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The Secretary,
An Bord Pleanála,
64 Marlborough Street,
Dublin 1,
D01 V902.

12 October 2022

Re: 'North Connacht Project' consisting of approximately 59 kilometres of underground cable between the existing Moy substation near Ballina, Co. Mayo and the existing Tonroe substation near Ballaghaderreen, Co. Roscommon

Ref: ABP-313724-32

Dear Secretary,

Thank you for correspondence of 31st August 2022 in respect of the North Connacht Project (Ref: ABP-313724-32).

EirGrid plc. notes the detail of the correspondence, in accordance with Section 182A(5)(a) of the Planning and Development Act 2000, as amended and the request for further information in relation to the effects on the environment of the proposed development.

EirGrid notes the date An Bord Pleanála set for receiving such further information as being the 12th October 2022, no later than 5.30 pm. 2 no. hard copies and 1 no. electronic copy (by way of email) of this correspondence and associated enclosures are submitted, as requested.

EirGrid notes that the Request for Further Information (RFI) primarily relates to a submission received from Transport Infrastructure Ireland (TII).

EirGrid was supported in preparing this response by Mott McDonald, who also prepared certain documents in respect of the application for approval submitted on the 3rd June 2022. Mott McDonald have, in particular, provided competent experts with qualifications and experience requirements as set

out in TII publication PE-STY-02003 (Road Safety Impact Assessment – Impact Assessment Team Qualifications). A range of competent experts in respect of other topics inputted as required.

The submission expresses a variety of issues with the planned laying of the proposed underground cable – in part – in two National roads in the area. At the outset, EirGrid expresses disappointment with the content of the TII submission, as this follows considerable engagement between TII and EirGrid, both at a strategic level, and at a project level, where such issues were addressed, and taken into account in the proposed development.

In this context, the Board will note that the proposed development primarily relates to the laying of an underground cable in part within a National Road. This is precisely the same nature and extent – and general receiving environment – of a significant portion of the Celtic Interconnector project in County Cork which was Granted Approval by the Board in May 2022 (ABP Ref: VA04.310798). In respect of that separate proposed development, TII also made a submission, herein for the benefit of the Board it is enclosed – see Enclosure 1. The conclusions of that submission are very instructive:

- TII is cognisant of the strategic national importance of the project and supportive of EirGrid and Government objectives;
- There is a parallel critical requirement to ensure that the strategic capacity and safety of the existing National primary road is maintained;
- TII seeks to identify mechanisms to ensure the proposed transmission infrastructure development can proceed complementary to safeguarding the strategic function, safety and continued efficient operation of the National primary road;
- The issues can best be addressed through engagement between EirGrid, the roads authority and TII requests the application of appropriate conditions of approval in this regard.

Given that the proposed development of underground cable infrastructure in part within national primary roads in this instance and the same issues arising are fully acknowledged by EirGrid. It is entirely unclear to EirGrid why such issues cannot also best be addressed through post-consent engagement between EirGrid, Mayo County Council and Roscommon County Council (as roads authorities) and TII on matters of detailed design.

Without prejudice to the remaining content of this response submission, EirGrid respectfully suggests that this can best be dealt with by the Board by way of any appropriate Condition of Approval, and confirms it is willing to abide by any such condition.

See below response to the 15 no. items, each addressed individually and sequentially.

1 "The Updated Infrastructure Safety Management Directive (EU) 2019/1936 was transposed into Irish Law by the European Communities (Road Infrastructure Safety Management) Regulations (SI612/2021). In accordance with Article 5 of the said Regulations, the applicant is requested to undertake a Road Safety Impact Assessment. This assessment should in accordance with the above Regulations:

a) **indicate the road safety considerations which contributed to the choice of the proposed solution, and**
b) **provide all relevant information necessary for a cost benefit analysis of the options assessed.**
c) **Any other matters specifically concerning road safety issues which the applicant may wish to address in the context of Directive EU 2019/1936. "**

We note to the Board that Notice of the making of this Statutory Instrument (SI612/2021) was published in Iris Oifigiúil on 26th November 2021. This is of importance, as the Regulations were enacted subsequent to EirGrid identifying the proposed nature, location and extent of the development per Step 4C Report (Mott MacDonald, July 2021) of its 6-Step Roadmap. The Step 4C Report (Mott MacDonald, July 2021) is included as Appendix E of the PECR for reference. In support of this point, please find attached the Autumn 2021 Update Brochure for the project (Enclosure 2) which clarifies that Step 4 (Where exactly should we build?) is concluding and EirGrid is moving to Step 5 (the Planning Process).

It is our respectful submission that a Road Safety Impact Assessment (RSIA) is a document intended to ensure that road safety is an identifiable consideration in the optioneering of projects. In this instance, given the timing of project development vis-à-vis the publication of the Regulations, the RSIA can only reasonably be applied to consideration of the proposed development, which somewhat defeats its intended purpose.

In addition, at the outset, we note Article 5(1) of the Regulations which commences with *"Any person undertaking a substantial modification to a road to which these Regulations apply...."*. Having regard to the description of the development contained in the Statutory Notices, and the plans and particulars submitted with the application for Approval, EirGrid is of the opinion that the proposed development cannot reasonably be considered to comprise *"a substantial modification to a road…."*. If this was to be the case, it would mean that every other laying of communications or utility cables, piping or ducting, or any other modest intrusive development on a road would necessarily comprise *a "substantial modification"*. EirGrid suggests that this is unlikely to be the intended purpose or scope of the Regulations and request the Board to consider if they are applicable in respect of this proposed development.

It is contended that the proposed development does not constitute a *substantial modification* to the existing national road network for the reasons set out below.

- Following installation, the road above the trench will be reinstated to match the environment in which it is installed to the standard required by the relevant authority at that location, in this case Mayo County Council, Roscommon County Council and/or TII.
- The construction phase works required to facilitate installation of the Underground Cable (UGC) will be sequential and transient in nature. It is generally the case that cable ducts can be laid in a road at a rate of approximately 50m per day, although a rate of 20m-50m per day is anticipated in built up areas where utilities are more common. Joint bays, generally located at intervals of approximately 850 metres along the UGC route of the proposed development (shorter intervals occur where the route alignment is more complex), are typically installed in three days, with the road reinstated, to the standard required as above, post installation.
- No new access / egress to / from the existing road network is proposed as part of the proposed development.
- There will be no discernible changes to traffic flows arising during the operational stage of the UGC.
- Traffic flow during construction will be managed in accordance with long-established traffic management methodologies that will be well understood by the Board, by Mayo County Council and Roscommon County Council (as roads authorities), as well as by TII, as addressed in the planning application documentation, in particular the Traffic Management Plan.

