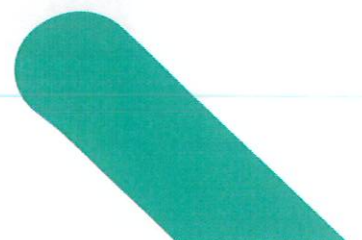
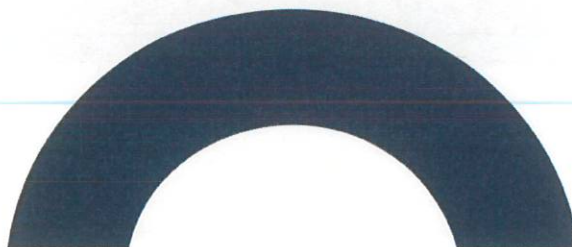
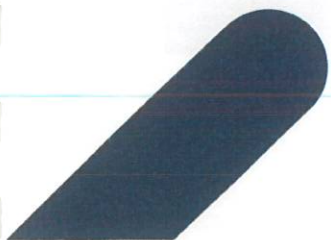
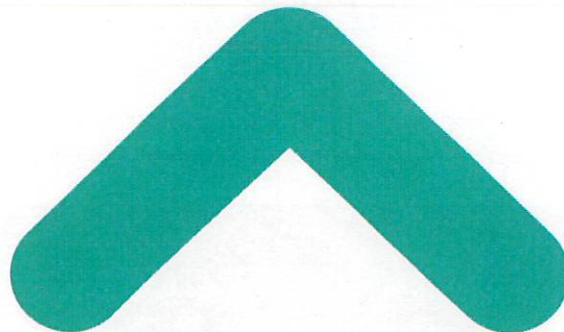




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**EirGrid CP0901 – Kilbarry-
Knockraha No. 2 110 kV Line
Renewal and Alteration**

Environmental Impact
Assessment Screening Report





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Table of Contents

1.	INTRODUCTION.....	1
1.1	Project Background	1
1.2	Site Location and Context	2
1.3	EIA Legislative Background.....	3
1.3.1	Schedule 5, Part 1 Projects	4
1.3.2	Schedule 5, Part 2 Projects	4
1.3.3	Sub-threshold EIA Screening Considerations	5
1.3.4	Other Relevant Guidelines	6
2.	DESCRIPTION OF THE PROPOSED WORKS	7
2.1	Paint / Corrosion Treatment of Steel Towers	7
2.2	Replacement of Wooden Polesets	7
2.3	Replacement of Existing Steel Intermediate Towers with Wooden Intermediate Polesets	9
2.4	Replacement of Insulators and Hardware.....	9
2.5	Civil Works on Tower Shear Blocks	10
2.6	Ancillary Works	11
3.	SCHEDULE 7 CRITERIA	12
3.1	Characteristics of the proposed development.....	12
3.2	Location of Proposed Development.....	18
3.3	Type and Characteristics of Potential Impact	24
4.	CONCLUSION	29

TABLE OF TABLES

<i>Table 1. Transmission Infrastructure - Kilbarry - Knockraha No. 2 110 kV.....</i>	<i>1</i>
<i>Table 2. Site Context - Kilbarry - Knockraha No. 2 110 kV.....</i>	<i>2</i>

TABLE OF FIGURES

<i>Figure 1. Site Location in Geographical Context - Knockraha No. 2 110 kV Transmission Line.....</i>	<i>2</i>
<i>Figure 2. Typical 110 kV Intermediate Wooden Poleset Structure (Portal IMP).....</i>	<i>8</i>
<i>Figure 3. Example Transmission Tower Structure.....</i>	<i>10</i>

APPENDIX

<i>Appendix 1</i>	<i>Summary of Proposed Works</i>
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1. INTRODUCTION

1.1 Project Background

MKO has been commissioned by EirGrid plc to complete an Environmental Impact Assessment (EIA) Screening Report to accompany a Section 5 Declaration of Exempted Development in relation to the renewal and altering of the existing Kilbarry-Knockraha No. 2 110 kV transmission line in the townlands of Kilbarry, Ballincolly, Ballyvolane, Arderrow, Ballyharoon, Banduff, Poulacurry North, Poulacurry South, Ballinglanna, Corbally North, Corbally South, Ballynagarbragh, Lackenroe, Ballycurreen, Ballynagaul, Killeena, Ballynanelagh, Co. Cork.

The Kilbarry-Knockraha No. 2 110 kV transmission line was constructed over three phases with structures 1-7 built in 1954, structures 62-75 built in 1964 and structures 7-62 built in 1974. The Kilbarry - Knockraha No. 2 110 kV overhead line (OHL) comprises 75 no. individual structures along its length; specifically, the 110 kV OHL is constructed of double wood polesets (55 no.) at intermediate locations, galvanised steel angle masts (18 no.) where the direction of the OHL changes and galvanised steel end masts (2 no.), as described below in Table 1, where the line terminates at Kilbarry and Knockraha 110 kV Substations.

Table 1. Transmission Infrastructure - Kilbarry - Knockraha No. 2 110 kV

Infrastructural Type	Physical Description	Height	Kilbarry - Knockraha No. 2 110 kV Structure No.
End Mast Tower	End masts are steel lattice towers. They are designed to take the tension of the line in only one direction and are therefore generally shorter and heavier in construction.	12.5m-14m	1, 75
Double Current (DC) Intermediate Mast Tower	Double circuit intermediate towers are steel lattice suspension towers which are designed to ensure clearances are maintained on two circuits.	22.1m-32.1m	4, 6
DC Angle Mast Tower	Double circuit angle masts are steel lattice tower constructions. They are designed to support directional change and also maintain the required clearances for two circuits. They are heavier duty than suspension towers.	22m-27m	3, 5, 7
Angle Mast Tower	Single circuit angle masts are steel lattice tower constructions. They are designed to support directional change and are therefore heavier duty than suspension towers or intermediate polesets.	12.5m-14m	2, 9, 10, 20, 28, 32, 34, 35, 45, 46, 63
Strain Intermediate (INT) Tower	A strain intermediate tower is a steel lattice tower. They are designed to take the tension of the line in only one direction and are therefore shorter and heavier in construction than suspension towers.	11m-24m	37, 52
Portal Intermediate Poleset (IMP) (Wooden)	At 110 kV, these consist of two wooden poles (portal), treated with creosote, with a steel cross arm. The insulators and conductors are supported via this cross arm.	11m - 22m	8, 11-19, 21-27, 29-31, 33, 36, 38-44, 47-51, 53-62, 64-74

This EIA Screening assessment was undertaken to determine if an EIA is required for the proposed works in their entirety as set out in the mandatory and discretionary provisions of the Planning and Development Act 2000 (as amended) ('the Act') and set in Schedule 5 of the Planning and Development Regulations 2001 (as amended) ('Regulations').

Information on the proposed renewal and alteration works to the Kilbarry-Knockraha No. 2 110 kV transmission line is provided in Section 2. Additional information is provided in the Screening for

Appropriate Assessment which has also been submitted in support of the Section 5 Declaration for Exempted Development for these proposed works.

1.2 Site Location and Context

The existing Kilbarry – Knockraha No. 2 110 kV line, as shown in Figure 1, is located on the northern outskirts of Cork City. The transmission line traverses a range of semi-rural and rural agricultural greenfield and high density urban environments along its route between Kilbarry and Knockraha 110 kV substations.



Figure 1. Site Location in Geographical Context - Knockraha No. 2 110 kV Transmission Line

Table 2 below provides a high level contextual analysis of the Kilbarry – Knockraha No. 2 110 kV line within the Cork County Council and Cork City Council administrative boundaries.

Table 2. Site Context - Kilbarry - Knockraha No. 2 110 kV

Structures	Local Authority	Townland(s)	Site Context
1-4	Cork City Council	Cork City and suburbs	<ul style="list-style-type: none"> › Outer compound of Kilbarry 110 kV Substation › 110 kV OHL crosses public greenfield space within and adjacent to the Kilbarry Enterprise Centre
5-12		Ballincolly	<ul style="list-style-type: none"> › DC Angle Mast 05 is located immediately adjacent to residential dwelling within the Thorndale Estate › Crosses through greenfield spaces within high density residential estates: Thorndale, Kinvara and Mervue › 110 kV OHL route is immediately adjacent to St. Aidan's Community College and runs above Kilmorna Heights › Starting at Portal IMP 11, 110 kV OHL crosses semi-rural undulating agricultural greenfield
13-18		Ballyvolane	110 kV OHL crosses semi-rural undulating agricultural greenfield
19-26		Arderrow Ballyharoon Banduff	110 kV OHL crosses semi-rural agricultural greenfield up to Portal IMP 19 Angle Mast 20 is situated within the immediate vicinity of a cluster of 7 no. residential dwellings on Banduff Road

Structures	Local Authority	Townland(s)	Site Context
			Crosses semi-rural agricultural greenfield with low density residential housing in the vicinity of Portal IMP 26
27-29		Poulacurry North	110 kV OHL crosses primarily semi-rural agricultural greenfield with low density residential housing / agricultural infrastructure
30-37		Poulacurry South	110 kV OHL crosses through greenfield spaces within high density residential estates: Crawford, Castlejane and Glanmire Court
38-45		Ballinglanna	<ul style="list-style-type: none"> › 110 kV OHL crosses over football pitch on E Cliff Road › 110 kV OHL crosses through greenfield spaces and private back gardens within high density Glyntown residential estate
46-47	Cork County Council	Ballinglanna	110 kV OHL crosses primarily semi-rural agricultural greenfield with low density residential housing
48-51		Corbally North	110 kV OHL crosses primarily semi-rural agricultural greenfield with low density residential housing (Portal IMP 52) and commercial infrastructure (Brooklodge East)
52-57		Ballynagarbragh	110 kV OHL crosses primarily semi-rural greenfield with low density residential housing (Portal IMP 53) and rural agricultural greenfield
58-62		Lackenroe	110 kV OHL crosses primarily semi-rural greenfield with occasional low density residential housing and agricultural infrastructure (Portal IMP 59 - Portal IMP 61) and rural agricultural greenfield
63-74		Ballycurreen	110 kV OHL crosses rural agricultural greenfield with occasional low density residential housing and agricultural infrastructure (Portal IMPs 67, 68 and 71)
		Killeena	
75	Ballynanelagh	Outer compound of Knockraha 110 kV Substation	

It is important to highlight that the Kilbarry – Knockraha No. 2 110 kV line predates the urban residential environment of north Cork City which has developed along the periphery of the transmission line over the last 50 no. years.

The proposed works are intended to maintain through corrective maintenance, and ultimately safeguard, the operational functionality of the existing Kilbarry – Knockraha No. 2 110 kV line. All proposed works are within the development envelope of the existing equipment and the proposed works do not include for the extension of the line nor is it proposed to alter the overall functionality of the line in the context of the wider transmission system (e.g. no increase in the voltage of the line from the existing 110 kV).

1.3

EIA Legislative Background

The requirement for Environmental Impact Assessment (EIA) has its origins in Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment. This Directive has been amended three times and was codified by Directive 2011/92/EU in 2011. Directive 2011/92/EU was then subsequently amended by Directive 2014/52/EU in 2014.

The primary objective of the EIA Directive (Directive 2011/92/EU), as amended by Directive 2014/52/EU, is to ensure a high level of protection of the environment and human health, through the establishment of minimum requirements for EIA, prior to development consent being awarded, of public and private developments that are likely to have significant effects on the environment.

Directive 2014/52/EU provides a definition of environmental impact assessment as being a process consisting of:

- › The preparation of an environmental impact assessment report (EIAR);
- › The carrying out of consultations required to inform the EIAR;

- › The examination by the competent authority of the information presented in the EIAR and any supplementary information provided, where necessary, by the developer and relevant information received through consultations with the public, prescribed bodies and any affected Member States;
- › The reasoned conclusion by the competent authority on the significant effects of the project on the environment; and
- › The integration of the competent authority's reasoned conclusion into any development consent decision.

Section 172 of the Act provides the legislative basis for mandatory EIA, and in summary states that EIA must be carried out by the relevant consenting authority in respect of an application for consent where either-

- › The proposed development would be of a Class specified in Part 1 or Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (as amended) ("the Regulations"), and would equal or exceed the relevant quantity, area or other limit specified therein. Should no quantity or area of other limit be specified there are some developments which require EIA regardless of size (e.g. integrated works for the smelting of cast iron and steel), or
- › The proposed development **would be of a class** specified in Part 2 of Schedule 5 of the Regulations **and not reach** or exceed the relevant quantity, area or other limit specified, **and it is concluded by the relevant authority** that the development is likely to have a significant effect on the environment.

Section 176 of the Act states that the Minister shall for the purposes of giving effect to the EIA Directive making regulations identifying development which may have significant effects on the environment. Part 10 of the Regulations states that the prescribed classes of development for the purposes of Section 176 of the Act are set out in Schedule 5. Schedule 5 of the Regulations differentiates between the projects that always require EIA and those for which an EIA may be required. These projects are listed in Schedule 5 Part 1 and Part 2 of the Regulations. For the purposes of clarity, please note that the subject works proposed by the Applicant, as detailed below, do not fall into any of the classes set out in either parts of Schedule 5.

1.3.1 Schedule 5, Part 1 Projects

These are projects which are considered as having significant effects on the environment and require a mandatory EIA. The subject works as set out above do not fall under any of the categories set out in Schedule 5, Part 1. The only class of development within Part 1 which could potentially be considered related to the subject works is project description for development type is class 20 which refers to:

"Construction of overhead electrical power lines with a voltage of 220 kilovolts or more and a length of more than 15 kilometres."

The proposed works do not involve the construction of any new overhead electrical power lines, and do not relate to any works with a voltage of 220 kilovolts or more and a length of more than 15 kilometres. Accordingly, the subject works do not exhibit any characteristics associated with the projects identified in Part 1, and therefore, an EIA is not automatically required.

1.3.2 Schedule 5, Part 2 Projects

In the context of Schedule 5, Part 2 projects, the only potentially relevant project type is identified under Class (3)(b) which refers to:

"Industrial installations for carrying gas, steam and hot water with a potential heat output of 300 megawatts or more, or transmission of electrical energy by overhead cables not included in Part 1 of this Schedule, where the voltage would be 200 kilovolts or more."

As described in Section 2 of this report, the voltage rate of the Kilbarry – Knockraha No. 2, 110 kV line is less than 200 kV. Accordingly the works do not fall under this class.

As the subject works constitute renewal and altering an existing line it is worth referencing Class 13(a), Part 2 Schedule 5, which relates to extensions, changes development and testing, it states the following:

“Any change or extension of development already authorised, executed or in the process of being executed (not being a change or extension referred to in part 1) which would:

(i) Result in the development being of a class listed in Part 1 or paragraphs 1 to 12 of Part 2 of this Schedule, and

(ii) Result in an increase in size greater than –

- 25%, or

- An amount equal to 50% of the appropriate threshold,

Whichever is greater”

The proposed works will not, however, result in an increase in size, capacity or threshold; specifically, the proposed works do not alter the overall functionality capacity of the line in the context of the wider transmission system. As such, the provisions of Class 13(a) are not applicable.

1.3.3 Sub-threshold EIA Screening Considerations

As the proposed works are not a type of project identified in Schedule 5 Part 1 or Part 2 of the Regulations, there is no automatic requirement under the EIA Directive for it to be subject to EIA. Furthermore as the subject works do not satisfy any of the description criteria set out in Schedule 5 (as the works do not relate to any works on a transmission line exceeding 200kV, there should be no requirement to consider potential sub-threshold effects (i.e. as there are no thresholds established within Schedule 5 for altering and renewal of an existing 110kV line. Notwithstanding, this fact however, in the interests of completeness, this report continues to consider the potential sub-threshold considerations as set out below.

Section 172(b)(i) of the Act also sets out the basis for EIA for developments which may not be of a scale included in Schedule 5 of the Regulations but for which EIA may yet be required.

“(i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but does not equal or exceed, as the case may be the relevant quantity area or other limit specified in that part and

(ii) it is concluded, determined or decided, as the case may be by ...[the relevant authority]...that the proposed development is likely to have a significant effect on the environment”

This allows a consenting authority to require EIA where it is of the opinion that the proposed development (although sub-threshold) is likely to have significant effects on the environment, and therefore should be subject to EIA. As set out previously, while the subject works do not fall within a class of development set out in Part 2 of Schedule 5, and as such, no threshold applies, and accordingly, nor can the need for a subthreshold EIA. Nonetheless, in the interests of completeness the subthreshold considerations are set out below.

In this context, the consideration of ‘significant effect’ should not be determined by reference to size only and the nature and location of a project must also be taken into account. Class 15 of Schedule 5 provides for EIA/EIAR for developments under the relevant threshold, where the works would be likely to have significant effects on the environment.

“Any project listed in this Part which does not exceed a quantity, area or other limit specified in this Part in respect of the relevant class of development but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.”

