
- Monitoring and control of construction traffic will be ongoing during construction works. Construction traffic will minimise movements during peak hours.
- Construction Traffic routes minimising traffic impact on surrounding residential development will be used by construction vehicles.

Traffic Queueing

Material deliveries and collections from site will be planned, scheduled and staggered to avoid any unnecessary build-up of construction works related traffic.

Site Hoarding and Security Fencing

Security fencing has already been established around the site compound.

Site access will be restricted by dedicated security personnel who will check all incoming and outgoing vehicles and workers.

7 Safety, Health and Environmental Considerations During Construction Works

The appointed main contractor will be required to prepare a Construction Health & Safety Plan which will be put in place prior to commencement of the works. At a minimum, this plan will include:

- Construction Health & Safety training requirements;
- Induction procedures;
- Emergency protocols; and
- Details of welfare facilities.

7.1 Air Quality

This section describes the site policy with regard to dust management and the specific mitigation measures which will be put in place during construction works. The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following measures have been formulated by drawing on best practice guidance from Ireland, the UK and the US, such as:

- Department of Environment, Heritage and Local Government (DOEHLG), *Quarries and Ancillary Activities, Guidelines for Planning Authorities* (2004) [1];
- US Environment Protection Agency (USEPA), *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition* (periodically updated) (1986) [2];
- The Scottish Office – Development Department, *Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (1996) [3]; and
- Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Dust from Demolition and Construction* (2014) [4].

Site Management

The site activities will be undertaken with due consideration of the surrounding environment and the close proximity of sensitive receptors such as watercourses, residents and pedestrians. Dust management during the construction phase will be the most important aspect in terms of minimising the impacts of the project on the surrounding air quality. The following measures will also be implemented to ensure impacts are minimised:

- Complaint registers will be kept detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out;
- Equipment and vehicles used on site will be in good condition such that emissions from diesel engines etc. are not excessive; and
- Pre-start checks will be carried out on equipment to ensure they are operating efficiently and that emission controls installed as part of the equipment are functional.

Dust Control Measures

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design, planning and effective control strategies. The siting of construction activities and the limiting of stockpiling will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. In addition, good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or using effective control measures quickly before the potential for nuisance occurs.

- During working hours, technical staff will be available to monitor dust levels as appropriate; and

- At all times, the dust management procedures put in place will be strictly monitored and assessed.

The dust minimisation measures should be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust generation. In the event of dust nuisance occurring outside the site boundary, site activities should be reviewed, and procedures implemented to rectify the problem. Specific dust control measures to be employed are presented below.

Site Roads

Site access routes (particularly unpaved routes) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25% to 80% [5].

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles;
- Bowsers will be available during periods of dry weather throughout the construction period. Research shown found that the effect of surface watering is to reduce dust emissions by 50% [6]. The bowser will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Access gates to the site shall be located at least 10m from sensitive receptors where possible; and
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

Land Clearing/Earth Moving

Land clearing/earth-moving works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- During periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.

The movement of truck containing materials with a potential for dust generation to an off-site location will be enclosed or covered.

Stockpiling

The location and moisture content of rubble stockpiles are important factors which determine their potential for dust emissions. The following measures will be put in place:

- Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible;
- Regular watering will take place during dry/windy periods to ensure the moisture content is high enough to increase the stability of the soil and suppress dust;
- There will be no storage of soil along the cable route; and
- Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.

Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures:

- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- At the main site traffic exits, a wheel wash facility shall be installed if feasible. All trucks leaving the site must pass through the wheel wash; and
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.

General

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory management of dust by the construction contractor.

7.2 Ecology

The proposed development will have a neutral imperceptible effect on designated sites within the zone of impact of the development site. The proposed development is located in an area of low ecological value and as such predicted to have a neutral imperceptible effect on biodiversity.

There will be no impacts on water courses. The use of HDD methodology removes the potential for hydrological pathways in terms of aquatic impacts.

The key strategies to be undertaken to minimise impact on the local flora and fauna during site clearing and construction are as follows.