Without prejudice to our response above and having regard to the status of the project as a proposed development that is now the subject of a Statutory Request for Further Information, and not in optioneering stage, a RSIA has been undertaken. A copy of the RSIA is enclosed as Enclosure 3. This RSIA report has been prepared by Mott MacDonald in accordance with Section 182A(5)(a) of the Planning and Development Act 2000, as amended.

2 Please comment on the extent to which the impact on the national strategic road network was a relevant factor in identifying and assessing the various route corridors which were considered in the Step 4 A Report, submitted as part of the Planning and Environmental Considerations Report. The submission from the TII contend that the constraints mappings identified along the preferred corridor does not take into account the strategic importance to the State of the national road network and that EirGrid has not drawn any meaningful distinction between the strategic national road network and other parts of the public road network. Please comment on the above, and where appropriate providing details of the considerations given to the impact on the national road network in the alternative/ preferred routes examined by the applicant.

The Step 4A Report was submitted as part of the planning for this application as Appendix 4.1 of the Planning and Environmental Considerations Report (PECR). The Step 4A Report identifies and maps the constraints and potential areas of opportunity (referred to in this document as route corridor options) for Overhead Line (OHL) and Underground Cable (UGC) options.

The report, as explicitly stated in Section 1.1, does not evaluate the merits of any of the options, as the main purpose of this report is to solicit the views of members of the public and stakeholders as to the preferred technology option (OHL or UGC), and to obtain relevant information and local knowledge in respect of those route corridors which should be taken into consideration in our subsequent evaluation of those options.

The initial route sections for UGC were identified through desktop analysis to determine feasible routes along public roads between the two substations. This desktop assessment considered the roads available between the substations based on the shortest distance between the substations, as well as their type and width. For example, regional and national roads were generally identified and considered over narrower local roads as they are wider and allow for more favourable traffic management options during construction. In some cases, however, only local roads were available, and, in this instance, the most direct and widest roads were considered.

The initial UGC routes have been derived by using a Geographic Information System (GIS) least distance tool which uses Dijkstra's shortest path algorithm which is an iterative process to find the shortest route between two locations. This algorithm minimises each of the following parameters individually:

- Route length;
- Total number of crossings (infrastructure, watercourses);

- Roads less than 5m in width; and
- Roads with congested underground services.

Dijkstra's algorithm is a well-established method for finding shortest paths between two points and has been used by mapping companies for that purpose. The assessment has used this algorithm to find paths which have the lowest number of features according to the list above. Each of these paths is called a "minimising route".

In this case the model used a filtered subset of the OSI prime 2 roads data to derive the shortest route on feasible roads based on average road width for road sections. The two shortest routes were determined by this method. The third route was determined by mapping the closest feasible alternative to long national road sections to ensure viable routes remain should the national roads be unavailable to the project in the future.

In carrying out this analysis, the study area was considered to have limited road network suitable for the laying of an UGC and the N5 National Road was considered an opportunity in this instance, rather than a constraint – this is reflected in the low weighting for national roads in the Heat Mapping for Underground Cable Input table including as Appendix D of the Step 4A Report. Due to the road widths and constraints along the local and regional road networks, these potential options do not perform as well as the proposed development, with greater potential impact, and were therefore not identified as the Best Performing Option for the proposed development.

In saying this, EirGrid is fully conscious of the strategic importance to the state of the national road network. Its strategic importance is equivalent to that of the national grid network. There is a long history of utilities and services being placed underground the national road network. It does not undermine its strategic importance and normal operation. The impacts, notwithstanding the temporary construction phase, of underground services are not significant, as addressed in the PECR.

The strategic importance of the national road network was a relevant factor, among many others, as EirGrid applied its comprehensive and consistent multi criteria analysis (MCA) approach to decision making in Step 4. The MCA approach facilitates a balanced consideration of the technical, economic, environmental, social and deliverability aspects of a development project.

By way of example, EirGrid considered the strategic importance of the national road network when considering the route between Swinford and Ballina. All options provided as part of the Step 4A Report were routed, following GIS analysis and engagement with TII, to avoid that portion of the N26 from the townland of Cuillonaghtan through Foxford to Ballina (on the western side of the River Moy). Instead it

was decided to utilise the local road network to Ballina (on the eastern side of the Moy).

This consideration of alternative route options, we wish the Board to understand in the context of this response submission, was a direct result of engagement with TII which addressed the nature of the road network in this area and ensured EirGrid's understanding that the portion of road between Foxford and Ballina may require significant upgrading in future. This project-level engagement with TII ensured robust consideration of alternative routing options for the cable along this portion of the overall route. The avoidance of the use of the National Road between the townland of Cuillonaghtan and Ballina ensures avoidance of approximately 20km of the national road network and any infrastructure schemes of national importance can occur without any likely interaction with the North Connacht Project. These considerations and decisions demonstrate the value and authenticity of pre-application engagement undertaken by EirGrid in respect of the proposed development with TII. Such alternative options were not available in other sections of the route.

The input of each criterion used in the MCA is based on experts' knowledge and judgement in each subject matter. Depending on which step the project is at, the granularity of the MCA varies on the basis of the best information available at that point in time.

Within the MCA different tools may be used to evaluate the criteria, for instance the socio-economic criteria will have an element of taking into account the feedback from consultation. It should however be noted that not all feedback can be taken on-board in the MCA and some feedback and other information may have to be taken on-board in the decision-making process outside the MCA. EirGrid notes that, while TII identify one issue for consideration – the strategic importance of the national road – they do not consider the range of other issues and criteria that have informed EirGrid in proposing the route now comprising the subject of this application.

Moreover, as captured in Table 3.1 – *Stakeholder Engagement* – of the PECR accompanying the application, the strategic importance of the road network as a consideration by EirGrid in its optioneering process merited the holding of multiple meetings with TII (see also our response to Item 3 of the Request for Further Information below). It is disappointing that TII appear to contend that the matter was not a consideration in the project development process, when it was a key stakeholder and participant in this process, and this matter was the primary issue raised in such engagement.

3 Please comment to what extent road safety standards and /or road safety implications were taken into consideration when assessing the various route options, including the preferred option in the Step 4A Report.

An extensive optioneering process, in line with EirGrid's Framework for Grid Development (as illustrated in Figure 1) has been undertaken for the North Connacht 110 kV project.

Figure 1: EirGrid's Six-Step Framework for Grid Development (Source: EirGrid)

The optioneering process included publication and stakeholder engagement on the following reports[1].

- Step 4A Report (Mott MacDonald, September 2020) described the constraints mapped within the Project study area, and the identified potential areas of opportunity for both UGC and OHL options.
- Step 4B Report (Mott MacDonald, March 2021) included a comparative evaluation of four potential OHL corridor options and three potential UGC corridor options. Based on a multi-criteria analysis approach (which included a comparative evaluation of technical, economic, environmental and social performance; and deliverability), the Step 4B report identified the emerging best performing option) EBPO, UGC corridor option 2; and
- Step 4C Report ((Mott MacDonald, July 2021), confirmed the Best Performing Option (BPO) to be taken into the next (planning) stage; Moy to the N26 junction (Cuillonaghtan townland), N26 junction (Cuillonaghtan townland) to Swinford; and Swinford to Tonroe.