Notwithstanding the fact that, as set out above, none of the statutory thresholds in Part 2 of Schedule 5 of the Regulations are applicable to the subject works, a sub-threshold EIA Screening Report has been

prepared. When considering or making a determination as to whether EIA is required Schedule 7 of the Regulations sets out the criteria for determining whether development listed in Part 2 of Schedule 5 should be subject to an EIA while schedule 7A sets out the information to be provided by the applicant or developer for the purposes of screening sub-threshold development for environmental impact assessment. The criteria for assessment under the provisions of Schedule 7 are 1) *Characteristics of proposed development*, 2) *Location of proposed development*, and 3) *Types and characteristics of potential impacts*. The Schedule 7A information requirements constitutes:

1. *A description of the proposed development, including in particular—*
 - a. *a description of the physical characteristics of the whole proposed development and, where relevant, of demolition works, and*
 - b. *a description of the location of the proposed development, with particular regard to the environmental sensitivity of geographical areas likely to be affected.*
2. *A description of the aspects of the environment likely to be significantly affected by the proposed development.*
3. *A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment resulting from—*
 - a. *the expected residues and emissions and the production of waste, where relevant, and*
 - b. *the use of natural resources, in particular soil, land, water and biodiversity.*

The information required by Schedule 7 and 7A has been set out in Sections 2 and 3 below. The assessment of the criteria set-out on Schedule 7 provides the description and assessment of any likely significant effects from the proposed development.

1.3.4

Other Relevant Guidelines

In addition to the various requirements of the Planning Regulations, the following guidance was also considered in the preparation of this EIA Screening Report:

- › The Planning and Development Acts 2000 (as amended) and the Planning and Development Regulations 2001 (as amended);
- › Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, Department of Housing, Planning and Local Government, August 2018;
- › Guidance on EIA Screening (Directive 2011/92/EU as amended by 2014/52/EU), European Commission, 2017;
- › Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA, Draft, August 2017;
- › Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government 2009; and
- › The Planning System and Flood Risk Management, Guidelines for Planning Authorities, Department of the Environment, Heritage and Local Government and the Office of Public Works, 2009.

2. DESCRIPTION OF THE PROPOSED WORKS

Corrective maintenance / renewal requirements are proposed which can be broadly grouped under the following headings:

1. **Paint/ Corrosion Treatment of Steel Towers:** Painting and corrosion treatment of existing steel structures;
2. **Replacement of Wooden Polesets:** Removal of all hardware (including crossarm and insulators), installation of new poles and fittings / hardware, new or existing crossarm and new or existing insulators followed by the cutting and removal of old polesets;
3. **Replacement of Existing Steel Intermediate Towers with Wooden Intermediate Polesets:** Removal of existing structure, fittings and foundations, followed by installation of new intermediate polesets and installation of fittings/hardware;
4. **Replacement of Insulators and Hardware:** Removal of existing hardware and insulators followed by the installation of new hardware and insulators;
5. **Civil Works on Tower Shear Blocks:** Reinforcement of shear blocks; and
6. **Ancillary Site Works** including the replacement and/or repair Anti-Climbing Guards

It is important to emphasise that the proposed works are intended to maintain, and ultimately safeguard, the operational functionality of the existing Kilbarry - Knockraha No. 2 110 kV line. The renewal and alteration of the 110 kV OHL will not result in any material changes to the appearance or functionality of the line. Specifically, all works are within the development envelope of the existing equipment and no extension of the line is proposed. The replacement of wooden polesets will be located immediately adjacent to the locations of the in-situ structures on the same alignment and will not be materially different in the context of the overall alignment of the 110 kV OHL.

The proposed works to the 110 kV OHL will require access for equipment such as tracked excavators, concrete delivery vehicles, mobile cranes, mobile elevated work platforms etc. As a number of structures are located on agricultural lands and in close proximity to residential dwellings, gaining access to these lands to carry out the proposed works will be coordinated with relevant stakeholders in accordance with the relevant ESB/IFA Code of Practice and relevant statutory provisions. It should also be noted that the undertaking of the proposed works is dependent on outage availability. Cork County Council and Cork City Council would be notified in advance of any work commencing on the line.

Details of the proposed renewal and alteration works are outlined below in the following sections.

2.1 Paint / Corrosion Treatment of Steel Towers

Corrosion is treated by specialist contractors who climb the tower using safe tower climbing methods, treat the corrosion and paint the tower. The painting and corrosion treatment of the identified steel towers (01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 28, 45, 63, 75) will be undertaken in line with ESB's work practice as outlined below, to comply with technical requirements:

- › An impervious sheet will be laid on the existing ground under the mast base to prevent paint from dripping to the soil;
- › A cleaning agent will first be applied to the towers and then cleaned by means of wire brushing or sanding. When dry, a primer and top coat of paint will be applied; and
- › The paint specification will provide protection to the steel for a minimum of 15 no. years. The top coat of matt grey will remain the same and there will be no deviation to the visual appearance of these structures.

2.2 Replacement of Wooden Polesets

Thirty five wooden pole-sets will be replaced as part of the proposed renewal and alteration works.

The replacement of the identified wooden polesets may result in an increase in height of up to 2m at certain points along the 110 kV OHL dependent on local topographical variation (please refer Section 4 (Precedent Cases) of the S5 Declaration Report submitted with this application for details of precedent case law on increase in height of electrical infrastructure). However, any minor height increase of a wooden poleset as a consequence of the proposed works will still be in proportion relative to other structures along the alignment. A typical wooden poleset (Portal IMP) for a 110 kV line is shown in Figure 2 below and Appendix 3 of the Section 5 Declaration Report. Typical 110 kV wooden polesets range in height from 16m to 22m as described above in Table 1.

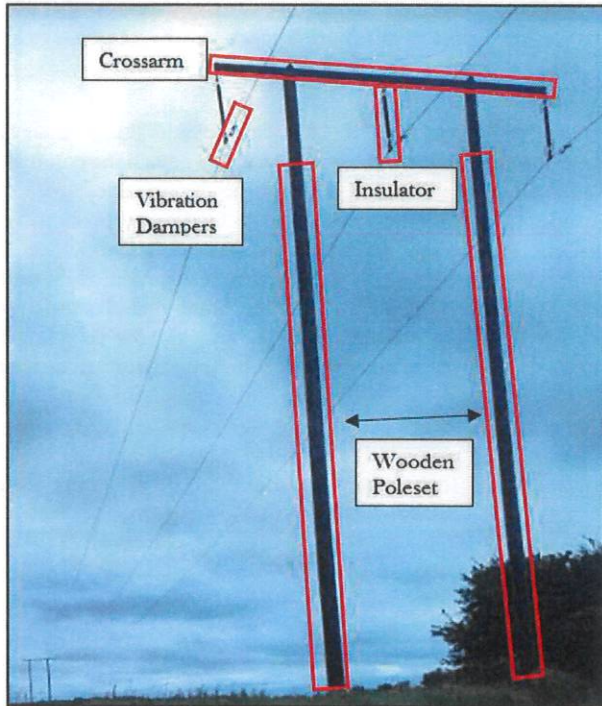


Figure 2. Typical 110 kV Intermediate Wooden Poleset Structure (Portal IMP)

Where a wooden poleset is being replaced, the crossarm, insulators and hardware will either be reused, or alternatively, new crossarms and equipment will be installed. The final appearance of the newly installed wooden polesets will be consistent with the existing structures. Please refer to Appendix 3 of the Section 5 Declaration Report for typical plans of the proposed 110 kV 'Lines Suspension Portal Wood Pole Set' transmission structures.

The installation of replacement polesets will be undertaken in line with established best practice as outlined below:

- Transportation of two wooden poles, crossarm (where required) and insulators and hardware (where required) to the area immediately adjacent to the poleset due to be replaced;
- The replacement poles will be installed to a minimum depth below ground of 2.3m. The estimated working area for construction of a wooden poleset is 10m² around the base of the poleset. The excavation for each hole will be carried out using a wheeled or tracked excavator;
- Each of the two poles are lined up with the excavated holes and the machine operator will then drive forward pushing the pole up until the pole is in an almost vertical position. If the crossarm is to be replaced as part of the identified works, the new crossarm is attached to one pole;
- The pole is supported at all times and the holes manually backfilled initially to a minimum depth of 1.0m to ensure temporary stability prior to installing the sleepers. Should the ground conditions be poor, additional stability will be provided by installing stay wires. Following the initial backfilling, a strip approximately 2.7m long is excavated to a depth of 0.8m parallel to the line. This is necessary to install the rectangular wooden sleepers which add additional stability to the poleset and are attached to the poles using U-bolts; and

- › The two installed poles are connected near the top by a steel crossarm from which insulators are attached. The existing conductor is then attached to these insulators. Where the existing crossarm is to be retained, the crossarm is detached from the decommissioned poles and lifted into place and attached to the newly installed poles

Once the new wooden poleset is installed, the decommissioned poleset will be cut at the base 1m below ground level and removed from the site for recycling by a licensed waste contractors and hauliers.

2.3 Replacement of Existing Steel Intermediate Towers with Wooden Intermediate Polesets

Intermediate Mast 08 and Strain INT Mast 33 are to be replaced with wooden polesets due to their age and condition. Prior to commencing any works to the structures, it will be necessary to detach the conductor and fibre wrap from the towers. The detached conductor and fibre wrap will be disconnected from the mast and connected to temporary poles erected adjacent to the location. The temporary poles will be erected in the same manner as the replacement of wooden polesets, as discussed below. Once the conductors have been diverted to the temporary poleset, the body of the tower will be dismantled. Sections of the tower will be unbolted and lifted down to ground level. The final section, which includes the tower legs will be cut at ground level and removed. All steelwork will be removed from site for recycling by licensed waste carriers. An excavator will be used to excavate around the existing foundations to facilitate their removal. New wooden polesets will then be installed, subject to the requirements of the detailed design.

The installation of the replacement wooden polesets will follow the same methodology as set out above under Section 2.2.

2.4 Replacement of Insulators and Hardware

There are a number of glass anti-fog type insulators exhibiting corrosion in addition to several cases of corrosion and wear to associated hardware. Vibration dampers were also found to be fatigued or missing at a number of sites. Four polesets require the replacement of insulators and hardware only (18, 54, 72 and 74).

The insulators and hardware holding the conductor are attached to steel crossarms linking the wooden poles. The replacement of the insulators and hardware will require the disconnection of the conductor from existing insulators and hardware. The weight of the conductors can be supported by a strap attached to the crossarm. The insulators and hardware are then accessed by a Mobile Elevated Work Platforms (MEWP) where the insulator is supported by straps as it is unbolted and removed. New insulators and hardware are fitted, conductors are re-attached and decommissioned insulators and hardware / equipment are removed. Replacement crossarms, if required, will be lifted into position with a lifting device such as a pulley system or telescopic handler. A typical Transmission Tower Structure for a 110 kV line is shown in Figure 3 below and included within Appendix 3 of the Section 5 Declaration Report.

The decommissioned equipment will be stored under appropriate conditions until it can be recycled or disposed of through licensed waste contractors and hauliers.

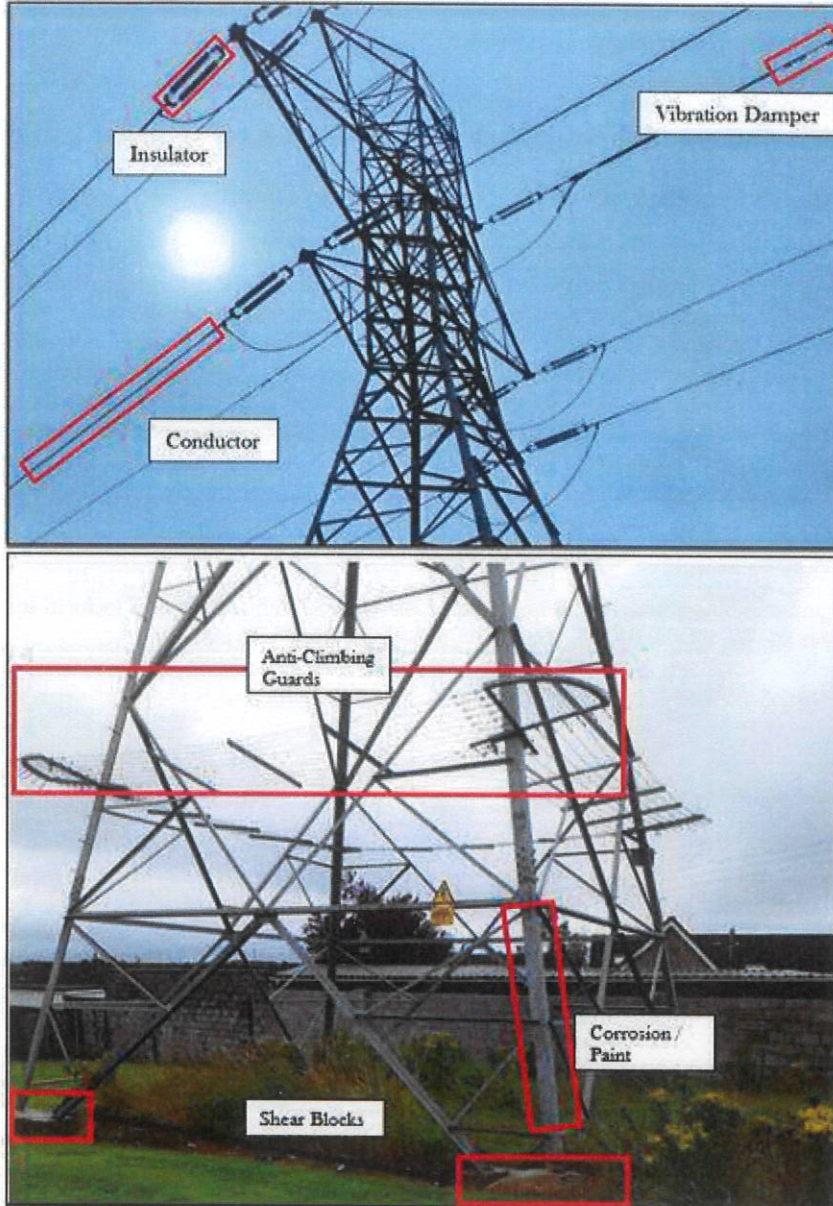


Figure 3. Example Transmission Tower Structure

2.5 Civil Works on Tower Shear Blocks

Site investigation works of the existing tower foundations were undertaken as part of the LCA to determine the foundation dimensions and conditions along with the ground conditions of the tower sites. In line with ESB specification, the tower foundations were assessed to determine whether they were of sufficient size to cater for the overall weight of the OHL. Concrete cores were also retrieved to determine the compressive strength of the concrete within the existing foundations. The following information was gathered from the site investigations:

- › Foundation size;
- › Foundation concrete strength and condition; and
- › Soil Characteristics and bearing capacity

Typical steel angle masts have four legs each with their own individual and independent foundation block; specifically, 2 no. of the legs will be in compression with the remaining 2 no. legs being in tension. In order

to assess the stability of the steel angle mast, one compression leg foundation was exposed at each tower for investigation. The investigation methodology was as follows:

- › Concrete cores were extracted and in-situ measurements recorded;
- › Dynamic probing was carried out on all sites to establish the soil bearing capacity at the site; and
- › Concrete cores were tested and the compression strength recorded.

The concrete shear blocks of all tower foundations were also visually examined during this survey. The shear blocks are used to form a watershed between the tower foundation and the tower legs. Part of the shear block will be visible above ground and work to it is considered maintenance to the tower. Fifteen tower structures (03, 04, 05, 06, 07, 09, 10, 20, 28, 32, 34, 35, 45, 63 and 75) were identified as requiring their shear blocks to be raised. Raising shear blocks consists of pouring concrete around the bottom of the tower leg. Concrete trucks are brought as close as possible to the exposed shear blocks to pour directly around the bottom of the tower leg. In the event of this not being possible, concrete is transported in dumpers.

2.6

Ancillary Works

A number of existing anti-climbing guards are to be replaced or repaired with addition of locks in some cases (in tower structures 01, 02, 03, 04, 05, 06, 07, 09, 10, 20, 32, 33, 34, 35, 45 and 63).

3. SCHEDULE 7 CRITERIA

Tables 3.1, 3.2 and 3.3 below set out the Schedule 7 considerations in relation to the criteria for determining whether development listed in Part 2 of Schedule 5 should be subject to an EIA.