- All site clearance and landscaping works will comply with current legislative requirements and best practice;
- Where possible, the removal of trees and tree lines suitable for use by nesting birds will be undertaken outside the bird nesting season (avoiding the period 1st March to 31st August);
- Should any trees or tree lines be removed that contain features suitable for roosting bats, such work will only be done during the autumn months;
- Taking measures to limit the working area during the construction phase will reduce the impacts of the development on adjacent areas. The construction area will be clearly delimited by the site boundary and machinery should operate only within this allocated site area;
- The single badger sett recorded outside the redline boundary of the proposed development area will be addressed as part of the site preparation works for that development.
- All re-fuelling of plant, equipment and vehicles will be carried out at the construction compound in the area of future development adjacent to proposed 110 kV Substation. All fuels, chemicals, liquid and solid waste will be stored in areas bunded in accordance with established best practice guidelines at the construction compound.
- Provision of a water and sediment management plan, providing for means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local water courses or drains.
- The measures outlined in Section 7.5 will ensure that silt run-off and potential flooding risks are minimised which will protect any ecological receptors associated with the site.

7.3 Noise and Vibration

Noise impacts arising from earthworks and construction activities have the potential to cause annoyance or nuisance to local residents in the area.
The earthworks will generate typical construction activity related noise and vibration sources from use of a variety of plant and machinery such as rock breakers (where required), excavators, lifting equipment, dumper trucks, compressors and generators.
The noise limits to be applied for the duration of the infrastructure works are those specified in the B Category of BS 5228. These limits are summarised below and will be applied at the nearest sensitive receptors to the works.

- Night (23:00-07:00) = 55dB
- Evening (19:00-23:00) = 65dB
- Day (07:00-19:00) = 70dB
- At the commercial property = 75dB

The total noise (LAeq) which should not be exceeded during daytime is therefore 70dB. Vibration limits to be applied for the infrastructure works are those specified in the TII document Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TII, Revision 1, 2004). These limits are outlined below:

Allowable Vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of;

- Less than 11Hz - 3mm/s
- 11 to 50 Hz - 3 to 8mm/s
- 50 to 110 Hz (and above) - 8 to 11mm/s

Any noise complaints related to activities at the site will be logged and investigated and, where required, measures taken to ameliorate the source of the noise complaint.
A designated noise liaison should be appointed to site during construction works. Any complaints should be logged and followed up in a prompt fashion. In addition, prior to particularly noisy construction activity, e.g. excavation close to a property, etc., the site contact should inform the nearest noise sensitive locations of the time and expected duration of the works.
All works on site shall comply with BS 5228 2009+ A1 2014 (Parts 1 & 2) which gives detailed guidance on the control of noise and vibration from construction activities. In general, the contractor shall implement the following mitigation measures during the proposed infrastructure works:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Keep internal haul roads well maintained and avoid steep gradients.
- Minimise drop height of materials.
- Start-up plant sequentially rather than all together

More specifically the Contractor shall ensure that:

- In accordance with “Best Practicable Means”, plant and activities to be employed on site are reviewed to ensure that they are the quietest available for the required purpose.
- Where required, improved sound reduction methods are used e.g. enclosures.
- Site equipment is located away from noise sensitive areas, as much as physically possible.
- Regular and effective maintenance by trained personnel is carried out to reduce noise and / or vibration from plant and machinery.
- Hours are limited during which site activities likely to create high levels of noise and vibration are carried out.
- A site representative responsible for matters relating to noise and vibration will be appointed prior to construction on site.

7.4 Waste Management

This section outlines the measures that will be undertaken to minimise the quantity of waste produced at the site and the measures to handle the waste in such a manner as to minimise the effects on the environment.

Chapter 14 of EIAR contains a detailed description of waste management relating to construction of the proposed development. A site-specific Construction and Demolition Waste Management Plan is included as Appendix 14.1 of the EIA Report. This C&D Waste Management Plan will be refined and updated in advance of the works to ensure best practice is followed in the management of waste from the proposed development.

Adherence to the C&D Waste Management Plan prepared for the construction works will ensure that the management of waste arising is dealt with in compliance with the provisions of the Waste Management Acts 1996 – 2011 as amended 7, associated Regulations 7, the Litter Pollution Act of 1997 as amended 8 and the Eastern-Midlands Region Waste Management Plan 2015 – 2021 9, and achieve optimum levels of waste reduction, re-use and recycling.

Typical waste materials that will be generated from the construction works will include:

- Soil and stones;
- Biodegradable/Green waste
- Bituminous mixtures, coal tar and tarred products;

The management of all hazardous waste materials, if they occur, shall be coordinated in liaison with Health and Safety Management.

7.4.1 Waste Minimisation

Waste minimisation measures proposed are summarised as follows:

- Materials will be ordered on an 'as needed' basis to prevent over supply;
- Materials will be correctly stored and handled to minimise the generation of damaged materials;
- Materials will be ordered in appropriate sequence to minimise materials stored on site; and
- Sub-contractors will be responsible for similarly managing their wastes.