Extensive engagement was undertaken with TII throughout this process, including the issuing of an Underground Cable Route Options Transport Study, submitted to TII in February 2021, prior to the publication of the Step 4B Report. A copy of the Underground Cable Route Options Transport Study is included in Appendix A of the RSIA (refer to Enclosure 3).

The Underground Cable Route Options Transport Study focused on the appraisal of the three identified UGC options and considered, at a high level, matters which have realistic potential impact upon Ireland's road network.

[1] https://www.eirgridgroup.com/the-grid/projects/north-connacht/related-documents/

In relation to national roads, the report advised that traffic diversions were unlikely to be required to facilitate cable works on any of the National Roads affected but traffic management will involve either;

- Localised carriageway closure and traffic management signing and sharing of remaining carriageway space for two-way traffic on carriageway sections which include hard shoulders; or
- Single alternate lane operation controlled by temporary traffic signals on two lane single carriageway sections.

The report advised that further consultation should be undertaken with TII to fully appraise constraints associated with the installation of UGC in National Road corridors with matters for discussion including:

- Road safety and traffic management issues on a strategic, highly trafficked, high speed, national road, during construction.
- Impact on the ability of general maintenance and safety works to existing roads, including signing, drainage works, safety barriers, etc., as a result of having high voltage cabling laid on a national road corridor.
- Constraints associated with the on-line national road improvements and upgrades, including potential requirement for minor horizontal alignment impact, where cabling may require relocation.

The report further advised that, as the project moves toward planning, the following potential construction phase effects will need to be considered:

- Disruption and delay to users of roads from cable installation work in road corridors
- Disruption and delay of users of footpaths and cycle paths from cable installation work in or adjacent to active travel infrastructure
- Disruption and delay to users of roads as a result of the additional traffic movements that will be generated by the Project
- Detrimental impact on road safety as a result of the additional traffic movements that will be generated by the Project.

A copy of the Underground Cable Route Options Transport Study is included in Appendix A of the RSIA (refer to Enclosure 3).

Subsequent to the issuing of the Underground Cable Route Options Transport Study, meetings were held between the project team and TII as detailed below:

- Meeting held 22 Feb 2021 (virtual)_TII Subgroup meeting
    - Impact of the proposed development on the N26 realignment at Cloongullaun. Ongoing communication with Mayo County Council in relation to same.
    - The proposed UGC follows the proposed N26 Bypass
- Meeting held 28 May 2021(virtual) _TII Subgroup
    - Update on North Connacht 110 kV Project
    - Findings of Transport Study completed by EirGrid Consultant
    - Overview of the Development Options and Evaluation Report
- Meeting 3 September 2021 (virtual) _TII Subgroup
    - Progress update on Proposed UGC route and interactions with existing National Roads
    - Future impact of the presence of UGC in the national roads on future maintenance.
    - Impact of the proposed development on the Ballina Bypass (N26).
    - Impact of the proposed UGC in the verge along the N5 on the possible future development of right turn lanes in the N5 on the approach to Swinford.
- Meeting 29 March 2022 (virtual)_TII Structures/Bridge Management
    - Progress update on Proposed UGC route and interactions with existing National Roads
    - Standard cable trench details outlined.
    - Depth of cover to cross bridge/structure outlined and reviewed in the context of the standard cable trench details.

TII subsequently requested an obstacle schedule of the structures encountered on the route for National Roads. Information provided 1 April 2022.

In addition to specific project meetings with TII, 13no. Steering Group meetings were held between EirGrid, ESB and TII during 2020 and 2021 to discuss the interaction of transmission infrastructure with national road network at a strategic and commercial level. The issue of traffic safety was a key topic at these meeting among others including discussions on engagement protocols when interactions occur between electricity and road assets, installation protocols for electricity assets, and other matters.

An application for approval for the proposed development was submitted to An Bord Pleanála in June 2022. The application was supported by a PECR, which included an assessment of impacts on roads and traffic undertaken with reference to the following guidance:

- Traffic and Transport Assessment Guidelines (TII, 2014);
- The Institute of Environmental Management and Assessment Guidelines for the Environmental Assessment of Road Traffic (The Institute of Environmental Management and Assessment, 1993); and

- The UK Design Manual for Roads and Bridges (DMRB, various dates).

Section 14.5 and 14.6 (Roads and Traffic) of the PECR considered:

- Driver delay: disruption and delay to users of roads from (a) cable installation work in road corridors and (b) as a result of the additional traffic movements that will be generated by the proposed development;
- Community Effects: Disruption and delay of users of footpaths and cycle paths from cable installation work in or adjacent to active travel infrastructure; and
- Accidents and Safety: Detrimental impact on road safety as a result of the additional traffic movements that will be generated by the proposed development.

As detailed in the documentation that supported the application;

- The UGC will be installed within the road. Following installation, the road above the trench will be reinstated to match the environment in which it is installed to the standard required by the relevant authority at that location, in this case Mayo County Council, Roscommon County Council and / or TII.
- The construction phase works required to facilitate installation of the UGC will be sequential and transient in nature. It is generally the case that cable ducts can be laid in a road at a rate of approximately 50m per day, although a rate of 20m-50m per day is anticipated in built up areas where utilities are more common. Joint bays, generally located at intervals of approximately 850 metres along the UGC route of the proposed development (shorter intervals occur where the route alignment is more complex), are typically installed in three days, with the road reinstated post installation.
- No new access / egress to / from the existing road network is proposed as part of the proposed development.
- There will be no discernible changes to traffic flows arising from operation of the UGC.

The assessment of impacts on roads and traffic included an evaluation of detrimental impact on road safety as a result of the additional traffic movements that will be generated by the proposed development.

The assessment of impacts on roads and traffic in relation to accidents and road safety concluded that there would be a negligible increase in collisions in the study area during the construction period as a consequence of the increased traffic generated by the proposed development and the significance of the effect would be none and therefore not significant.

The overall assessment of impacts on roads and traffic concluded that there are no significant residual traffic and road effects predicted during the construction and operational phases with the successful incorporation of specific measures described in the PECR and within the Traffic Management Plan (TMP). It acknowledged that inconvenience will be caused in some areas due to the diversion routes and construction of the UGC route; however as the construction period is over a number of months, any part of the linear development will only be affected during certain periods of the construction phase and not simultaneously, and only on a temporary basis.