3.1 Characteristics of the proposed development

Table 3.1 - Characteristics of the proposed development

Criteria	Analysis
Will the size and design of the whole project be considered significant?	<p>No. The existing Kilbarry - Knockraha No. 2 110 kV overhead line (OHL) comprises 75 no. individual structures along its length; specifically, the 110 kV OHL is constructed of double wood polesets (55 no.) at intermediate locations, galvanised steel angle masts (18 no.) where the direction of the OHL changes and galvanised steel end masts (2 no.). These transmission structures range from 11m in height (i.e. Strain Intermediate (INT) Tower and Portal Intermediate Poleset (IMP) (Wooden)) to 32m in height (i.e. Double Current (DC) Intermediate Mast Tower). The intermediate wooden polesets are embedded in the soil typically to a depth of 2.3m whereas the steel angle masts have concrete foundations under each leg extending c. 2.5 x 2.5m and to a depth of 3m.</p> <p>The proposed works will not result in any material changes to the overall appearance or functionality of the line. The proposed scope of work within the Cork County Council functional area does not include the replacement of steel towers with wooden polesets or vice versa; specifically, where replacement of infrastructure is proposed, it is on a like for like basis. The proposed replacement of Intermediate Mast 08 and Strain INT Mast 33 towers with wooden polesets within the Cork City functional area will be of less visual significance from what is currently in-situ and will not give rise to any significant impacts on environmental media. Furthermore, the 110 kV OHL already includes 55 no. double wooden polesets, which is over half of the transmission structures comprising the line. The overall size and design of the project is therefore not considered significant in the context of EIA.</p>
Will the project have a significant impact when considered in cumulation with other existing and/or approved projects?	<p>No. The Cork County Council and Cork City Council planning databases were searched on the 9th September 2020 to determine if any nearby plans or projects within a 1km radius of the existing Kilbarry - Knockraha No. 2 110 kV OHL were likely to result in cumulative impacts. Due to the urban setting of the Cork City Council functional area, there is significant massing of development within the immediate vicinity of the 110 kV OHL line relating to transmission and telecommunication infrastructure, industrial and warehousing, residential (new build and alterations/extensions) and community infrastructure development. The Cork County Council functional area, in which the 110 kV OHL traverses for c. 5.4km, is less developed in comparison with pockets of commercial/warehousing infrastructure (Brooklodge East) near the City/County boundary. The majority of planning applications lodged in the immediate vicinity of the 110 kV line within the Cork County Council functional area relate to the provision and/or alteration of residential development and ancillary agricultural infrastructure.</p>

Criteria	Analysis	
	A consolidated list of projects for both Cork City and Cork County functional areas include, but are not limited to:	
	Cork County Council Functional Area	Cork City Council Functional Area
	Pl Ref. 13/6402 / PL04.244030: Extension of the existing 220 kV substation busbar in an easterly direction by approximately 109m including the installation of 2 no. 220 kV wing couplers, 2 no. sectionalising circuit breaker bays with associated equipment, 6 no. 24m lightning masts and 2 no. new line bays with associated equipment (Grant - 19/05/2015)	Pl Ref. 10/3448: Alterations to the existing ESB Kilbarry 110 kV Substation (Grant - 27/08/2010)
	Pl Ref. 14/4361: Permission for the continued use of the existing 36 metre high, free standing communications structure (Grant - 01/10/2014)	Pl Ref. 13/4658: Construction of a two storey standalone extension to the north of the existing two storey and single storey school buildings (Grant - 02/09/2013)
	Pl Ref. 15/6755: Construction of a dairy washings tank and an animal house (Grant - 18/03/2016)	Pl Ref. 15/36893: Alterations to existing ESB Kilbarry 110 kV Substation (Grant - 31/07/2015)
	Pl Ref. 17/4964: Construction of a dwelling house and all associated site works (Grant - 20/07/2017)	Pl Ref. 15/6722: Construction of 54 no dwellings, all ancillary car parking, landscaping and site developments works (Grant - 30/06/2016)
	Pl Ref. 17/5758: Extension of Duration - Warehouse building comprising of 2 no. units (site development works granted under Planning Reg. No: 10/5518) (Unconditional - 31/08/2017)	Pl Ref. 17/37392 / ABP-300653-18: Permission to the demolition of the existing industrial buildings on site and the construction of 81 no. residential units at a site which formed part of the former sunbeam factory complex (Grant - 10/04/2018)
	Pl Ref. 17/6655: Construction of dwellinghouse (Grant - 29/06/2018)	Pl Ref. 17/7137 / ABP-301637-18: Construction of 25 no. dwelling units and all associated ancillary development works (Conditional Grant - 02/01/2018)
	Pl Ref. 19/4197: Erect a 2 storey dwellinghouse (Grant - 27/03/2019)	Pl Ref. 18/6756: The construction of a two storey dwellinghouse domestic waste water treatment system, vehicular entrance and all associated site works (Grant - 3/05/2019)
	Pl Ref. 20/4297: Construction of 2 no. detached dwellinghouses (Grant - 10/07/2020)	Pl Ref. 19/38211: Permission for the construction of a new 110kV Gas Insulated Switchgear (GIS) building, located entirely within the footprint of the existing Kilbarry 110 kV Substation (Grant - 16/07/20)
	Pl Ref. 19/38922: Permission for demolition of existing shed and construction of 4 no dwelling houses and all associates site development works (Grant - 28/06/20)	

Criteria	Analysis
	<p>PI Ref. 19/38927: Retention of an existing 15m telecommunications structure with all associated equipment and cabin within a fenced compound (Grant - 20/03/2020)</p>
	<p>PI Ref. 20/039410: Permission for change of use from manufacturing purposes, offices, distribution depot and storage to manufacturing purposes, offices, distribution depot and storage including electronic recycling (Decision Due)</p>
	<p><u>Construction</u></p> <p>The main potential for cumulative impacts is associated with construction phase is traffic in the event that select projects (i.e. Planning Refs. 19/38211, 20/4297 and 19/38922, as referenced above) are progressed within the same time periods due to their general proximities. As the proposed works to the 110 kV OHL will require access for equipment such as tracked excavators, concrete delivery vehicles, mobile cranes, mobile elevated work platforms etc, there will be an increase in construction / vehicle movement on the local road network. Notwithstanding, these renewal and alteration works have short construction durations (c. 2-3 days) with the replacement of Intermediate Mast 08 and Strain INT Mast 33 with wooden polesets requiring c. 7 days. As such, it is considered significantly unlikely to result in any discernible significant cumulative effects on general mobility / accessibility of the local road network with any other construction projects in the vicinity. As the proposed works will be confined to the development envelope of the existing 110 kV OHL (c. 10m buffer on either side of the transmission line), the potential for significant environmental emissions (e.g. noise, air, water and land/soils) with other projects is considered minimal. Furthermore, the nature of the proposed renewal and altering works (refurbishment / replacement of existing structures) are not inherently invasive, and where excavation and the de-construction of existing structures is required, these works will be undertaken in accordance with established best practice which will further control potential cumulative effects.</p> <p><u>Operation</u></p> <p>Due to the type and nature of technology utilised and ancillary structures comprising the 110 kV Kilbarry-Knockraha 110 kV No. 2 OHL, there are no discernible operational emissions arising from the development.</p> <p>From a landscape perspective, the surrounding built environment has generally developed around the 110 kV OHL, and consequently, the line has become an established landscape structure. The replacement of the identified wooden polesets may result in an increase in height of up to 2m at certain points along the 110 kV OHL dependent on local topographical variation. However, any minor height increase of an intermediate wooden poleset as a consequence of the proposed works will still be in proportion relative to other structures along the alignment. Furthermore, the minor increase in height, if and where applicable, will largely be indiscernible to receptors given the scale and established nature of the development. The proposed replacement of Intermediate Mast 08 and Strain INT Mast 33 with wooden polesets, which are significantly reduced in scale and visual prominence, will result in lower visual impacts.</p> <p>In conclusion, potential cumulative environmental impacts/emissions are not considered significant.</p>

Criteria	Analysis
<p>Will the project involve the use of natural resources, in particular land, soil, water and biodiversity? Is the use of these natural resources considered significant?</p>	<p>No, the use of natural resources is not considered significant. The project will involve only limited use of natural resources. All works associated with the renewal and alteration of the 110 kV OHL will be undertaken within the development envelope of the existing equipment, and furthermore, the proposed works are maintaining and renewing existing infrastructure insofar as practicable, the works do not result in the extension of the line. The replacement of wooden polesets will be located immediately adjacent to the locations of the in-situ structures on the same alignment and will not be materially different in the context of the overall alignment of the 110 kV OHL. As such, there will be a very minor requirement for additional land-take, and where required, these lands will be within the development envelope / corridor of the line.</p> <p>There are no raw / process water requirements associated with the proposed works.</p> <p>There are no ecological receptors of significance located within the proposed development site. The existing Kilbarry-Knockraha No. 2 110 kV Line passes over a number of different habitat types which are predominately comprised of residential areas and roadways classified as Buildings and Artificial Surfaces (BL3), Amenity Grassland (GA2), Improved Agricultural Grassland (GA1), Dry meadows and grassy verges (GS2) scattered areas of Scrub (WS1) and Hedgerows (WL1) which are often associated with Earthen banks (BL2) and stonewalls classified as Stonewalls and other stone work (BL1). There were no Qualifying Interests (Qis) of SACs, or Special Conservation Interests (SCIs) of SPAs recorded during the site visit.</p> <p>There are 3 no. European designated sites within the general setting of the 110 kV OHL: Great Island Channel Special Area of Conservation (SAC) (001058), c. 2.4km south-east, Blackwater River (Cork/Waterford) SAC (002170), c. 9.1km north; and Cork Harbour Special Protection Area (SPA) (004030), c. 433m south. The Appropriate Assessment Screening Report prepared by MKO concludes, it can be excluded on the basis of objective evidence, that there will be likely significant effects on European sites from the project alone, or in combination with other plans or projects.</p> <p>Overall, it is considered that the use natural resources is not considered significant.</p>
<p>Will the project produce a significant volume of wastes?</p>	<p>No. Due to the nature and scale of the proposed renewal and altering of the Kilbarry - Knockraha No. 2 110 kV overhead transmission line, the project will not produce a significant volume of waste. All proposed works will be managed and programmed in such a manner as to prevent/minimise waste production and maximise upper tier waste management (i.e. re-use, recycle, and recovery) where technically and economically feasible.</p> <p>The replacement of wooden polesets and the decommissioning / excavations required for replacement structures will be managed to ensure a 'cut-and-fill' balance will be adhered to during the proposed works which will maximise the re-use of material excavated from groundworks for land reinstatement whilst minimising the potential for waste production.</p> <p>The decommissioned equipment (insulators, hardware, wooden poles, steel structures and etc.) will be stored under appropriate conditions until it can be recycled or disposed of by licensed waste contractors and hauliers in a manner which will not adversely affect the environment.</p>

Criteria	Analysis
Will the project result in significant pollution or nuisance?	<p>No. The proposed works will be confined to the development envelope of the existing 110 kV OHL and does not provide for any extension of the line. Furthermore, due to the nature and scale of the proposed works, the duration of the works at any given structure will be short (c. 2-3 days and up to 7 no. days for the replacement of Intermediate Mast 08 and Strain INT Mast 33) thus potential construction impacts, e.g. noise, traffic, air, will be localised and temporary. The works will be undertaken in compliance with standardised best construction practice. As a number of structures are located on agricultural lands and in close proximity to residential dwellings, gaining access to these lands to carry out the proposed works will be coordinated with relevant stakeholders in accordance with the relevant <i>ESB/IFA Code of Practice</i> and relevant statutory provisions. The construction areas around the transmission structure assets will be reinstated as close as possible to their original condition in accordance with the relevant ESB Code of Practice for Survey and in consultation with the individual landowners.</p> <p>No significant pollution or nuisance impact at proximate residential receptors is envisaged providing that best design and construction practice is followed.</p>
Will the project result in a risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge?	<p>No. The proposed corrective maintenance / renewal requirements for the Kilbarry - Knockraha No. 2 110 kV transmission line has been designed in accordance with EirGrid's standards for this type of development. The proposed works comply with the technical and operational requirements for set out in the appropriate National and International standards. On-going maintenance, e.g. the proposed works, as undertaken by the TAO, maintain, and ultimately safeguard, the operational functionality of the existing 110 kV line.</p> <p>In relation to climate change, and particularly, the increased risk of flooding arising from same, the proposed works areas are not identified as being at risk of flooding. Potential flood risk for the 110 kV OHL has been considered in accordance with the <i>Planning System and Flood Risk Management - Guidelines for Planning Authorities (PSFRM Guidelines)</i> (Department of the Environment, Heritage and Local Government, [DOELG], November 2009). While the 110 kV line (conductor) traverses lands classified as having 10 % AEP Flood Extent (1 in 10 chance in any given year) associated with the Glashaboy River, between Portal IMP 37 and Portal 38, it is important to emphasise that there are no proposed works to Portal IMP 37 nor 38 as part of this proposal. Furthermore, there are no proposed works located within, or adjacent to, to this flood risk zone nor are there any further flood risk zones. The PSFRM Guidelines conclude that essential infrastructure, such as the existing 110 kV OHL, is considered appropriate for land classified as Flood Zone C due to the low vulnerability for flooding.</p> <p>There will be no change in the capacity within the development envelope of the 110 kV OHL to infiltrate rainwater as a result of the proposed renewal and alteration for the line. Any clean stormwater run-off from periods of heavy precipitation will continue to discharge the surrounding lands as currently occurring; thus, increased risk of flooding elsewhere from the proposed works is negligible.</p>
Will the project result in any risks to human health (e.g. due to water contamination or air pollution)?	<p>No. The proposed works will be confined to the development envelope of the existing 110 kV OHL and does not provide for the extension of the line. Furthermore, due to the nature and scale of the proposed works, the duration of the works at any given structure will be short in duration thus potential construction impacts, e.g. noise, water, air, will be localised and temporary. The works will be undertaken in compliance with standardised best practice and all relevant health and safety procedures. As a number of structures are located on</p>

Criteria	Analysis
	<p>agricultural lands and in close proximity to residential dwellings, gaining access to these lands to carry out the proposed works will be coordinated with relevant stakeholders in accordance with the relevant ESB/IFA Code of Practice and relevant statutory provisions. Compliance with these standardised practice parameters will ensure there is no risk to human health.</p> <p>The following measures will be implemented to reduce the risks to human health from air pollution and water contamination during the construction phase of development. There will be no discernible emissions to either air or water (including groundwater) during operation.</p> <p><u>Air Pollution</u></p> <ul style="list-style-type: none"> ○ The pro-active control of fugitive dust will ensure that the prevention of significant air emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the construction works with regard to proximate receptors; ○ All vehicles carrying materials which could result in emissions to air (e.g. dust, etc.) will be fully sheeted in order to prevent any adverse effects to residential receptors and air quality within the locality. It should be noted that the transportation of materials and equipment (e.g. wooden poles, hardware) and decommissioned transmission assets (steel structures and wooden poles) are not considered to pose a threat to air quality ; ○ Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind; ○ Re-vegetate earthworks and exposed areas/ soil stockpiles to stabilise surfaces as soon as practicable; <p><u>Groundwater Contamination</u></p> <ul style="list-style-type: none"> ○ All decommissioned plant, equipment and machinery will be dismantled and stored under appropriate conditions until it can be recycled or disposed of through licensed waste contractors and hauliers; ○ Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment; ○ Drip trays will be used where hydrocarbons are being used for vehicle maintenance/refuelling; ○ All plant will be inspected at the beginning and end of each shift and if leaks are evident, they are to be repaired immediately or removed from site and replaced; ○ No on-site concrete batching will be permitted within the site boundary. Concrete will instead be transported to the site within a concrete truck; and ○ Concrete works will be scheduled during dry weather conditions to reduce the elevated risk of runoff

Location of Proposed Development

Table 3.2 - Location of proposed development

Criteria	Analysis
What is the existing and approved land use?	<p>The Kilbarry - Knockraha No. 2 110 kV line is located within the functional areas of Cork County Council and Cork City Council. The existing 5.4km of 110 kV OHL within the Cork County functional area was constructed between 1964 and 1974 and is not formally zoned for development by the Cork County Development Plan 2014 (as varied) (CDP). Current land-uses within the general setting of the line include for commercial/warehousing, residential development, agriculture and utility infrastructure, including electricity transmission. The renewal and alteration of the 110 kV OHL will not prevent, inhibit or alter these proximate land-uses as all proposed works are within the development envelope of the existing equipment and the proposed works do not include for the extension of the line. It is also important to highlight that, as set out within the Cobh Municipal District Local Area Plan 2017 (as varied), new development is required to comply with a maximum 40 metre wayleave along the route of the 110 kV OHL line, which further limits any potential effects on existing and permitted land uses.</p> <p>The CDP acknowledges that the provision of a <i>'secure and reliable electricity transmission infrastructure and transmission grid is essential to meet the growth in demand and ensure that a reliable electricity supply is available'</i>. The maintenance and safeguarding of the operational functionality of the existing Kilbarry - Knockraha No. 2 110 kV line through the successful implementation of the proposed works is therefore considered consistent with CDP Objective ED 6-1 (Electricity Network);</p> <p><i>"Support and facilitate the sustainable development, upgrade and expansion of the electricity transmission grid, storage and distribution network infrastructure.</i></p> <p><i>Support the sustainable development of the grid including strategic energy corridors and distribution networks in the region to international standards."</i></p> <p>The existing c. 7.1km of 110 kV OHL within the Cork City functional area was constructed between 1954 and 1974. As indicated by North-Central Suburbs Zoning Map (Map 4) within the Cork City Development Plan 2015-2021 (CCDP), the 110 kV OHL traverses lands zoned for <i>'Residential, Local Services and Institutional Services'</i> and <i>'Business and Technology'</i>.</p> <p><i>'Residential, Local Services and Institutional Services'</i> land-use zoning is characterised as: <i>To protect and provide for residential uses, local services, institutional uses, and civic uses, having regard to employment policies</i></p> <p><i>'Business and Technology'</i> land-use zoning is characterised as: <i>To provide for high technology related office based industry</i></p>