All wood waste generated by site works will be inspected and examined and will be segregated as re-useable wood and scrap wood waste.

7.4.2 Waste Storage

A dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities are to be stored, is to be established within proposed site compound of the proposed 110 kV substation.

Waste materials generated will be segregated on at the site compound, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled.

The site construction manager will ensure that all staff are informed of the requirements for segregation of waste materials by means of clear signage and verbal instruction. Appointed employees will be made responsible for ensuring good site housekeeping.

7.4.3 Responsibility

It will be the responsibility of the construction manager to ensure that a written record of all quantities and natures of wastes removed from the site are maintained on-site in a waste file (in hardcopy or electronically).

It is the responsibility of the project manager or his/her delegate that all contracted waste haulage drivers hold an appropriate waste collection permit for the transport of waste loads and that all waste materials are delivered to an appropriately licenced or permitted waste facility in compliance with the relevant Regulations.

The contractor, as part of regular site inspection audits, will determine the effectiveness of the waste management strategy and will assist the project manager in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated.

Prior to commencement of the excavation and construction activity and removal of any waste off-site, details of the proposed destination of each waste material will be provided to SDCC.

7.5 Surface Water Management

Run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing. Correct management will ensure that there will be minimal inflow of shallow/perched groundwater into any excavation. Due to the very low permeability of the Dublin Boulder Clay and the relative shallow nature for excavations, infiltration to the underlying aquifer is not anticipated.

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. No significant dewatering will be required during the construction phase which would result in the localised lowering of the water table. No discharge of construction water is anticipated during the construction of the proposed underground single circuits 110 kV underground transmission cable installation. There may be localised pumping of surface run-off from the excavations (up to 3m) during and after heavy rainfall events to ensure that the trenches are kept relatively dry.

The following measures will be put in place during the construction phase to ensure protection of surface waterbodies.

These measures are in compliance with the following relevant CIRIA guidance documents:

- Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532) 10; and Environmental Good Practice on Site (3rd edition) (C692) 11.

8 Summary

This Outline CEMP sets out the overall management strategy for construction works for a new 110 kV Gas Insulated Switchgear (GIS) Substation (known as Clutterland), 4 no. transformer bays, Client Control Building, 49kVa supply, associated compounds and site infrastructure also includes an underground single circuit 110 kV transmission line from the proposed Clutterland Substation to the existing 220kV / 110 kV Castlebaggot Substation; and an underground single circuit 110 kV transmission line from the proposed Clutterland Substation connecting to the existing 110 kV underground Kilmahud Corkagh circuit.

The Outline CEMP aims to ensure the management of construction activity is carried out in a planned, structured and considerate manner which minimises the impacts of the works on the local environment, residents and commercial activities in the vicinity of the site. Due to the nature of construction works, there may be unforeseen events which occur at the site and the project team will actively manage any changes and discuss with the relevant authorities, where required.

The project team are committed to ensuring that the construction activities to be carried out are pro-actively managed so as to minimise potential impacts.

9 References

1. Department of Environment, Heritage and Local Government (DOEHLG), *Quarries and Ancillary Activities, Guidelines for Planning Authorities* (2004).
2. US Environment Protection Agency (USEPA), *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition (periodically updated)* (1986).
3. The Scottish Office – Development Department, *Planning Advice Note PAN50 Controlling the Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (1996).
4. Institute of Air Quality Management (IAQM), *Guidance on the Assessment of Dust from Demolition and Construction* (2014).
5. UK Office of Deputy Prime Minister, *Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance* (2002).
6. USEPA, *Fugitive Dust Technical Information Document for the Best Available Control Measures* (1997).
7. Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No. 20 of 2011). Sub-ordinate and associated legislation includes:
   - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended 2011
   - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended
   - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended
   - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended
   - Waste Management (Packaging) Regulations 2014 (S.I. No. 282 of 2014)
   - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
   - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
   - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
   - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
   - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015)
   - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
   - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended
   - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007)
   - Waste Management (Movement of Hazardous Waste) Regulations 1998 (S.I. No. 147 of 1998)
   - The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988)
   - European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
   - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended
8. Litter Pollution Act 1997 (No. 12 of 1997) as amended
9. *Eastern-Midlands Region Waste Management Plan 2015 – 2021* (2015)
10. Construction Industry Research and Information Association (CIRIA) *Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532)*.
11. CIRIA, *Environmental Good Practice on Site* (3rd edition) (C692).

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