As noted above, a construction phase TMP also comprises an element of the application. The TMP represents a commitment to satisfy reviewing Authority requirements and sets out proposed traffic management and contingency planning measures to enhance road safety and limit adverse effects of construction traffic on the existing road network and the communities it serves.

As detailed in the TMP, once the construction programme, construction methodologies and associated worksite layout requirements have been firmly established, protocols to be adopted in terms of approvals, signage and information provision regarding essential traffic diversions will be discussed and agreed with Mayo and Roscommon County Council and other authorities as might be required.

The TMP will remain a ‘live’ document which will be updated in response to any relevant conditions of the Approval, if granted, and to reflect the detailed design of the Approved development, in collaboration and agreement with the Roads Authorities. It will be reviewed regularly and revised as necessary to ensure that the measures implemented are effective and remain within the parameters assessed in the PECR.

4 Please comment whether or not EirGrid, in assessing the various route options, considered the potential impact that could arise from repairs underground cable route and its implications for the safety and operational capacity for the national road network. Where EirGrid did consider this issue, please provide details of same.

As detailed in Section 5.2.1 of the PECR that supported the application for approval, access to UGCs in the operational phase – if ever required - occurs only at the joint bays. Joint bays are not required to be readily accessible as there is no ongoing maintenance required; they only need to be accessed in the unlikely event of cable failure requiring replacement.

The extent to which traffic management is required in this situation will depend on the location of the joint bay within the roadway, whether in the verge, hard shoulder or on the carriageway. In this regard, it may appear obvious to the Board that the use of wider roads allows for lesser potential impact in terms of road safety and traffic management, in comparison to narrower roads which might require road closures and diversions. However, in any such scenario, such activities are temporary and usually of short duration, given any repairs are restricted to an identified portion of cable between two joint bays.

This is captured in the Step 4B report (Appendix E of the PECR) which identified the Emerging Best Performing Option (EBPO), that subsequently was confirmed as the proposed route now before the Board. At Section 8.3 of that report, the option (known as “Option 2” or “Option B”) it is concluded that *“Option 2 performed better than options 1 and 3 under the Environmental Performance criterion, primarily because option 2 follows the existing N5 between Swinford and Ballaghaderreen where the increased width and standard of the road is better suited to accommodating the cable, resulting in less necessity to go off road with associated environmental risks”*. This is reflected at Section 4,4 of the PECR accompanying the application, in respect of *“Route Options Considered”*.

Section 14.6 of the PECR that supported the application for approval included an assessment of operational phase considerations. The assessment concluded that overall, it is ascertained that there are no discernible changes to traffic flows arising from operation of the UGC. Traffic and transport effects can, as a result, be stated as Negligible, thereby Not Significant given the temporary nature of the operational, maintenance-based traffic.

It is also acknowledged that protocols to be adopted in terms of approvals, signage and information provision regarding maintenance works, in the unlikely event of a cable failure, will be discussed and agreed with TII, Mayo and Roscommon County Council and other authorities as may be required.

5 Please provide further details of any implications, which were taken into consideration regarding costs associated operating, maintaining or upgrading of the National Road Network in assessing the alternative route options considered by the applicant.

At the outset of this response, having regard to the Board's statutory remit for Strategic Infrastructure Development, EirGrid respectfully submits that this is not a matter of proper planning and sustainable development, and should not be taken into consideration by the Board in determining the merits of the proposed development.

Without prejudice to this, EirGrid has been in discussion on this issue at a strategic and commercial level with TII. A working group was established to discuss this issue in the context of this project and several others.

EirGrid accepts that there may arise specific and detailed design issues of a technical or engineering nature in respect of the laying of cables within the National Road, which will have associated costs. In this regard, EirGrid are of the view that these are matters that are best addressed as part of post-consent engagement between the developer, TII and the planning authority regarding the detailed design of the development and specific matters of costs.

6 Please provide further information as to how it is proposed to install and maintain and reinstate the cable and trench network along the National Road Network, how it is proposed to install and maintain and reinstate the joint bays along the National Road Network to the standard required to ensure the safe operation and capacity on the network, particularly along the running lane of the national road network. In this regard further details are required in relation to the re-instatement of the road pavement surfacing, sub-base, capping layers and any geotextile strengthening layers, particularly having regard to the high proportion of HGV traffic using the national road network and the potential implications which any substandard re-instatement could have for the structural integrity of the road network.

Installation, maintenance and reinstatement of the cable trench network along the National Road Network

The typical cross sections of a 110 kV cable trench are shown below in Figure 2 and 3 (Enclosure 5). These include three 160mm power ducts, and two 125mm communications ducts. The trench width is either 930mm maximum or 600 mm and the minimum depth to the top of the power ducts is 950mm. This would be typical of installation where there are no utility services or other restrictions. The reinstatement, road resurfacing, sub-base, capping layers and any geotextile strengthening layers will be as per TII specification “Requirements for the Reinstatement of Openings in National Roads CC-PAV-04007” and Guidelines for Managing Openings in Public Roads.

The trench will be installed as straight as possible with long gradual curves wherever required and practicable. The installation will be as close to the road edge as possible, with a preference for installation in the hard shoulder in the case of national roads where possible. This will have the advantage of reducing traffic impact during installation due works being carried out in the hard shoulder instead of the road carriageway.

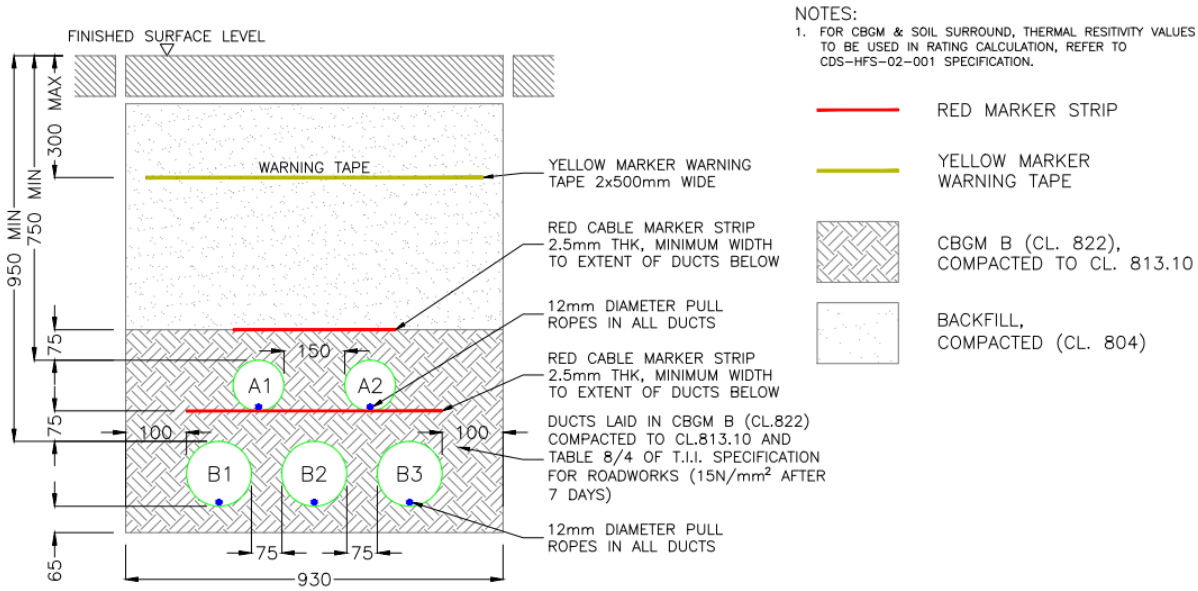

Figure 2: 110 kV Cable - Typical Trench Cross Section for Ducts in Flat Formation. (Source: Mott MacDonald 229100591-MMD-01-XX-DR-E-2105)