Criteria	Analysis
	<p>The CCDP (Section 12.25) states that ensuring adequate network capacity to carry power from new generation stations and ensuring a reliable supply to meet growing demand will require both the provision of new transmission infrastructure and the enhancement of existing transmission infrastructure in the South West Region, as exemplified by the proposed works. Specifically, the CCDP states that</p> <p><i>‘Regional and national policy promotes the protection and development of the Grid and development proposals in Cork City should not compromise plans for the grid; this will be accounted for in planning applications’.</i></p> <p>As the overall footprint / alignment of the 110 kV OHL will not be modified as a result of these proposed works nor require any additional land-take from outside of the development envelope, it is considered that proposal does not conflict with adjacent land-uses nor relevant policy set out in the CCDP.</p>
<p>Has the project the potential to impact on the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground?</p>	<p>No. All works associated with the renewal and alteration of the 110 kV OHL will be undertaken within the development envelope of the existing equipment, and furthermore, the proposed works do not include for any extension of the line. The replacement of wooden polesets will be located immediately adjacent to the locations of the in-situ structures on the same alignment and will not be materially different in the context of the overall alignment of the 110 kV OHL. As such, there will be a very minor requirement for additional land-take, and where required, these lands will be within the development envelope / corridor of the line. These design elements will limit the disruption of undeveloped land.</p> <p>There are no raw / process water requirements associated with the proposed works.</p> <p>The proposed renewal and altering works to the existing 110 kV OHL will be undertaken in compliance with standardised best construction practice.</p> <p><u>Biodiversity:</u></p> <p>There are no ecological receptors of significance located within the zone of influence of significant effects from the Kilbarry-Knockraha No. 2 110 kV Line. The existing 110 kV OHL passes over a number of different habitat types which are predominately comprised of residential areas and roadways. As all of the proposed works are associated with existing infrastructure, there will be no significant loss of habitat and there will be no additional impacts outside of the proposed project footprint. Desk-based assessment and ecological field assessments, undertaken as part of the Appropriate Assessment Screening Process, concluded that, on the basis of the minor scale of the proposed works, their association with the maintenance/refurbishment of the existing 110 kV OHL infrastructure and the absence of any European designated sites within the proposed work’s the zone of influence of significant effects, no potential for significant effects exist.</p> <p><u>Water</u></p> <p>Proposed excavations (earthworks) associated with the replacement of wooden polesets and the replacement of 2 no. existing steel tower structures are minor in nature and not significant, e.g. replacement poles will be installed to a minimum depth below ground of 2.3m. As</p>

Criteria	Analysis
	<p>such, it is not anticipated that there will be any groundwater impacted. The site will be kept clean as per standard protocol and any excavation activities will be managed in line with established best practice.</p> <p><u>Soils & Groundwater:</u></p> <p>All plant will be inspected at the beginning and end of each shift, and if leaks are evident, they will be repaired immediately or removed from site and replaced. Where hydrocarbons are being used for vehicle maintenance and/or where refuelling is to take place on site, drip trays will be used way from all drains. Concrete pouring will be fully controlled and supervised to ensure that any pollution risk is not presented.</p> <p>As such, the proposed works will not adversely impact the relative abundance, availability, quality and regenerative capacity of these natural resources.</p>
<p>Has the project the potential to impact on the absorption capacity of the natural environment, paying particular attention to wetlands, riparian areas, river mouths</p>	<p>No. The 110 kV OHL route crosses six watercourses, which from east to west, include the Glashaboy [EPA code: 19G01], Rowgarrane [EPA code: 19R39], Lackinroe [EPA code: 19L50], Glenmore [EPA code: 19G82], Lisheenroe [EPA code: 19L40] and the Goganstown [EPA code: 19G68]. In all instances, the existing line passes over the watercourses and there will be no bankside or instream works required as part of the proposed works. Furthermore, all of the transmission structures identified for the proposed works are located greater than 50m from the cited watercourses and their associated tributaries, as per the online EPA River Network GIS mapping. The majority of these structures benefit from intervening development (urban, residential and community) and natural buffers (field boundaries, natural vegetation (hedgerows, woodland) from the waterbodies. Consequently, there is limited to negligible potential for significant effect on wetland and riparian habitats via any hydrological pathway. Notwithstanding, the replacement of wooden polesets and any associated excavations will be undertaken in compliance with standardised best construction practice.</p> <p>There will be no change in the capacity within the development envelope of the 110 kV OHL to infiltrate rainwater as a result of the proposed renewal and alteration for the line.</p>
<p>Has the project the potential to impact on the absorption capacity of the natural environment, paying particular attention to coastal zones and the marine environment</p>	<p>No. The project has no potential to impact on these features of the natural environment having regard to its location and the nature of the proposed development works. Based on the nature and scale of the proposed works, the distance of c. 2km between the Kilbarry-Knockraha No. 2 110 kV Line and Cork Harbour (Lough Mahon) and the nature of the intervening buffer between the existing 110 kV OHL and the harbour (urban development, transportation infrastructure, forestry, bound agricultural fielding and etc.) there is no potential for significant impacts on the marine / coastal environment.</p>
<p>Has the project the potential to impact on the absorption capacity of the natural environment, paying particular</p>	<p>No. The project has no potential to impact on these features of the natural environment having regard to its location and the nature of the proposed development works.</p>

Criteria	Analysis
attention to mountain and forest areas	
<p>Has the project the potential to impact on the absorption capacity of the natural environment, paying particular attention to areas classified or protected under national legislation; Natura 2000 areas designated by Member States pursuant to Directive 92/43/EEC and Directive 2009/147/EC</p>	<p>In order to support the competent authorities in the carrying out of an Appropriate Assessment, an Appropriate Assessment Screening Report (AASR) was prepared by MKO which examined the potential effects of the proposed works on the integrity of the Great Island Channel Special Area of Conservation (SAC) (001058), c. 2.4km south-east, Blackwater River (Cork/Waterford) SAC (002170), c. 9.1km north; and Cork Harbour Special Protection Area (SPA) (004030), c. 433m south, with respect to the sites' conservation objectives.</p> <p>The proposed works are small scale in nature, fully associated with maintenance/refurbishment of the existing line infrastructure and there are no instream or bankside works required. There is also no direct hydrological connectivity between the proposed works and the SAC. Consequently, no potential for significant effect via any hydrological pathway exists. As such, no source-impact-pathway exists in relation to the habitats listed as QI's for the Great Island Channel SAC and Blackwater River (Cork/Waterford) SAC. In the context of Cork Harbour SPA, based on the nature and scale of the works, the nature of the habitats at the works areas and the intervening buffer between the existing line and the SPA; no potential for significant effect as a results or disturbance/displacement of any SCI species exists nor is there any no potential for significant effect on supporting wetland habitat for SCI species, via any hydrological pathway.</p> <p>The AASR concludes, it can be excluded on the basis of objective evidence, that there will be likely significant effects on European sites from the project alone, or in combination with other plans or projects.</p>
<p>Has the project the potential to impact on the absorption capacity of the natural environment, paying particular attention to areas in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure</p>	<p>No. The proposed works have no potential to impact on these features of the natural environment having regard to the Kilbarry - Knockraha No. 2 110 kV line's lack of connectivity and/or distance from any area in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure.</p>
<p>Has the project the potential to impact on the absorption capacity of the natural environment, paying particular attention to densely populated areas</p>	<p>No. The Kilbarry-Knockraha No. 2 110 kV transmission line was constructed over three phases with structures 1-7 built in 1954, structures 62-75 built in 1964 and structures 7-62 built in 1974. In this regard, it is important to highlight that the 110 kV OHL predates the majority of current development situated in the immediate proximity of the line, particularly the urban residential environment of north Cork City which has developed along the periphery of the transmission line over the last 50 no. years.</p>

Criteria	Analysis
	<p>Twenty-two (22 no.) transmission structures identified for corrective maintenance and renewal works are within the immediate vicinity (<100m) of residential dwellings and community infrastructure, as identified below:</p> <ul style="list-style-type: none"> › <i>Cork City Council functional area (densely populated):</i> DC Angle Mast 05, DC Angle Mast 06, DC Angle Mast 07 (54m north of St. Aidan's Community College), Intermediate Mast 08, Angle Mast 09, Portal IMP 17, Angle Mast 20, Portal IMP 21, Portal IMP 26, Portal IMP 29, Portal IMP 30, Portal IMP 31, Angle Mast 32, Strain INT Mast 33, Angle Mast 34, Angle Mast 35 and Angle Mast 45 › <i>Cork County Council functional area (semi-rural):</i> Portal IMP 50, Portal IMP 51, Portal IMP 59, Portal IMP 60 and Portal IMP 66. <p>Gaining access to these lands to carry out the proposed works will be coordinated with relevant stakeholders in accordance with the relevant ESB/IFA Code of Practice and relevant statutory provisions. Compliance with best practice construction methodologies will ensure that that there are no significant impacts, particularly noise, arise over the short-duration of the works.</p> <p>Noise from the operation of the Kilbarry-Knockraha No. 2 110 kV transmission line after the works will not result in any changes to the existing baseline levels at any noise sensitive receptors situated within the more densely populated north Cork City environs or any other residential properties within proximity of the 110 kV OHL. In general, the operation of the existing 110 kV OHL will not result in any discernible environmental emissions, e.g. noise, air, water etc.; therefore, there will be no new significant adverse impacts on any densely populated areas.</p>
<p>Has the project the potential to impact on the absorption capacity of the natural environment, paying particular attention to landscapes and sites of historical, cultural or archaeological significance</p>	<p><u>Historical, Cultural or Archaeological Heritage</u></p> <p>No. EirGrid operates in compliance with its '<i>Cultural Heritage Guidelines for Electricity Transmission Projects</i>' (2015) which sets out a standardised approach for cultural heritage consideration in the design, construction, and operation of high voltage electricity transmission projects. Adherence to these standards will ensure no direct impacts to archaeological or architectural heritage from either the construction or operational phases of development.</p> <ul style="list-style-type: none"> › There are 15 no. Protected Structures identified within the Cork County and Cork City Development Plans within 500m of the Kilbarry - Knockraha No. 2 110 kV OHL with the most proximate, RPS ID - 00484 Cloth Mill & Mill Race, situated c. 117m north of the line. The remaining Protected Structures range from 210m to 495m in distance from the line. › There are 26 no. registered monuments (Record of Monuments and Places / Sites and Monuments Record) within 500m of the Kilbarry - Knockraha No. 2 110 kV OHL with CO074-132 Burnt Mound being the closest (measured from Zone of Notification [ZON]), c. 45m south-west, of Portal IMP 13. Nine (9 no.) registered monuments are situated <200m from the 110 kV OHL between c. 117m to c. 176m with the remaining monuments ranging from 202m to 476m in distance. › There are 28 no. registered structures from the National Inventory of Architectural Heritage (NIAH) within 500m of the Kilbarry - Knockraha No. 2 110 kV OHL with the most proximate, Delaney Brothers Monument - Reg. No. 20859001, situated c. 98m north

Criteria	Analysis
	<p>of the line. Five (5 no.) 5 no. structures are situated <200m from the 110 kV OHL between c. 135m to c. 197m with the remaining monuments ranging from c. 254m to c. 476m in distance.</p> <p>It is important to highlight that all subject works are proposed within the development envelope of the existing equipment and the proposed works do not include for any extension of the line. The replacement of wooden polesets will be located immediately adjacent to the locations of the in-situ structures on the same alignment. Against this backdrop, there are no predicted direct impacts to archaeological or architectural heritage, nor potential visual impacts, within the general vicinity of the 110 kV OHL from either the construction or operational phases of development. As such, mitigation measures specifically designed for the protection of archaeology and cultural heritage are not considered relevant for this project.</p> <p><u>Landscape</u></p> <p>No. The Kilbarry-Knockraha No. 2 110 kV transmission line (End Mast 01 - Portal IMP 69) is located within the 'City Harbour and Estuary' Landscape Character Type (LCT), which comprises a mix of rural and intensely urban areas with rural areas around much of the greater harbour characterised by a prevalence of infrastructure such as roads, bridges and electricity power lines (e.g. the existing 110 kV OHL) and some urban sprawl. The LCT is classified by the Landscape Character Assessment as having 'Very High' Landscape Value and Landscape Sensitivity and 'National' Landscape Importance. LCTs which have a very high or high landscape value and high or very high landscape sensitivity and are of county or national importance are designated as High Value Landscapes (HVL).</p> <p>Transmission assets (Portal IMP 70 - End Mast 75) are located in the Fissured Fertile Middleground (10b) LCT which is characterised as both flatter fertile farmland type and the higher marginal hilly or rugged type. The LCT is classified by the Landscape Character Assessment as having 'Medium' Landscape Value, 'High' Landscape Sensitivity and 'County' Landscape Importance. The Fissured Fertile Middleground (10b) LCT is not classified as a High Value Landscape.</p> <p>The Scenic Route (Ref. No. S41) from Dunkettle to Glanmire and eastwards to Caherlag and Glounthane is c. 320m south of the existing 110 kV OHL at its closest point (e.g. Glanmire Bridge). Scenic Route (Ref. No. S42), from Cashnagariffe, N.W. Carrigtwohill and Westwards to Caherla, is further south of the 110 kV OHL at c. 1.4km at its closest point.</p> <p>The surrounding built environment has generally developed around the 110 kV OHL, and consequently, the line has become an established landscape structure within the City Harbour and Estuary LCT, as noted in the Landscape Character Assessment. The renewal and alteration of the 110 kV OHL will not result in any material changes to the scale or siting of the line. While the replacement of the identified wooden polesets may result in a non-significant increase in height of up to 2m at certain points along the 110 kV OHL dependent on local topographical variation, any minor height increase of an intermediate wooden poleset as a consequence of the proposed works will still be in proportion relative to other structures along the alignment. Furthermore, the minor increase in height, if and where applicable, will largely be indiscernible to receptors given the scale and established nature of the development. The proposed replacement of Intermediate Mast 08 and Strain INT Mast 33 with wooden polesets, which are significantly reduced in scale and visual prominence, will result in lower visual impacts. As the OHL already includes 55 no. double wooden polesets, the visual presence of the renewed 110 kV OHL within the receiving environment will not be intensified nor materially different to what has historically been in-situ.</p>

Criteria	Analysis
	No significant landscape or visual residual impacts arising from the proposed works have been identified on the recognised and sensitive aspects of the receiving landscape characters and associated scenic routes.

3.3

Type and Characteristics of Potential Impact

Table 3.3 - Type and Characteristics of Potential Impacts

Criteria	Screening Analysis
Outline the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected)	<p>The existing Kilbarry - Knockraha No. 2 110 kV overhead line (OHL) comprises 75 no. individual structures along its length (c.12.5km) within Cork County (c. 5.4km in length) and Cork City Council (c. 7.1km in length) functional areas. The proposed works do not include the extension of the line. The replacement of wooden polesets will be located immediately adjacent to the locations of the in-situ structures identified for replacement on the same alignment. As such, there will be a very minor requirement for additional land-take, and where required, these lands will be within the development envelope / corridor of the line.</p> <p>Twenty-two (22 no.) transmission structures identified for corrective maintenance and renewal works are within the immediate vicinity (<100m) of residential dwellings and community infrastructure. Typical construction works required will include excavation which will result in a short-term localised increase in environmental emissions (e.g. dust, noise etc.), typical of all construction projects. Compliance with standardised best practice will ensure that potential environmental impacts do not result in any nuisance at nearby sensitive receptors during the construction phase. The operation of the existing 110 kV OHL will not result in any discernible environmental emissions.</p> <p>The implementation of established best practice procedures will further restrict potential impact pathways to larger geographical areas which will limit and offset potential impacts on receptors outside of the development area.</p>
Outline the nature of the impact	<p>The proposed renewal and altering of the Kilbarry-Knockraha No. 2 110 kV transmission line comprises 6 no. broad categories of corrective maintenance / renewal requirements: paint / corrosion treatment of steel towers (14 no.), replacement of wooden polesets (35 no.), replacement of existing steel intermediate towers with wooden intermediate polesets (2 no.), replacement of insulators and hardware, civil works on tower shear blocks (15 no.) and ancillary works (repair/renewal of anti-climbing guards - 16 no.).</p> <p>Prior to the commencement of construction activities (e.g. replacement of wooden polesets, replacement of steel intermediate towers with wooden polesets and raising of tower shear blocks), the area for development will be fenced off. Mobilisation will include the putting in place of staff, temporary facilities, plant and equipment, materials and systems for construction, where required. Civil and plant construction works will include tracked excavators, concrete delivery vehicles, mobile cranes, mobile elevated work platforms. Works will include</p>

Criteria	Screening Analysis
	<p>excavation, stockpiling and management of construction and decommissioned materials until it can be recycled or disposed of by licensed waste contractors and hauliers in a manner which will not adversely affect the environment.</p> <p>Although not significantly invasive and of short duration, the proposed works have potential to result in adverse environmental impacts in the absence of standardised procedures and established best practice. The proposed works will be undertaken in compliance with established best practice and the ESB/IFI Code of Practice. The implementation of these measures will ensure that there are no adverse impacts on the relative abundance, availability, quality and regenerative capacity of these natural resources.</p> <p>Due to the type and nature of technology utilised and ancillary structures comprising the 110 kV Kilbarry-Knockraha 110 kV No. 2 OHL, there are no discernible operational emissions arising from the development. The construction areas around the transmission structure assets will be reinstated as close as possible to their original condition in accordance with the relevant ESB Code of Practice for Survey and in consultation with the individual landowners. There will be no change in the capacity within the development envelope of the 110 kV OHL to infiltrate rainwater as a result of the proposed renewal and alteration for the line. Any clean stormwater run-off from periods of heavy precipitation will continue to discharge the surrounding lands as currently occurring.</p>
Outline the transboundary nature of the impact	The project will not result in transboundary impacts.
Outline the intensity and complexity of the impact	<p>Potential construction impacts are not considered to be significantly complex when established best practice and internal standardised procedures are employed nor intense due to the nature of the development:</p> <ul style="list-style-type: none"> › The proposed works to the existing Kilbarry-Knockraha No. 2 110 kV transmission line is consistent with the policies and objectives set out within the Cork County Development Plan 2014 (as varied) and the Cork City Development Plan 2015-2021 with regard to the upgrading of the electricity transmission grid. All works are within the development envelope of the existing equipment and the proposed works do not include for the extension of the line nor is it proposed to alter the overall functionality of the line in the context of the wider transmission system (e.g. no increase in the voltage of the line from the existing 110 kV). › Construction phase activities will include civil works - excavation, stockpiling of excavated management of construction and decommissioned material. These construction activities may temporarily affect proximate environmental receptors; however, selection and implementation established best practice and standardised procedures will prevent any potentially adverse effects generated from these activities. It should be noted that none of these measures are required to avoid or reduce harmful effects to European sites. › The renewal and alteration of the 110 kV OHL will not result in any material changes to the scale or siting of the line. While the replacement of the identified wooden polesets may result in minor increases in height of up to 2m at certain points along the 110 kV OHL dependent on local topographical variation, any minor height increase of an intermediate wooden poleset as a consequence of the proposed works will remain in proportion relative to other structures along the alignment. As the OHL already includes 55 no.

Criteria	Screening Analysis
	<p>double wooden polesets, the replacement of steel intermediate towers (2 no.) with wooden polesets will not intensify or materially alter the visual presence of the renewed 110 kV OHL within the receiving environment in the context of what has historically been in-situ.</p> <p>Due to the type and nature of technology utilised and ancillary structures comprising the 110 kV Kilbarry-Knockraha 110 kV No. 2 OHL, there are no discernible operational emissions arising from the development.</p>
Outline the probability of the impact	<p>Technical components of the renewed 110 kV OHL will be designed in accordance with EirGrid's standards for this type of development and operational requirements as set out in the appropriate National and International standards.</p> <p>Conventional construction and best environmental practice techniques will be proactively planned and implemented by ESB (TAO) during the undertaking of the proposed works. Best practice construction measures will be drawn from, at a minimum, relevant legal obligations for construction sites in Ireland and recommended best construction practice.</p> <p>The implementation of the above measures will ultimately reduce the probability that the undertaking of the proposed works will have the potential to result in adverse environmental impacts.</p>
Outline the expected onset, duration, frequency and reversibility of the impact	<p>The selection and implementation established best practice procedures and internal standardised procedures (ESB/IFA Code of Practice) will ensure potential impacts during the construction phase are temporary in nature and not significant.</p> <p>It is expected that the proposed works will commence in 2022 subject to the Project successfully securing a Section 5 Declaration of Exempted Development by Cork County and Cork City Councils with construction and commissioning activities lasting up to a maximum 4 months.</p> <p>Normal working hours during the construction period are expected to be Monday to Friday 08:00 to 18:00 (inclusive), and Saturday 08:00 to 14:00 (inclusive) and not at all on Sundays and public holidays. It should also be noted, however, that the undertaking of the proposed works is dependent on outage availability thus some works may have to be carried out outside of normal working hours. Cork County Council and Cork City Council will be notified in advance of any work commencing on the line.</p> <p>The Kilbarry - Knockraha No. 2 110 kV Transmission line has been completely operation since 1974, c. 46 years. The renewal and alteration of the 110 kV OHL will increase the design life of the transmission line by approximately another 30 - 50 years. Therefore, it is considered that the permanent impacts (e.g. land intake) are irreversible. Notwithstanding, the proposed development is considered critical within the wider transmission network and will remain a permanent asset.</p> <p>The maintenance and safeguarding of the operational functionality of the existing Kilbarry - Knockraha No. 2 110 kV line will contribute towards the sustainable development of the regional transmission grid to international standards in line with CDP Objective ED 6-1 (Electricity Network). The upgrade and expansion of the electricity transmission grid will ensure that a secure and reliable electricity supply is available to meet the future growth in demand within the Cork City and Cork County functional areas.</p>

Criteria	Screening Analysis
Outline the cumulation of the impact with the impact of other existing and/or approved projects	<p>The Cork County Council and Cork City Council planning databases was searched on the 9th September 2020 to determine if any nearby plans or projects within a 1km radius of the existing Kilbarry - Knockraha No. 2 110 kV OHL were likely to result in cumulative impacts. Due to the urban setting of the Cork City Council functional area, there is significant massing of development within the immediate vicinity of the 110 kV OHL line relating to transmission and telecommunication infrastructure, industrial and warehousing, residential (new build and alterations/extensions) and community infrastructure development.</p> <p>The Cork County Council functional area is less developed in comparison with pockets of commercial /warehousing infrastructure (Brooklodge East) near the boundary of the 2 no. functional areas. The majority of planning applications lodged in the immediate vicinity of the 110 kV line within the Cork County Council functional area relate to the provision and/or alteration of residential development and ancillary agricultural infrastructure.</p> <p>A consolidated list of projects for both Cork City and Cork County functional areas is provided for in Section 3.1.</p> <p><u>Construction</u></p> <p>The main potential for cumulative impacts is associated with the construction phase is traffic in the event that proximate construction / civil projects are progressed within the same time periods. As the proposed works to the 110 kV OHL will require access for equipment (e.g. tracked excavators, concrete delivery vehicles, mobile cranes, mobile elevated work platforms etc) there will be an increase in construction / vehicle movement on the local road network. Notwithstanding, the majority of the renewal and alteration works will have short construction durations (c. 2-3 days) with the replacement of Intermediate Mast 08 and Strain INT Mast 33 with wooden polesets requiring c. 7 days. As such, any discernible cumulative effects on general mobility / accessibility of the local road network with any other construction projects in the vicinity will be minor and temporary.</p> <p>As all of the proposed works will be confined to the development envelope of the existing 110 kV OHL (c. 10m buffer on either side of the transmission line), the potential for significant environmental emissions (e.g. noise, air, water and land/soils) with other projects is considered minimal. Furthermore, the nature of the proposed works (refurbishment / replacement of existing structures) are not inherently invasive, and where excavation and the de-construction of existing structures is required, these works will be undertaken in accordance with established best practice and standardised procedures which will further control for potential cumulative effects.</p> <p><u>Operation</u></p> <p>Due to the type and nature of technology utilised and ancillary structures comprising the 110 kV Kilbarry-Knockraha 110 kV No. 2 OHL, there are no discernible operational emissions arising from the development. As such, there is negligible potential for the refurbished line to result in any novel cumulative operational effects with other proximate development.</p> <p>From a landscape perspective, the surrounding built environment has generally developed around the 110 kV OHL, and consequently, the line has become an established landscape structure. The strengthening of the 110 kV OHL, in combination with other on-going improvements to the wider transmission network (PI Ref. 10/3448, PI Ref. 13/6402 / PL04.244030, PI Ref. 15/36393 and PI Ref. 19/38211)</p>



Criteria	Screening Analysis
	will, however, ensure the sustainable development of enhanced electricity supplies, and associated networks, to serve the existing and future needs of Cork County and City.
Outline the possibility of effectively reducing the impact	<p>The proposed corrective maintenance measures to maintain, and ultimately safeguard, the operational functionality of the existing Kilbarry - Knockraha No. 2 110 kV line have been carefully identified and selected to ensure that environmental impacts are minimised as much as possible. These impacts in the context of the discussed environmental media are not considered significant and do not result in a requirement for EIA.</p> <p>All works associated with the renewal and alteration of the 110 kV OHL will be undertaken within the development envelope of the existing equipment and will not be materially different in the context of the overall alignment of the 110 kV OHL. Compliance with standardised best practice will ensure that impacts associated with noise, air, water, etc. - do not result in any nuisance at nearby sensitive receptors during the construction phase.</p> <p>Technical components of the renewed 110 kV OHL will be designed in accordance with EirGrid's standards for this type of development and operational requirements as set out in the appropriate National and International standards. These design specifications will address environmental risks during the lifetime of the development.</p>

4. CONCLUSION

It is concluded that impacts associated with the renewal and altering of the Kilbarry - Knockraha No. 2 110 kV line are not significant in the context of Schedule 7 of the Regulations to the extent that an EIA is not required. This conclusion is based on the findings of the analysis provided in the preceding sections of this report in relation to:

- > Characteristics of Project;
- > Location of Project; and
- > Type and Characteristics of Potential Impact

As part of the above analysis, a broad range of environmental media have been assessed. No potential impacts of significance were identified during either the construction or operational phase of the Kilbarry - Knockraha No. 2 110 kV line's lifetime. The proposed works have also been assessed as part of the Appropriate Assessment Screening Report, having informed the preparation of this report, which concluded that there will be no likelihood of significant effects on any European sites arising from the proposed works.

Although the recommendation of the EIA Screening is that an EIA is not required, it is acknowledged that it is Cork County Council and Cork City Council, as the competent authorities, who will decide on the necessity or otherwise on an EIA in this instance.



APPENDIX 1

SUMMARY OF PROPOSED WORKS

Structure	Local Authority	Townland	Proposed Works
01	Cork City Council	Cork City and suburbs	<ul style="list-style-type: none"> > Treat corrosion & paint > Replace Anti-Climbing Guards
02	Cork City Council	Cork City and suburbs	<ul style="list-style-type: none"> > Treat corrosion & paint > Replace single circuit insulators and hardware > Replace vibration dampers > Replace Anti-Climbing Guards
03	Cork City Council	Cork City and suburbs	<ul style="list-style-type: none"> > Treat corrosion & paint > Replace double circuit insulators and hardware > Replace vibration dampers > Civil works (reinforcement / reparation) to foundations > Replace Anti-Climbing Guards
04	Cork City Council	Cork City and suburbs	<ul style="list-style-type: none"> > Paint > Replace double circuit insulators and hardware > Replace U bolts > Replace vibration dampers > Civil works (reinforcement / reparation) to foundations > Replace Anti-Climbing Guards
05	Cork City Council	Ballincolly	<ul style="list-style-type: none"> > Paint > Replace double circuit insulators and hardware > Civil works (reinforcement / reparation) to foundations > Replace Anti-Climbing Guards
06	Cork City Council	Ballincolly	<ul style="list-style-type: none"> > Paint > Replace double circuit insulators and hardware > Replace U bolts > Replace vibration dampers > Civil works (reinforcement / reparation) to foundations > Replace Anti-Climbing Guards
07	Cork City Council	Ballincolly	<ul style="list-style-type: none"> > Paint > Replace double circuit insulators and hardware > Civil works (reinforcement / reparation) to foundations > Replace Anti-Climbing Guards
08	Cork City Council	Ballincolly	<ul style="list-style-type: none"> > Replace tower with 110 kV wooden poleset
09	Cork City Council	Ballincolly	<ul style="list-style-type: none"> > Paint > Replace single circuit hardware > Civil works (reinforcement / reparation) to foundations > Rewire Anti-Climbing Guards and fit locks
10	Cork City Council	Ballincolly	<ul style="list-style-type: none"> > Paint > Replace single circuit insulators and hardware

Structure	Local Authority	Townland	Proposed Works
			> Rewire Anti-Climbing Guards and fit locks
12	Cork City Council	Ballincolly	> Replace wooden poleset
13	Cork City Council	Ballyvolane	> Replace wooden poleset > Replace hardware
14	Cork City Council	Arderrow	> Replace wooden poleset > Replace hardware
15	Cork City Council	Arderrow	> Replace wooden poleset > Replace hardware
16	Cork City Council	Arderrow	> Replace wooden poleset > Replace hardware
17	Cork City Council	Arderrow	> Replace wooden poleset > Replace hardware
18	Cork City Council	Arderrow	> Replace hardware
20	Cork City Council	Banduff	> Replace J bolts > Civil works (reinforcement / reparation) to foundations > Replace barbwire Anti-Climbing Guards
21	Cork City Council	Banduff	> Replace wooden poleset
22	Cork City Council	Banduff	> Replace wooden poleset
24	Cork City Council	Banduff	> Replace wooden poleset > Replace hardware
25	Cork City Council	Banduff	> Replace wooden poleset
26	Cork City Council	Banduff	> Replace wooden poleset > Replace hardware
28	Cork City Council	Poulacurry North	> Paint > Civil works (reinforcement / reparation) to foundations
29	Cork City Council	Poulacurry North	> Replace wooden poleset
30	Cork City Council	Poulacurry South	> Replace wooden poleset
31	Cork City Council	Poulacurry South	> Replace wooden poleset
32	Cork City Council	Poulacurry South	> Civil works (reinforcement / reparation) to foundations > Rewire Anti-Climbing Guards and fit locks
33	Cork City Council	Poulacurry South	> Replace tower with 110 kV wooden poleset
34	Cork City Council	Poulacurry South	> Replace vibration dampers > Civil works (reinforcement / reparation) to foundations > Re-tension barbwire Anti-Climbing Guards
35	Cork City Council	Poulacurry South	> Replace vibration dampers > Civil works (reinforcement / reparation) to foundations > Re-tension barbwire Anti-Climbing Guards

Structure	Local Authority	Townland	Proposed Works
45	Cork City Council	Ballinglanna	<ul style="list-style-type: none"> > Paint > Replace single circuit insulators and hardware > Civil works (reinforcement / reparation) to foundations > Re-wire Anti-Climbing Guards
46	Cork County Council	Ballinglanna	<ul style="list-style-type: none"> > Treat corrosion & paint > Replace single circuit insulators and hardware > Civil works (reinforcement / reparation) to foundations
47	Cork County Council	Ballinglanna	<ul style="list-style-type: none"> > Replace wooden poleset > Replace hardware > Replace vibration dampers
48	Cork County Council	Corbally North	<ul style="list-style-type: none"> > Replace wooden poleset
49	Cork County Council	Corbally North	<ul style="list-style-type: none"> > Replace wooden poleset
50	Cork County Council	Corbally North	<ul style="list-style-type: none"> > Replace wooden poleset
51	Cork County Council	Corbally North	<ul style="list-style-type: none"> > Replace wooden poleset
53	Cork County Council	Ballynagarbragh	<ul style="list-style-type: none"> > Replace wooden poleset > Replace hardware
54	Cork County Council	Ballynagarbragh	<ul style="list-style-type: none"> > Replace hardware
55	Cork County Council	Ballynagarbragh	<ul style="list-style-type: none"> > Replace wooden poleset
56	Cork County Council	Ballynagarbragh	<ul style="list-style-type: none"> > Replace wooden poleset > Replace hardware
57	Cork County Council	Ballynagarbragh	<ul style="list-style-type: none"> > Replace wooden poleset
59	Cork County Council	Lackenroe	<ul style="list-style-type: none"> > Replace wooden poleset
60	Cork County Council	Lackenroe	<ul style="list-style-type: none"> > Replace wooden poleset
61	Cork County Council	Lackenroe	<ul style="list-style-type: none"> > Replace wooden poleset
63	Cork County Council	Lackenroe	<ul style="list-style-type: none"> > Treat corrosion & paint > Replace J bolts > Civil works (reinforcement / reparation) to foundations

Structure	Local Authority	Townland	Proposed Works
			> Re-tension barbwire Anti-Climbing Guards
64	Cork County Council	Ballycurreen	> Replace wooden poleset > Replace hardware
65	Cork County Council	Ballycurreen	> Replace wooden poleset > Replace hardware
66	Cork County Council	Ballycurreen	> Replace wooden poleset > Replace crossarms > Replace hardware
67	Cork County Council	Killeena	> Replace wooden poleset > Replace hardware
68	Cork County Council	Killeena	> Replace wooden poleset > Replace hardware
69	Cork County Council	Killeena	> Replace wooden poleset > Replace hardware
70	Cork County Council	Killeena	> Replace wooden poleset > Replace hardware
71	Cork County Council	Killeena	> Replace wooden poleset
72	Cork County Council	Killeena	> Replace hardware
73	Cork County Council	Killeena	> Replace wooden poleset > Replace crossarms > Replace hardware
74	Cork County Council	Killeena	> Replace hardware
75	Cork County Council	Killeena	> Paint > Civil works (reinforcement / reparation) to foundations