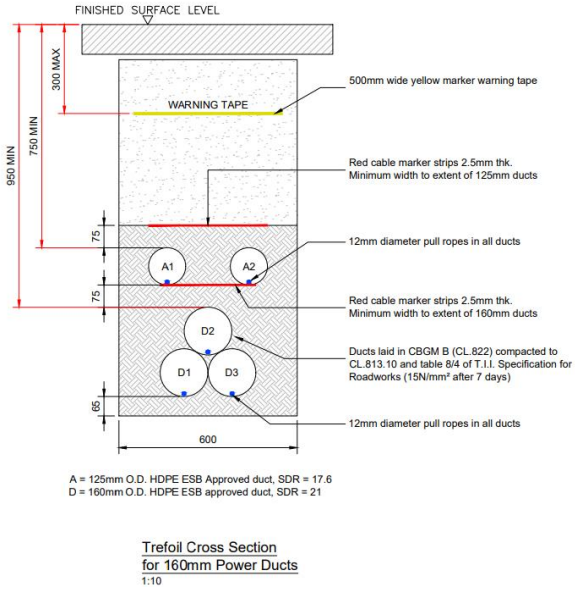

Figure 3: 110 kV Cable - Typical Trench Cross Section for Ducts in Trefoil Formation. (Source: Mott MacDonald 229100591-MMD-01-XX-DR-E-2105)

Installation, maintenance and reinstatement of Joint Bays, Link Boxes and Communication's Chambers

Every approximately 500m to 950m, a joint bay will be required to join consecutive lengths of the 110 kV cable together. The typical dimensions of such a Joint bay will be approximately 6m in length, 2.5m wide and 2.4 m deep as shown in Figure 4 (Enclosure 6). Dimensions may vary depending on the

installation requirements of the cable manufacturer. The joint bays will be of pre-cast concrete construction manufactured off-site. The initial opening for installation of joint bay will be approximately between 3m - 3.5m wide.

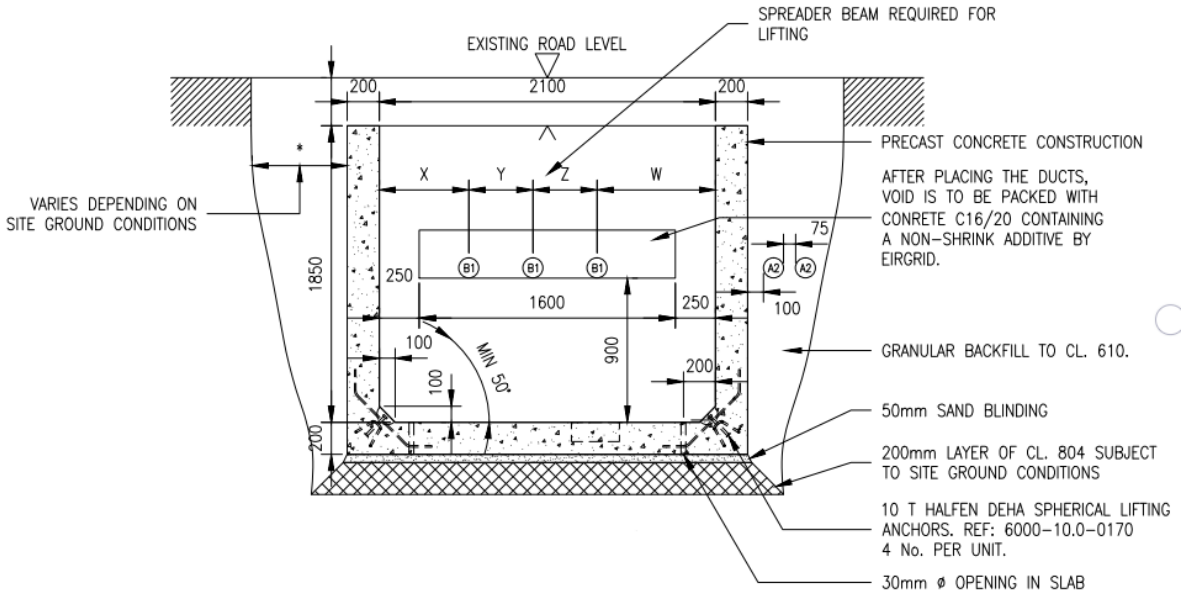

Figure 4: Cross-section of typical joint bay installation (Source: EirGrid XDC-CBL-STND-H-012 Sheet 002)

Figure 5 shows the typical joint bay reinstatement (Enclosure 7). Joint bays are usually located in the hard shoulder. Joint bays are typically constructed as part of the civil works well in advance of cable installation. At this stage joint bays are temporarily reinstated with sand, granular backfill to CL. 610 around the joint bay, precast concrete slab 2.5 x 2 x 0.2 m and resurfaced as per the existing road. When it is time to install the cable, the sand is easily excavated and then replaced with thermal sand surrounding the cables for the permanent reinstatement. The road surface is permanently reinstated as TII specification “CC-PAV-04007” and Guidelines for Managing Openings in Public Roads.