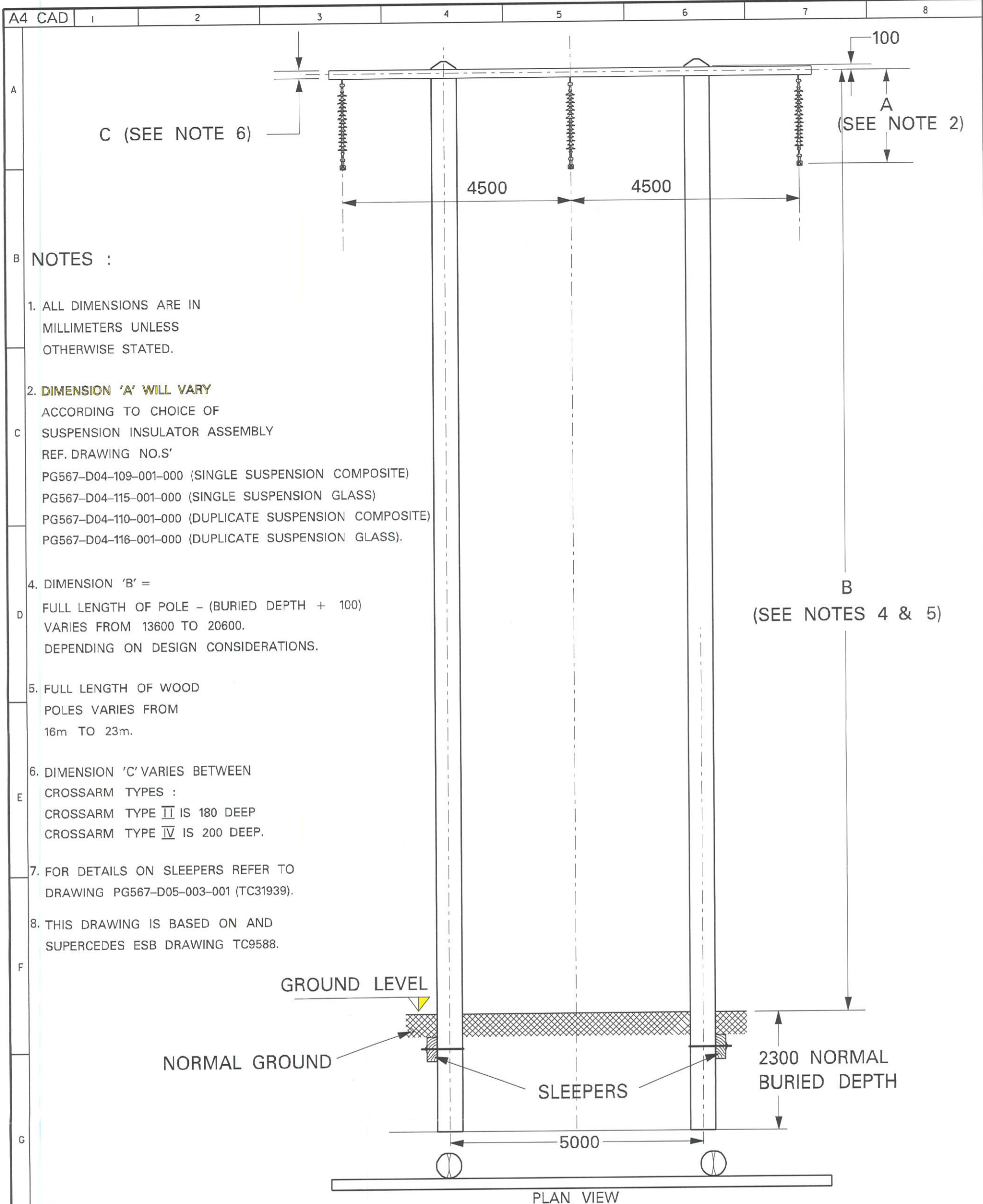


APPENDIX 3

TYPICAL HIGH VOLTAGE ENGINEERING
PLANS

Typical High Voltage Engineering Plans

Drawing Title	Scale
110 kV Suspension Wood Pole Set (Non-Shield Wire)	1:100
110 kV Suspension Wood Pole Set with Shield Wire	1:100
Typical Tower Type - Double Circuit 110 kV Angle Tower	1:100
Typical Tower Type - Single Circuit 110 kV Angle Tower (Earthwire)	1:100
Typical 110 kV End Mast Details	-
110 kV Type 1461E Tower - Type BC Foundation	-
110 kV Type 1461E Tower - Type CD Foundation	-

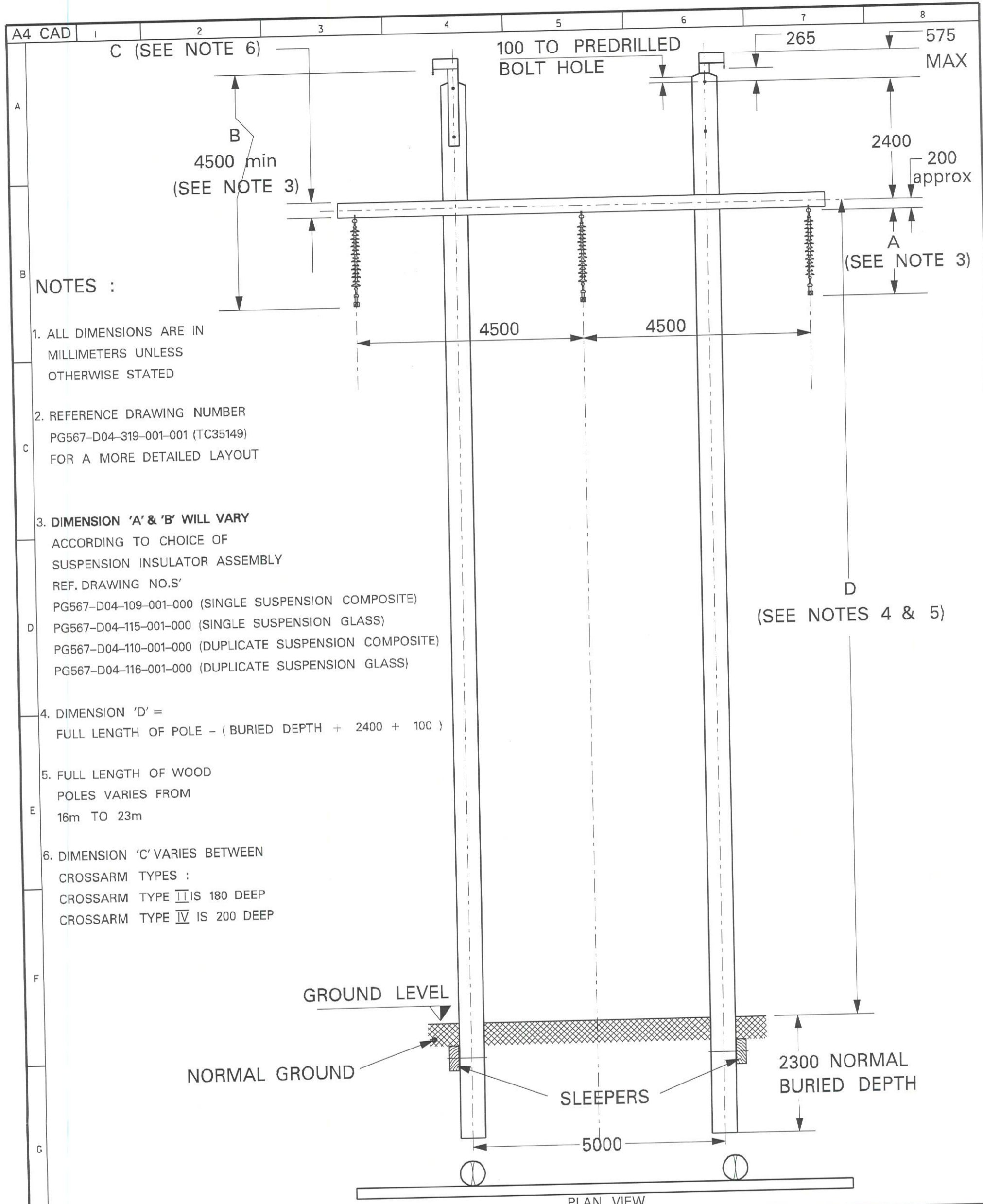


NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. **DIMENSION 'A' WILL VARY** ACCORDING TO CHOICE OF SUSPENSION INSULATOR ASSEMBLY REF. DRAWING NO.S'
 PG567-D04-109-001-000 (SINGLE SUSPENSION COMPOSITE)
 PG567-D04-115-001-000 (SINGLE SUSPENSION GLASS)
 PG567-D04-110-001-000 (DUPLICATE SUSPENSION COMPOSITE)
 PG567-D04-116-001-000 (DUPLICATE SUSPENSION GLASS).
4. DIMENSION 'B' = FULL LENGTH OF POLE - (BURIED DEPTH + 100) VARIES FROM 13600 TO 20600. DEPENDING ON DESIGN CONSIDERATIONS.
5. FULL LENGTH OF WOOD POLES VARIES FROM 16m TO 23m.
6. DIMENSION 'C' VARIES BETWEEN CROSSARM TYPES :
 CROSSARM TYPE II IS 180 DEEP
 CROSSARM TYPE IV IS 200 DEEP.
7. FOR DETAILS ON SLEEPERS REFER TO DRAWING PG567-D05-003-001 (TC31939).
8. THIS DRAWING IS BASED ON AND SUPERCEDES ESB DRAWING TC9588.

PLAN VIEW

ESB International <small>ESBI Engineering & Facility Management Ltd Stephen Court, 18/21 St Stephen's Green, Dublin 2 Ireland Telephone: 1 953-1-703 8000 Fax: 1 953-1-861-5359 www.esbi.ie Registered Office as above Registered in Ireland No. 155249</small>																																																	
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Rev</th> <th>Date</th> <th>Description</th> <th>Drn</th> <th>Prod</th> <th>Ver</th> <th>App</th> </tr> <tr> <td>1</td> <td>30/08</td> <td>GENERAL REVISIONS</td> <td>PF</td> <td>PF</td> <td>SH</td> <td>WM</td> </tr> <tr> <td>0</td> <td></td> <td>DRAWING IS BASED ON & SUPERCEDES ESB DRAWING TC9588</td> <td>PE</td> <td>PE</td> <td>WM</td> <td>PE</td> </tr> </table>	Rev	Date	Description	Drn	Prod	Ver	App	1	30/08	GENERAL REVISIONS	PF	PF	SH	WM	0		DRAWING IS BASED ON & SUPERCEDES ESB DRAWING TC9588	PE	PE	WM	PE	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Drawn</td> <td>Produced</td> <td>Verified</td> <td>Approved</td> <td>Approved date</td> </tr> <tr> <td>N.POWER</td> <td>P.Finlay</td> <td>S.Hartnett</td> <td>W.Mongey</td> <td>13/02/08</td> </tr> </table>	Drawn	Produced	Verified	Approved	Approved date	N.POWER	P.Finlay	S.Hartnett	W.Mongey	13/02/08	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Client Ref</td> <td>No. of Shts</td> <td>Size</td> <td>Scale</td> </tr> <tr> <td>TC36504</td> <td>1</td> <td>A4</td> <td>1:100</td> </tr> </table>	Client Ref	No. of Shts	Size	Scale	TC36504	1	A4	1:100	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Drawing Number</td> <td>SHEET</td> <td>REV</td> </tr> <tr> <td>PG567-D04-350-001-001</td> <td></td> <td></td> </tr> </table>	Drawing Number	SHEET	REV	PG567-D04-350-001-001		
	Rev	Date	Description	Drn	Prod	Ver	App																																										
1	30/08	GENERAL REVISIONS	PF	PF	SH	WM																																											
0		DRAWING IS BASED ON & SUPERCEDES ESB DRAWING TC9588	PE	PE	WM	PE																																											
Drawn	Produced	Verified	Approved	Approved date																																													
N.POWER	P.Finlay	S.Hartnett	W.Mongey	13/02/08																																													
Client Ref	No. of Shts	Size	Scale																																														
TC36504	1	A4	1:100																																														
Drawing Number	SHEET	REV																																															
PG567-D04-350-001-001																																																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="5">Purpose of issue - Preliminary unless indicated</td> </tr> <tr> <td>Tender</td> <td>Client Approval</td> <td>Construction</td> <td>As-built</td> <td>Revised</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	Purpose of issue - Preliminary unless indicated					Tender	Client Approval	Construction	As-built	Revised	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Client</td> <td>Project</td> <td>Production Unit</td> <td>Drawing Title</td> </tr> <tr> <td>Eirgrid / ESB NETWORKS</td> <td>GENERIC LINES DOCUMENTS</td> <td>High Voltage Engineering</td> <td>110kV LINES SUSPENSION WOOD POLE SET (NON - SHIELD WIRE)</td> </tr> </table>					Client	Project	Production Unit	Drawing Title	Eirgrid / ESB NETWORKS	GENERIC LINES DOCUMENTS	High Voltage Engineering	110kV LINES SUSPENSION WOOD POLE SET (NON - SHIELD WIRE)																					
Purpose of issue - Preliminary unless indicated																																																	
Tender	Client Approval	Construction	As-built	Revised																																													
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																													
Client	Project	Production Unit	Drawing Title																																														
Eirgrid / ESB NETWORKS	GENERIC LINES DOCUMENTS	High Voltage Engineering	110kV LINES SUSPENSION WOOD POLE SET (NON - SHIELD WIRE)																																														



NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED
2. REFERENCE DRAWING NUMBER PG567-D04-319-001-001 (TC35149) FOR A MORE DETAILED LAYOUT
3. DIMENSION 'A' & 'B' WILL VARY ACCORDING TO CHOICE OF SUSPENSION INSULATOR ASSEMBLY REF. DRAWING NO.S'
 PG567-D04-109-001-000 (SINGLE SUSPENSION COMPOSITE)
 PG567-D04-115-001-000 (SINGLE SUSPENSION GLASS)
 PG567-D04-110-001-000 (DUPLICATE SUSPENSION COMPOSITE)
 PG567-D04-116-001-000 (DUPLICATE SUSPENSION GLASS)
4. DIMENSION 'D' = FULL LENGTH OF POLE - (BURIED DEPTH + 2400 + 100)
5. FULL LENGTH OF WOOD POLES VARIES FROM 16m TO 23m
6. DIMENSION 'C' VARIES BETWEEN CROSSARM TYPES :
 CROSSARM TYPE II IS 180 DEEP
 CROSSARM TYPE IV IS 200 DEEP

PLAN VIEW

ESB International
 ESB Engineering & Facility Management Ltd
 Stephen Court, 18/21 St Stephen's Green, Dublin 2 Ireland
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 Registered Office as above
 Registered in Ireland No. 155249

Rev	Date	Revision Description	Drn	Prod	Ver	App
4	13/2/08	Drawing formatted for correct scaling	PF	PF	SH	WM
3	30/1/08	General revisions	PF	PF	SH	WM
2	20/3/07	Added Plan View, Updated Pole Top Dimensions & Printing to Scale	MB	MB	PE	COL
1	20/3/07	Crossarm Position Set at 2.4m	MB	MB	PE	COL
0	8/12/05	Initial Issue	MB	MB	OA	COL

Drawn N.POWER	Produced P.Finlay	Verified S.Hartnett	Approved W.Mongey	Approved date 13/02/08
Client Ref TC19683			No. of Shts 1	Size A4
			Scale 1:100	

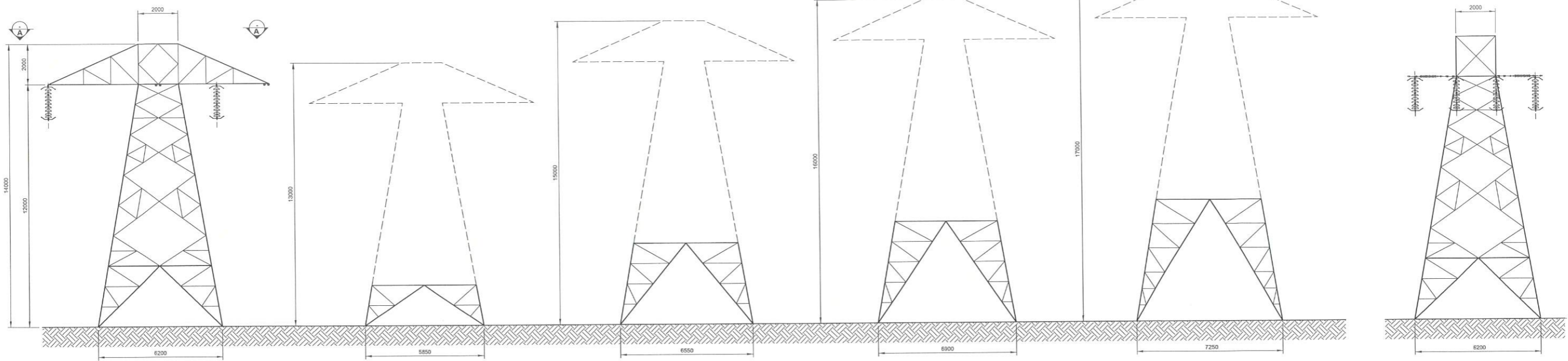
Drawing Number **PG567-D04-123-001-004**

Drawing Title
**110kV LINES
 SUSPENSION
 PORTAL WOOD POLE SET
 WITH SHIELDWIRE
 FOR 200mm/300mm/430mm ACSR LINES**

Client EirGrid / ESB NETWORKS
Contract N/A

Project GENERIC LINES DOCUMENTS
Production Unit High Voltage Engineering

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FRONT ELEVATION
STANDARD HEIGHT
TOWER A

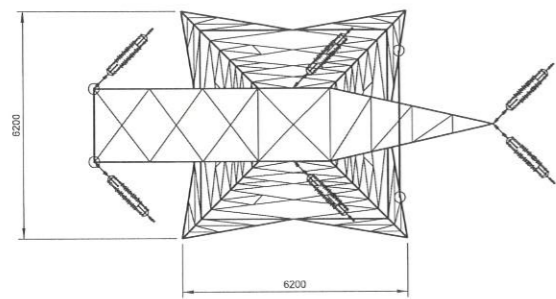
FRONT ELEVATION
-1m LEG
TOWER B

FRONT ELEVATION
+1m LEG
TOWER C

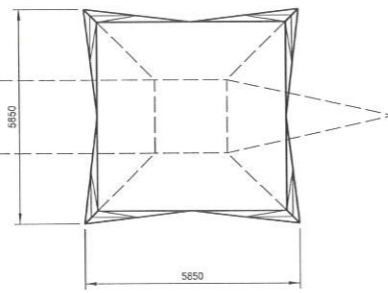
FRONT ELEVATION
+2m LEG
TOWER D

FRONT ELEVATION
+3m LEG
TOWER E

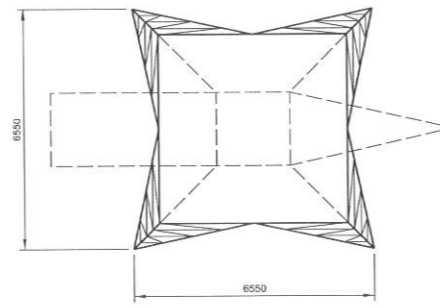
SIDE ELEVATION
STANDARD HEIGHT



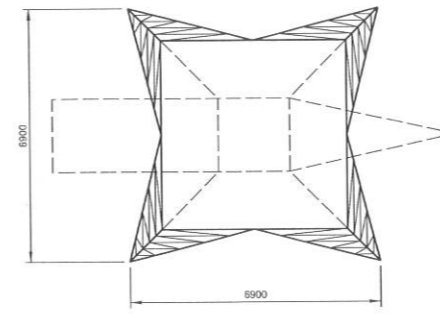
PLAN VIEW
STANDARD HEIGHT



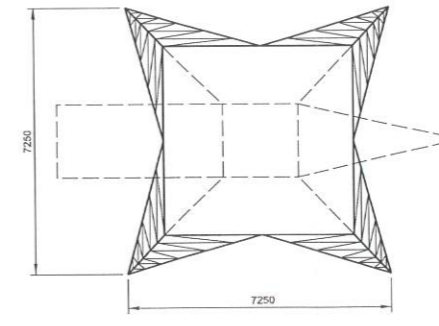
PLAN VIEW
-1m LEG



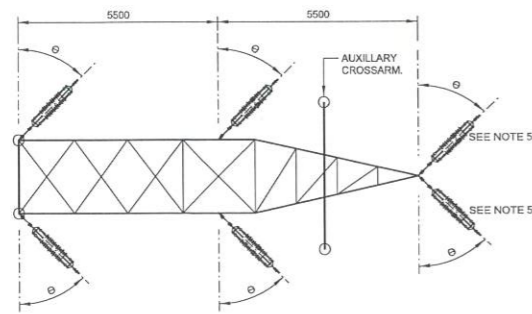
PLAN VIEW
+1m LEG



PLAN VIEW
+2m LEG



PLAN VIEW
+3m LEG



SECTION A - A

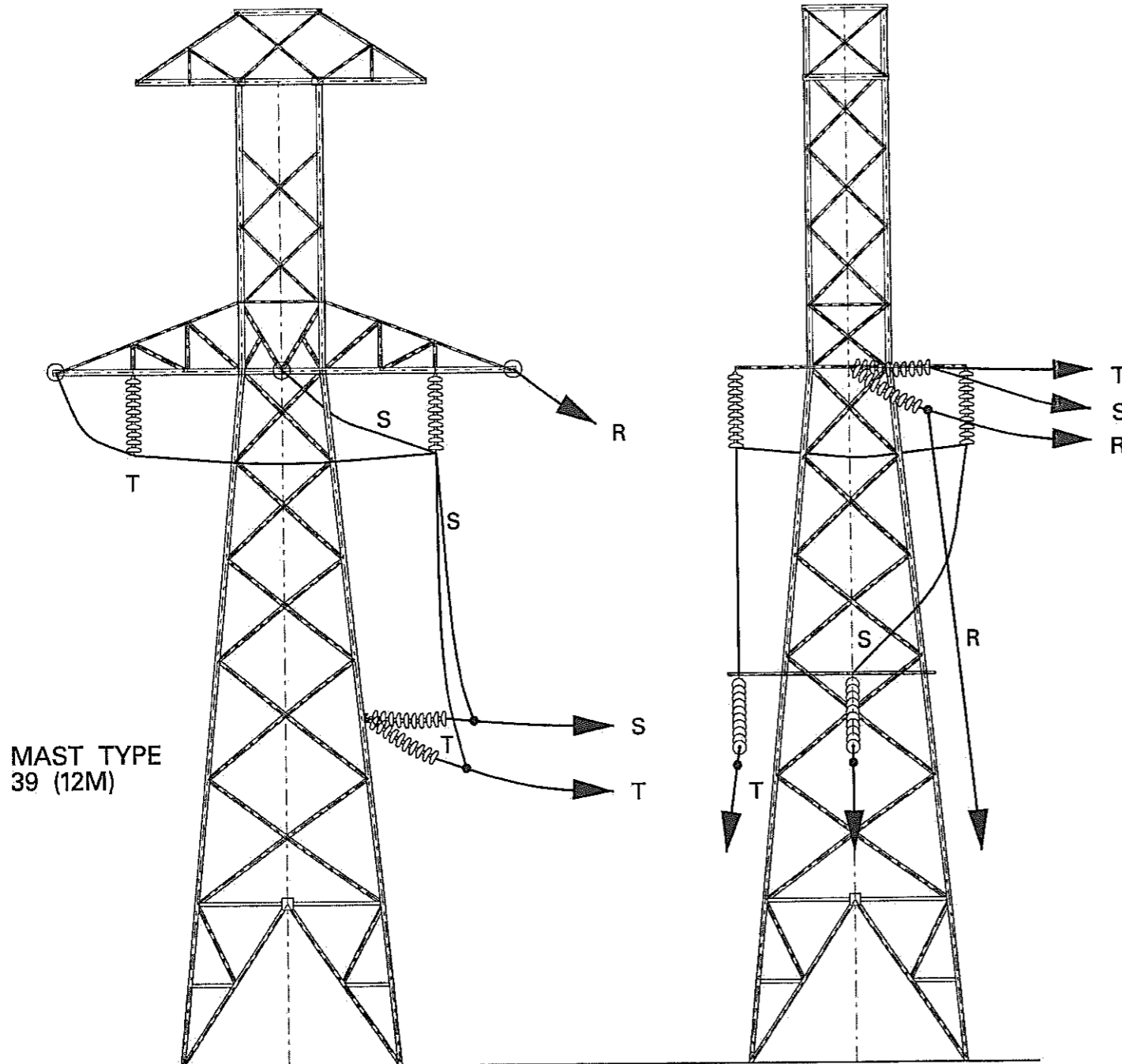
NOTES:

- STANDARD TOWER HEIGHT MAY BE VARIED USING LEG EXTENSIONS AS INDICATED.
- COMBINATIONS OF DIFFERENT LEG EXTENSIONS MAY BE USED ON THE SAME TOWER TO CATER FOR SLOPING GROUND.
- SECTION A-A IS COMMON TO ALL TOWER HEIGHTS.
- INTERNAL BRACING MAY CHANGE DEPENDING ON TOWER SUPPLIER.
- ORIENTATION OF INSULATORS IN PLAN 'Ø' WILL VARY BETWEEN 0° - 45° AT ANY TOWER LOCATION.
- ALL DIMENSIONS IN MILLIMETRES UNLESS STATED OTHERWISE.
- ACTUAL DIMENSIONS MAY BE LESS THAN SHOWN ON DRAWING, DEPENDING ON TOWER SUPPLIER.

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002	TITLEBLOCK UPDATED, NOTES & FONTS REVISED				
001	09/07/14	DRAWING TITLE AND NOTES AMENDED	AK	DT	PE
000	25/01/12	DRAWING APPROVED	AK	DT	PE
REV	DATE	REVISION DESCRIPTION	DRN	PROJ	VER
PURPOSE OF ISSUE - PRELIMINARY UNLESS INDICATED					
CLIENT APPROVAL	<input type="checkbox"/>	PLANNING	<input checked="" type="checkbox"/>	TENDER	<input type="checkbox"/>
		CONSTRUCTION	<input type="checkbox"/>	AS-BUILT	<input type="checkbox"/>
Client	ESB NETWORKS				
Project	Materials				
Contract					
Drawing Title	110kV LINE - OUTLINE DRAWING FOR PLANNING RL1 & 3 SINGLE CIRCUIT STRAIN TOWERS WITHOUT SHIELDWIRE FOR ALL CHANGES IN LINE DIRECTION UP TO 90° T12-MAX HEIGHT 17m				
Production Unit	High Voltage Engineering				
		One Dublin Airport Central, Dublin Airport, Cloghan, Co. Dublin Tel: 353 1 703 8000 Email: marketing@esbi.ie Web: www.esbinternational.ie ESB International is a trading name of ESB Engineering & Facility Management Ltd. Registered Office: as above Registered in Ireland No. 155249			
DRAWN	PRODUCED	VERIFIED	APPROVED	APPROVAL DATE	
A.King	J.Gill	D.Tohy	P.Ennis	09/11/2016	
CLIENT REF	NO OF SHEETS	SHEET	SCALE		
TC206581	-	A1	1/100		
DRAWING NUMBER			REV		
PG567-D004-477-001-002					

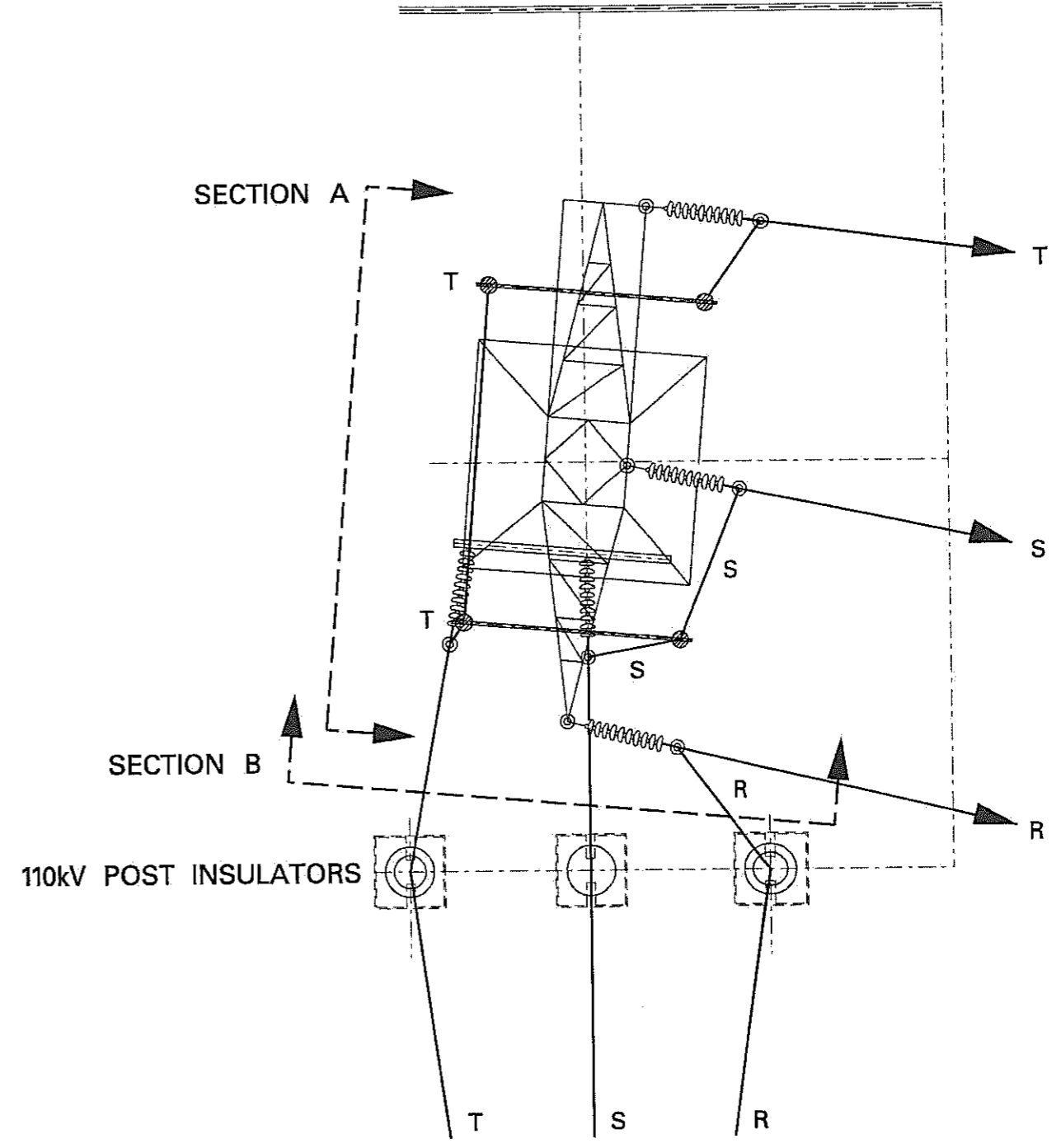
A
B
C
D
E



MAST TYPE
39 (12M)

SECTION A

SECTION B



110kV POST INSULATORS

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ESBI Engineering Ltd registered
in Ireland No. 155249 Registered office as above

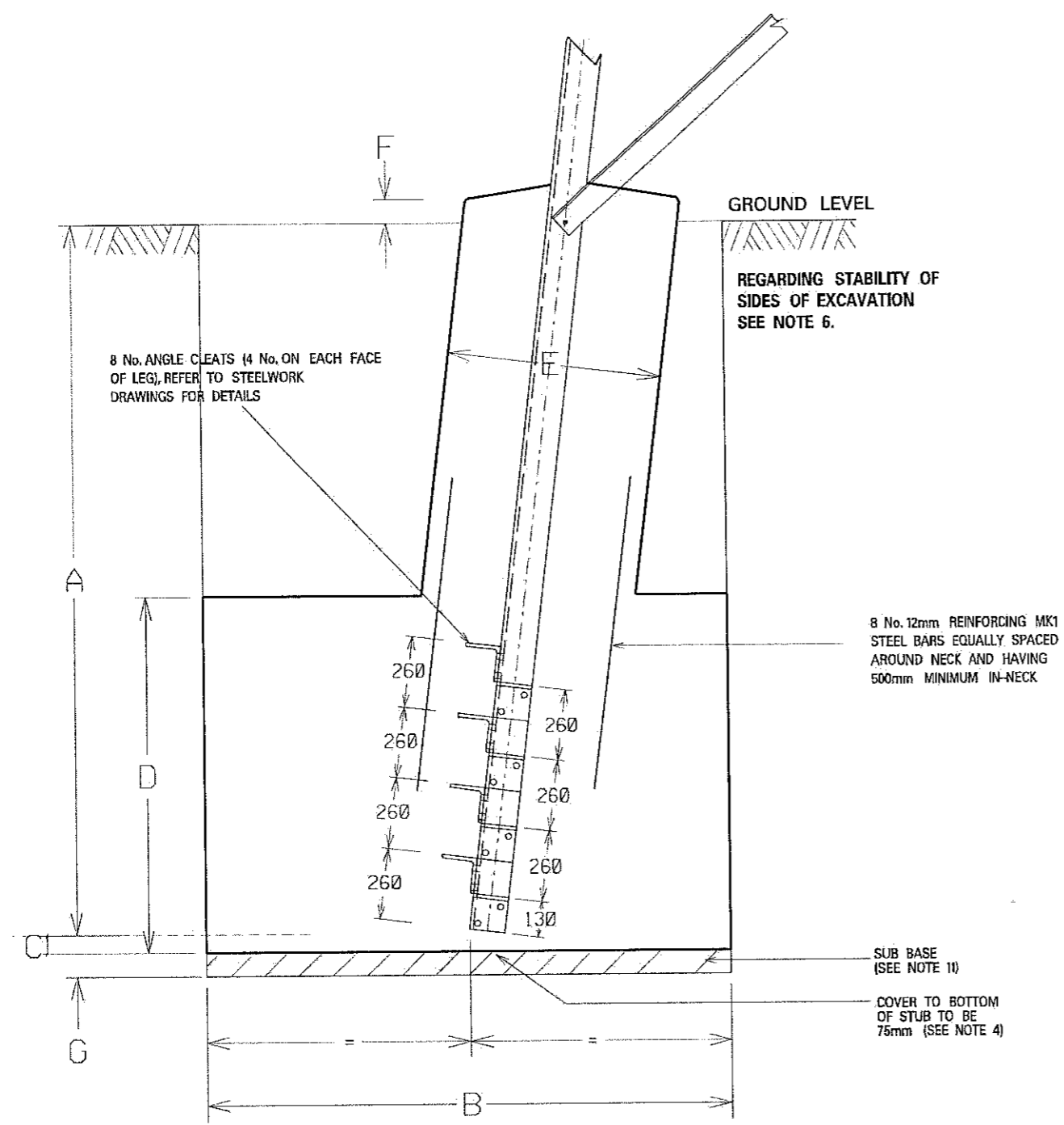
REVISION DESCRIPTION:
PURPOSE OF ISSUE -
PRELIMINARY UNLESS INDICATED
TENDER CLIENT APPROVAL
CONSTRUCTION AS-BUILT
REVISED FOR INFORMATION