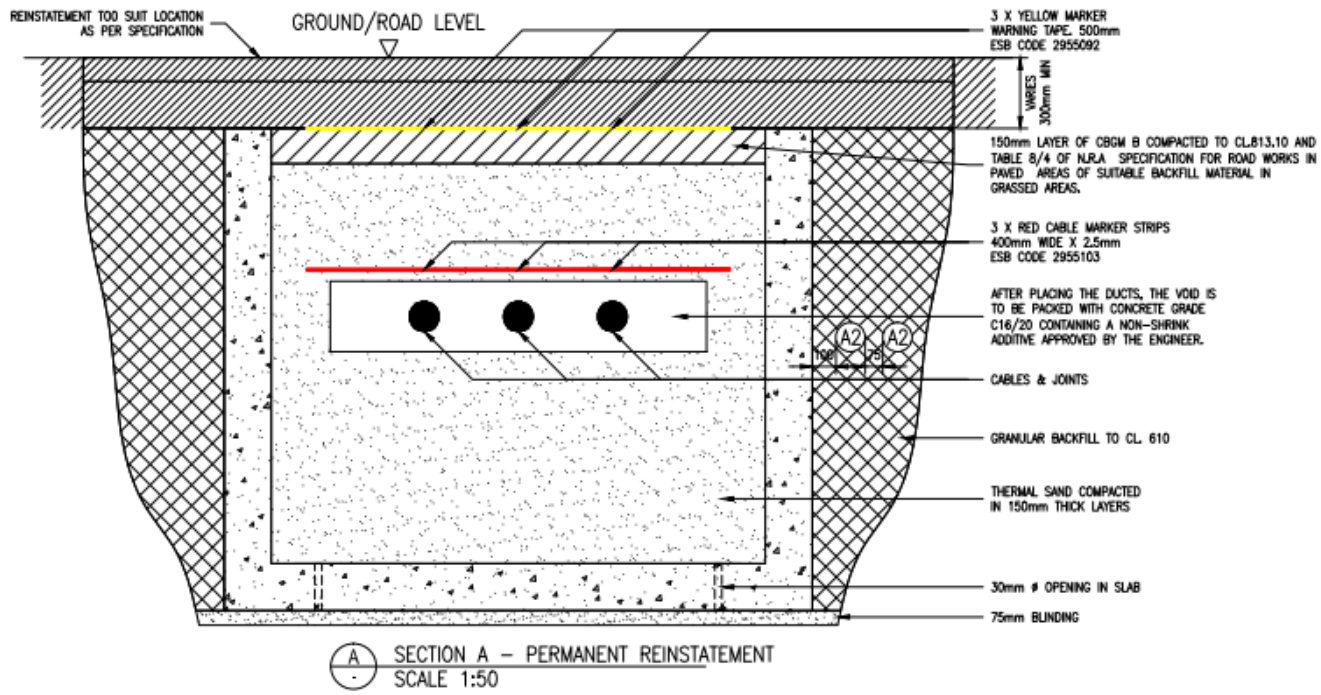

Figure 5: Cross-section of typical joint bay installation. (Source: EirGrid XDC-CBL-STND-H-012 Sheet 007)

Communications chambers (C2 Chambers) and link boxes would also be co-located with the joint bays. Manhole access would typically be provided for the communications chambers and link boxes for maintenance purposes.

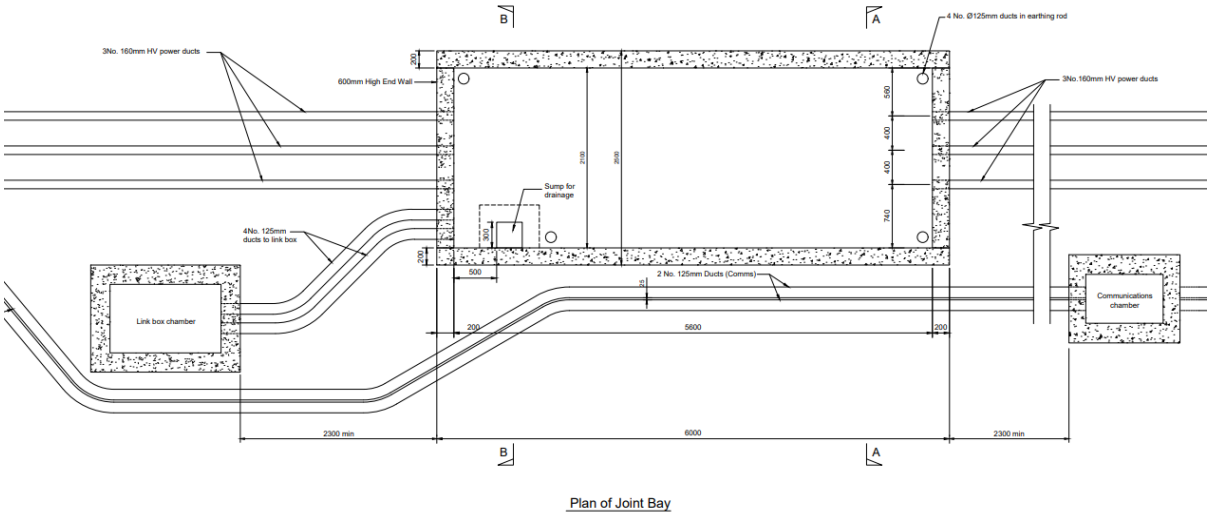

Figure 6: Typical plan of joint bay installation (Source: Mott MacDonald 229100591-MMD-01-XX-DR-E-2101) (Enclosure 8)

Access to Joint Bays, Link Boxes and C2 Chambers

There will be two manholes associated with each joint bay for the C2 chamber and link box and access will be required on a permanent basis to facilitate maintenance. Typically, manholes are located within the verge or hard shoulder to minimise traffic disruption during routine maintenance.

Following initial installation, the Joint Bays will be fully covered over as per the TII reinstatement specification “CC-PAV-04007” and “Guidelines for Managing Openings in Public Roads”. Joint bays are not required to be readily accessible as there is no ongoing maintenance required, however they would need to be accessed in the unlikely event of cable failure requiring replacement. The extent to which traffic management is required in this situation will depend on the location of the joint bay within the roadway, whether in the verge, hard shoulder or on the carriageway.

Maintenance

For Maintenance, 110 kV cables are typically inspected every three years or, for cables >10km, an inspection can be carried out for a third of the length of the cable every year. This involves sheath testing as well as inspection of cable terminations and link boxes.

Routine maintenance does not require access to joint bays. Access to joint bay is only required in the unlikely event of cable failure requiring replacement.

7 Please provide further details in respect of future maintenance liabilities with regard to such works to be undertaken.

As per our response to RFI Item 5, EirGrid respectfully submits that the issue of future maintenance liabilities (financial) is not a matter for consideration as part of SID application process.

Without prejudice to this, EirGrid has been in discussion on this issue at a strategic and commercial level with TII. A working group was established to discuss this issue in the context of this project and several others. EirGrid is of the view that these are matters that are best addressed as part of post-consent engagement between the developer, TII and the planning authority regarding the detailed design and commercial aspects of the development.

8 There is a strong possibility that the proposed route of the EirGrid 110kV route from the N59 Crossmolina Road to the N26 Foxford Road will have a significant interface with the Ballina By-Pass 'preferred option'. Accordingly, considering that the EirGrid 110kV project will be constructed in advance of the N59/N26 Ballina By-Pass, its installation in terms of alignment and level must be such that it does not impact on the By-Pass construction. Please provide evidence that that the alignment of the proposed route of the EirGrid 110kV cable does not impact or compromise on the proposed preferred option for the by-pass route and that an agreement in principle in respect of both routes have been secured with both Mayo County Council and Transport Infrastructure Ireland.

At the time of the submission, June 2022, no preferred route details had been published in respect of the N59/N26 Ballina By-Pass; EirGrid notes that the TII submission does not include a map, nor makes any other specific reference to an identified preferred route. At the time of the submission, EirGrid considered the bypass, as it appears as an indicative line in the Ballina and Environs Development Plan 2009-2015; however, it is not identified in the current National Development Plan.

It is noted that in the intervening period, since An Bord Pleanála issued this RFI, Mayo County Council has in conjunction with Transport Infrastructure Ireland, held a Public Information Event for the N26 Ballina Bypass Phase 1 project[2]. A public consultation event is also live and ongoing and is due to close on the 21st October 2022.

Even in the context of this current consultation, there is no exact technical or other information that might inform the exact alignment of the cable; nor is there currently any guarantee of capital funding of such relief road. It is the case that the provision of such road design detail as would be necessary to facilitate any specific routing of the proposed cable will not be forthcoming in the short term.

Notwithstanding this however, the proposed cable route has been routed predominantly along the existing road network at Ballina, along which are established residential dwellings and agricultural landholdings, precisely in order to avoid any subsequent conflict with a future, as yet non-designed, relief road corridor over private lands, should such development ever proceed. It is our respectful consideration that any future road development, should it proceed will most likely cross those existing roads by way of a grade-separated design option rather than at-grade intersections.

It is submitted that EirGrid has used its best endeavours to minimise the potential for compromising any potential scenario of a future route selection process, given that there is currently no design for, or even

[2] https://consult.mayo.ie/en/consultation/n26-ballina-bypass-phase-1

certainty of, a town bypass route. It should also be noted that given the different stages, timelines and programmes involved in the projects, it will likely be the case that the proposed cable infrastructure will actually be in place well before the planned road scheme occurs on site.

EirGrid will certainly make a submission to this consultation call by Mayo County Council to ensure the roads authority is aware of the North Connacht Project – an SID project of National strategic importance - is at planning stage, with an identified alignment, and that the alignment of the proposed town bypass project does not significantly impact on the proposed development of the cable route.

EirGrid is of the view that the best practical solution in this matter is to ensure an ongoing engagement and collaboration between EirGrid and TII and the roads authorities (and indeed with other relevant parties) with regard to the development of the separate infrastructure projects, with subsequent agreement of all relevant details post consent.

In addition, TII, ESB and EirGrid signed a protocol in October 2020 which consolidated very positive engagement between representatives of TII, ESB and EirGrid. The protocol document outlines interaction between TII and Local Authorities with the ESB and EirGrid during the development phases of major national road schemes.

The protocol will ensure the early identification of potential conflicts and the timely design and approval of all necessary alterations to existing transmission circuits. The protocol will also ensure the early identification of opportunities that may arise between national road development schemes and new transmission circuits that are at route selection stage. It is EirGrid's view that this protocol can be implemented successfully should the development of the bypass ever proceed.

The protocol document is enclosed as Enclosure 4 for information.

9 Further details are required as to how the cables will be placed within the road specifically in the context of other subsurface elements such as road drainage, culverts etc and how any potential conflicts between the various utilities/drainage arrangements which may arise would be successfully addressed.

Where existing utilities need to be crossed or other obstacles are encountered (e.g. culverts), the depth to the top of the power ducts could be deeper or alternatively could be reduced to a minimum of 450mm as shown in Figure 7. (Enclosure 9).

In the case of shallow burial, steel plates will be installed above the ducts and the ducts will be encased in C25/30 rapid hardening wet concrete. The duct formation in this case has been flattened out with the communications duct placed between the power ducts. A shallow installation would widen the trench to between 1225mm and 1365mm approximately.

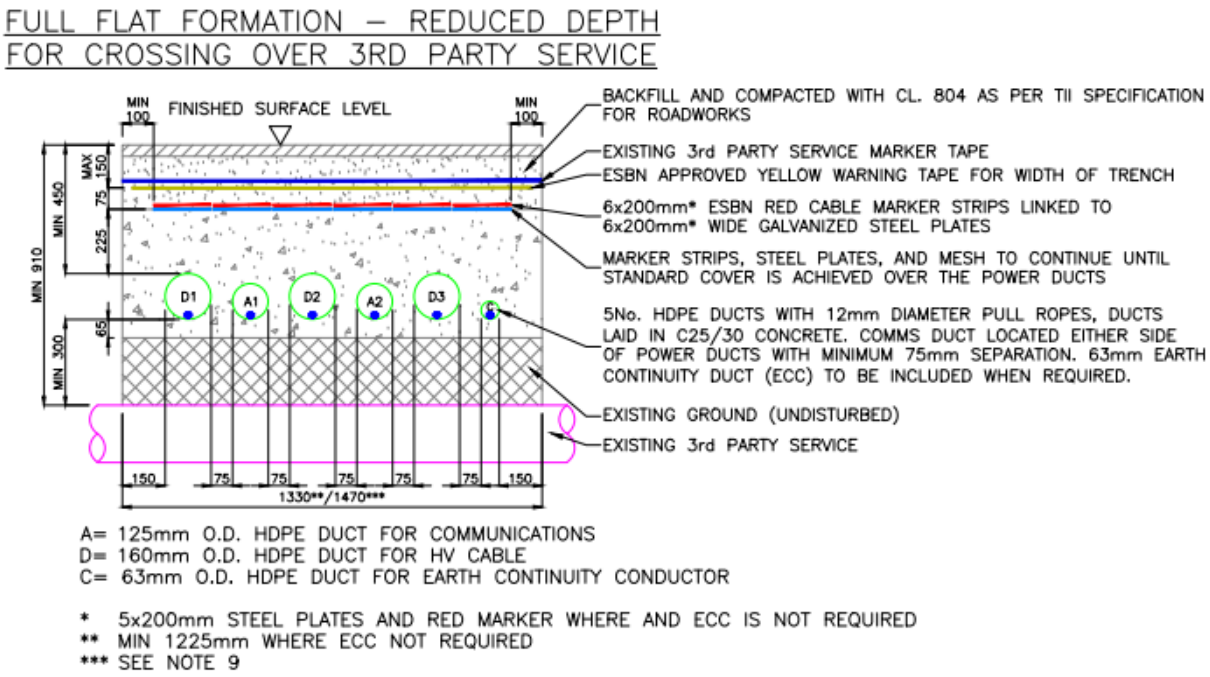

Figure 7: 110 kV Cable – Reduced Depth for Crossing Over Service (Source: EirGrid XDC-CBL-STND-H-002 Sheet 002)

Where existing utilities need to be crossed or other obstacles are encountered (e.g. culverts) and the depth to the top of the utility/culvert is less than 910 mm, crossing below is required as shown in Figure 8 (Enclosure 10).