CLIENT:
ELECTRICITY SUPPLY BOARD NETWORKS
PROJECT:
TONROE 110KV SUBSTATION

DRAWING TITLE:
**TONROE 110KV STATION
END MAST DETAILS
FLAGFORD 110KV LINE**

DRAWN E.HUDSON	CHECKED M.Mooney	APPROVED J.King	APPD. DATE 25/11/02
CLIENT REF TC28400		No. of Shts 1	SIZE A3
DRAWING NUMBER PE492-D121-053-001-000		SHEET 1	REV N/A

1461E EXCLUDING SW PEAK FOR FOUNDATION TYPE BC



DIMENSION	A	B	C	D	E	F	G
mm	3000	2200	75	1500	900	100	100

VOLUME OF CONCRETE/LEG(min)=8.56m³ (excluding sub-base)

FOUNDATION LOADS

MAX UPLIFT/LEG = 50,680kgs = 497kN
 MAX COMPRESSION LEG = 59,145kgs = 580kN
 TRANSVERSE SHEAR/LEG = 11,217kgs = 110kN
 LONGITUDINAL SHEAR/LEG = 8974kgs = 88kN

ASSOCIATED DRAWINGS

TOWER PEGGING - PG567-D012-071-006
 TOWER ERECTION - PG567-D004-447
 TYPE A FOUNDATION - PG567-D012-071-001
 TYPE C FOUNDATION - PG567-D012-071-003
 TYPE CD FOUNDATION - PG567-D012-071-004

NOTES:

- ALL FOUNDATIONS ARE TO BE INSTALLED SAFELY IN ACCORDANCE WITH BOTH THE CURRENT CONSTRUCTION REGULATIONS AND GENERAL APPLICATION REGULATIONS.
- REFER TO PG567-S010-001-005 ESB NETWORKS GENERIC WORK DESCRIPTION FOR 110kV, 220kV & 400kV LINES.
- THIS DRAWING DETAILS THE TYPE BC FOUNDATION. THE SIDES OF THIS TYPE OF BASE MUST BE CAST AGAINST UNDISTURBED SOIL.
- THE STUB (OR STUB & BASE) SHALL BE POSITIONED ACCURATELY IN ACCORDANCE WITH THE PEGGING DRAWING IN ORDER TO ACHIEVE THE REQUIRED TOLERANCES SET OUT IN THE GENERIC WORK DESCRIPTION AFTER THE CONCRETE HAS SET.
- TOP SOIL TO BE STRIPPED PRIOR TO EXCAVATION & REPLACED AS LAST LAYER OF BACK FILLING.
- THE DESIGN RISK ASSESSMENT RELATING TO THIS ELEMENT OF THE WORKS IS CONTAINED WITHIN THE PROJECT SPECIFIC PRELIMINARY HEALTH & SAFETY PLAN.
- EXCAVATED MATERIAL SHALL BE PLACED A MINIMUM OF 3m AWAY FROM EDGE OF EXCAVATION IN ORDER TO REDUCE RISK OF COLLAPSE.
- PRIOR TO PLACING OF CONCRETE THE EXCAVATION SHALL BE CLEAR OF ALL SURPLUS MATERIAL AND DEBRIS. ALL CONCRETE SURFACES AT JOINTS SHALL BE WIRE BRUSHED TO REMOVE ANY LOOSE MATERIAL BEFORE POURING OF NEW CONCRETE.
- ANY WATER IN THE EXCAVATION SHALL BE REMOVED BEFORE NEW CONCRETE IS PLACED.
- THE CONTRACTOR MUST REPORT EXCAVATIONS WHERE THERE IS STRONG WATER INGRESS, A HIGH WATER TABLE, COLLAPSE OF THE EXCAVATION SIDES OR PEAT PRESENT TO THE ESB REPRESENTATIVE: THE GENERAL FOUNDATION TYPE GIVEN OPPOSITE WILL NEED TO BE REVIEWED AT SUCH LOCATIONS BY ESB.
- SUB BASE MAY BE CONCRETE OR, WHERE AGREED WITH ESB NETWORKS, GRADED GRANULAR MATERIAL.
- CONCRETE TO BE IN ACCORDANCE WITH ESB SPECIFICATION PG567-S04-010-001. THE CONCRETE SHALL HAVE A MINIMUM CHARACTERISTIC CUBE STRENGTH OF 35N/mm²
- NOMINAL CONCRETE COVER TO STEEL REINFORCEMENT UNLESS OTHERWISE NOTED TO BE 50mm EXCEPT WHEN AGAINST AN EARTH FACE WHERE IT SHALL BE 75mm.
- ALL CONCRETE TO BE WELL VIBRATED DURING PLACING.
- ALL BACKFILL SHOULD BE WELL COMPACTED IN LAYERS OF NO MORE THAN 500mm.
- THE INSTALLATION OR REMOVAL OF TEMPORARY WORKS MUST NOT DAMAGE OR DISTURB THE FOUNDATION.
- WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFIC WORKS DESCRIPTION AND SHALL COMPLY WITH CURRENT IRISH AND EUROPEAN CONSTRUCTION STANDARDS WITH ALL AMENDMENTS.
- ALL CONSTRUCTION METHODS MUST BE SUBMITTED TO ESB NETWORKS FOR REVIEW BEFORE UNDERTAKING WORK.
- THE CONTRACTOR IS TO PROVIDE IN HIS METHOD STATEMENT DETAILS OF MEASURES TO BE TAKEN TO CONTROL CRACKING OF NEWLY PLACED CONCRETE DUE TO THERMAL EFFECTS. IF POURS ARE 1m DEEP OR GREATER THE CONCRETE SHOULD BE THERMALLY INSULATED UNTIL THE NEXT POUR OR BACKFILLING IS CARRIED OUT. IF MORE THAN ONE POUR IS PROPOSED FOR THE MAIN PAD, THE CONTRACTOR IS TO REVERT TO ESB DESIGNER FOR REINFORCEMENT DETAILS FOR BONDING THE TWO POURS TOGETHER.
- ALL EXPOSED CORNERS TO HAVE A 25mm CHAMFER.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

BENDING SCHEDULE TO BS4466 : 1988

MEMBER	BAR MARK	TYPE AND SIZE	No. OF MEMBERS	No. OF BARS IN EACH	TOTAL No.	LENGTH OF EACH BAR IN mm	SHAPE CODE	A mm	B mm	C mm	D mm	ER mm
MK1	01	T12	1	8	8	1600	20	1600				

CALCULATION REFERENCE FILE: PG567-F0001-C012-019-000

Rev	Revision Description

Purpose of issue - Preliminary unless indicated
 Tender Client Approval Construction As-built Revised

ESB International
 ESBI Energy Innovation

ESBI Engineering Solutions, Stephen Court, 18-21 St. Stephen's Green, Dublin 2, Ireland. Tel: (0)1 703 8000 Fax: +353 (0)1 703 7188 Email: marketing@esbi.ie Web: www.esbi.ie

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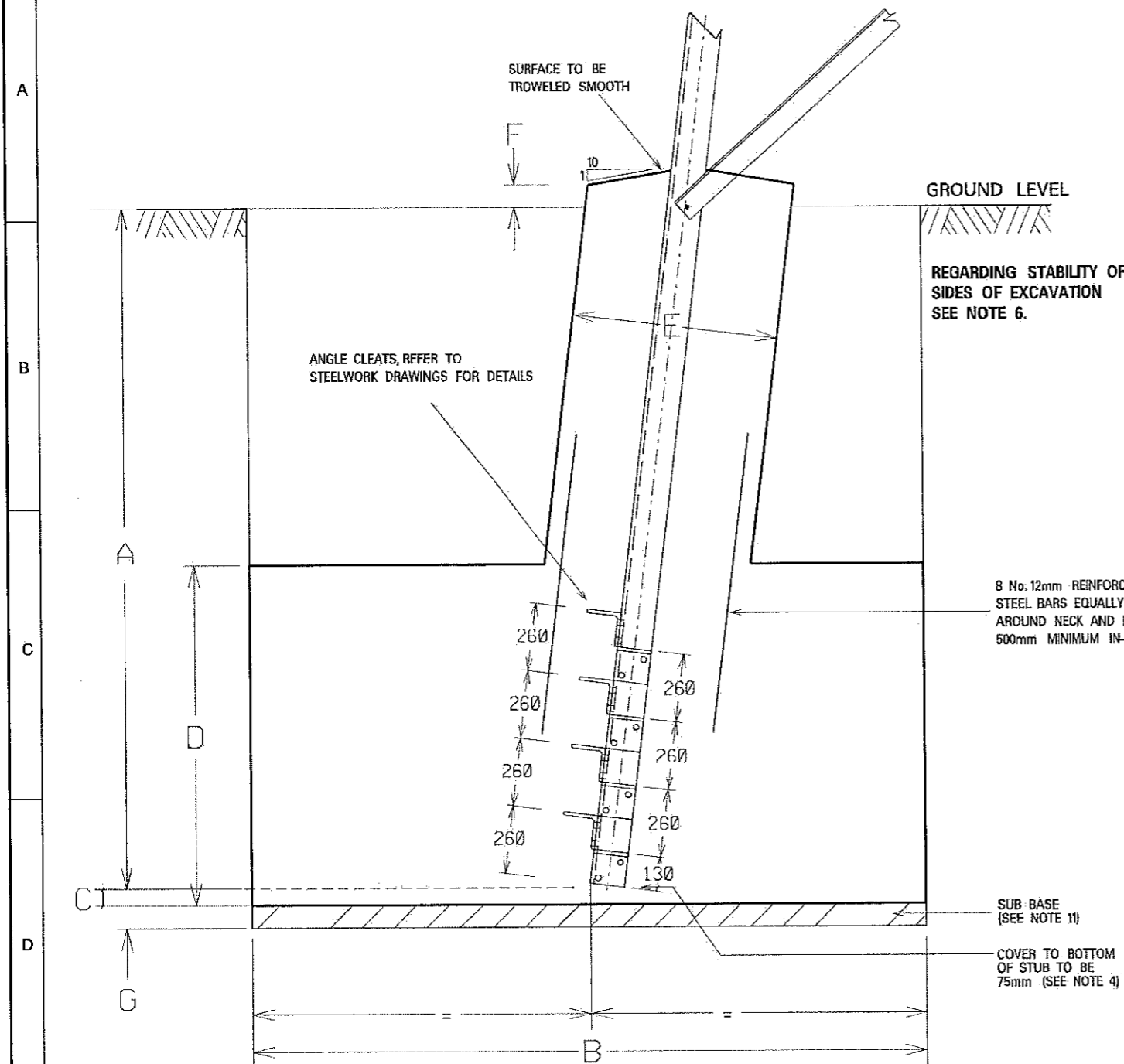
Client	ESB NETWORKS
Production Unit	High Voltage Engineering
Project	Foundations
Contract	

Drawing Title	110kV LINES TYPE 1461E TOWER EXCLUDING SHIELDWIRE PEAK TYPE BC FOUNDATION
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Drawn	Produced	Verified	Approved	Approved date
E.Lawlor	E.Lawlor	D.Tuohy	P.Ennis	24/03/11
Client Ref	No. of Sheets		Size	Scale
TC203982	-		A3	N/A
Drawing Number	SHEET REV			
	PG567-D012-071-002-000			

1461E EXCLUDING SW PEAK FOR FOUNDATION TYPE CD



DIMENSION	A	B	C	D	E	F	G
mm	3000	2800	75	1500	900	100	100

VOLUME OF CONCRETE LEG(min) = 13.06m³ (excluding sub-base)

FOUNDATION LOADS

MAX UPLIFT/LEG = 50,680kgs = 497kN
 MAX COMPRESSION LEG = 59,145kgs = 580kN
 TRANSVERSE SHEAR/LEG = 11,217kgs = 110kN
 LONGITUDINAL SHEAR/LEG = 8974kgs = 88kN

ASSOCIATED DRAWINGS

TOWER PEGGING : PG567-D012-071-008
 TOWER ERECTION : PG567-D004-447
 TYPE A FOUNDATION : PG567-D012-071-001
 TYPE BC FOUNDATION : PG567-D012-071-002
 TYPE C FOUNDATION : PG567-D012-071-003

NOTES:

- ALL FOUNDATIONS ARE TO BE INSTALLED SAFELY IN ACCORDANCE WITH BOTH THE CURRENT CONSTRUCTION REGULATIONS AND GENERAL APPLICATION REGULATIONS.
- REFER TO PG567-S010-001-005 ESB NETWORKS GENERIC WORK DESCRIPTION FOR 110kV, 220kV & 400kV LINES.
- THIS DRAWING DETAILS THE TYPE CD FOUNDATION. THE SIDES OF THIS TYPE OF BASE MAY BE CAST AGAINST DISTURBED SOIL.
- THE STUB (OR STUB & BASE) SHALL BE POSITIONED ACCURATELY IN ACCORDANCE WITH THE PEGGING DRAWING IN ORDER TO ACHIEVE THE REQUIRED TOLERANCES SET OUT IN THE GENERIC WORK DESCRIPTION AFTER THE CONCRETE HAS SET.
- TOP SOIL TO BE STRIPPED PRIOR TO EXCAVATION & REPLACED AS LAST LAYER OF BACK FILLING.
- THE DESIGN RISK ASSESSMENT RELATING TO THIS ELEMENT OF THE WORKS IS CONTAINED WITHIN THE PROJECT SPECIFIC PRELIMINARY HEALTH & SAFETY PLAN.
- EXCAVATED MATERIAL SHALL BE PLACED A MINIMUM OF 3m AWAY FROM EDGE OF EXCAVATION IN ORDER TO REDUCE RISK OF COLLAPSE.
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- ALL CONCRETE TO BE WELL VIBRATED DURING PLACING.
- ALL BACKFILL SHOULD BE WELL COMPACTED IN LAYERS OF NO MORE THAN 500mm.
- THE INSTALLATION OR REMOVAL OF TEMPORARY WORKS MUST NOT DAMAGE OR DISTURB THE FOUNDATION.
- WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFIC WORKS DESCRIPTION AND SHALL COMPLY WITH CURRENT IRISH AND EUROPEAN CONSTRUCTION STANDARDS WITH ALL AMENDMENTS.
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- ALL EXPOSED CORNERS TO HAVE A 25mm CHAMFER.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

BENDING SCHEDULE TO BS4466 : 1988

MEMBER	BAR MARK	TYPE AND SIZE	No. OF MEMBERS	No. OF BARS IN EACH	TOTAL No.	LENGTH OF EACH BAR IN mm	SHAPE CODE	A mm	B mm	C mm	D mm	E/R mm
MK1	01	T12	1	8	8	1600	20	1600				

CALCULATION REFERENCE FILE: PG567-F0001-C012-019-000

Rev	Revision Description

Purpose of issue - Preliminary unless indicated
 Tender Client Approval Construction As-built Revised

ESB International
 ESBI Energy Innovation

ESBI Engineering Solutions, Stephen Court, 10-21 St. Stephen's Green, Dublin 2, Ireland. Tel: (0)1 703 8000 Fax: +353 (0)1 703 7188 Email: marketing@esb.ie Web: www.esb.ie

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Client	ESB NETWORKS
Project	Foundations
Contract	

Production Unit	High Voltage Engineering
Drawing Title	110kV LINES TYPE 1461E TOWER EXCLUDING SHIELDWIRE PEAK TYPE CD FOUNDATION

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Drawn	Produced	Verified	Approved	Approved date
E.Lawlor	E.Lawlor	D.Tuohy	P.Ennis	24/03/11
Client Ref			No. of Shts	Size
TC203982			-	A3
Drawing Number			SHEET REV	
PG567-D012-071-004-000				