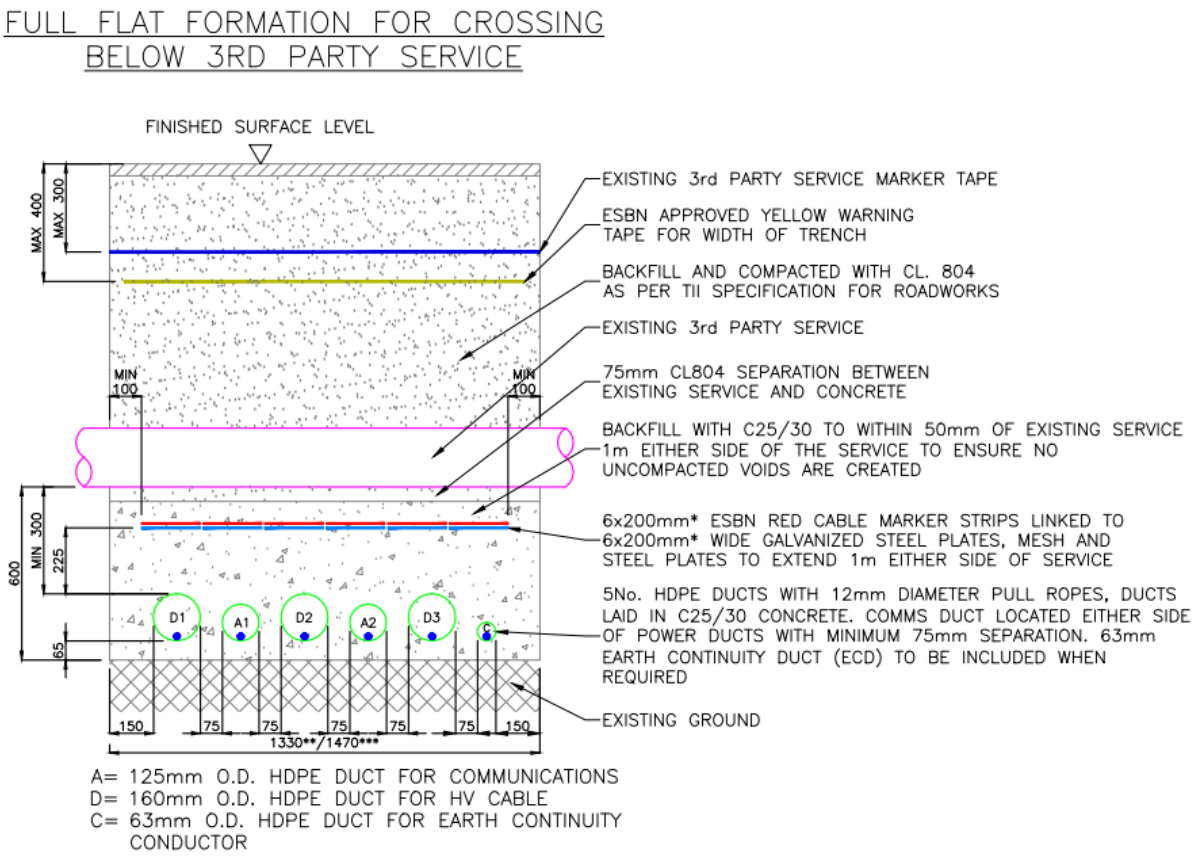

Figure 8: 110 kV Cable – Crossing Below a Service (Source: EirGrid XDC-CBL-STND-H-004 Sheet 002)

To avoid conflict, the cable route will be routed in areas with the least utilities where possible and based on the depth of the existing utility/culvert, the cable will either be routed above or below the service.

10 Please comment on TII assertion that a buffer zone will be required in the vicinity of the high voltage cables which could compromise TII's ability to carry out fundamental and essential maintenance such as repair of safety barriers, signage, ITS equipment and drainage etc without prior approval of ESB networks or their presence on site to monitor such works.

National roads with transmission cables installed

Table 1 provides a list of National Roads with 110 kV (or greater voltage) cables installed. As this technology (underground cables) has been installed within the National Road network previously EirGrid ascertains that this should not compromise TII's ability to carry out fundamental and essential maintenance.

The table below is not a comprehensive list of UGC in national roads and there are also numerous examples of ESB (the Distribution System Operator) and private developers installing cables of a similar scale in the strategic road network. The provision of cables in roadways to has been a standard approach to the development of utility services for several years now.

Table 1 National Roads with 110 kV (or greater voltage) Installed		
Road Name	**Voltage**	**Approximate Length**
N59	110kV	15km
N6	110kV	3km
N85	110kV	4.8km
N22	110kV	3.5km
N28	220kV	4km

Wayleave for Cables

A wayleave will be associated with the cable route and will restrict the installation of other services within the defined limits associated with the wayleave. The typical defined limits of a wayleave for a 110 kV cable is two metres to either side of the centreline of the trench.

As the cable trench is largely within the road extents, this will likely not compromise TII's ability to carry out fundamental and essential maintenance in the verge including repair of safety barriers, signage, ITS equipment and drainage.

Due to access requirements to the cable route, other services cannot be installed longitudinally above the route, however new services could cross above the route if required. In any event, the horizontal and vertical separation between the cable installation and other utilities, both existing and future, are restricted to 300mm or greater.

11 Please comment on whether or not any pavement overlay on the carriageway, an essential part of pavement upkeep, could result over time, in a possible 'derating' or a reduction in the carrying capacity of the underlaid cable.

Additional pavement overlay does cause derating to an underground circuit but for this circuit, based on new target ratings for the cables, an additional depth of 350 mm overlay can be added without derating the cables below the target ratings of the circuit. This is for trefoil formation which is the worst-case scenario.

In the unlikely event that the proposed overlay will be higher than the acceptable overlay, the Transmission System Operator (EirGrid) and the Transmission Asset Owner (ESBN) will need to be informed. A technical working group will be formed to review the proposed overlay to understand if there will be a derating or reduction in the carrying capacity of the underlaid cable.

In addition, and as previously referred to in RFI 8. TII, ESB and EirGrid signed a protocol in October 2020 which consolidated very positive engagement between representatives of TII, ESB and EirGrid. The protocol document outlines interaction between TII and Local Authorities with the ESB and EirGrid during the development phases of major national road schemes. It is equally applicable to vertical or horizontal adjustment of national roads. The protocol will ensure the early identification of potential conflicts and the timely design and approval of all necessary alterations to existing transmission circuits. The protocol will also ensure the early identification of opportunities that may arise between national road development schemes and new transmission circuits. It is EirGrid’s view that this protocol can be implemented successfully should vertical or horizontal adjustments ever be required on national roads. The protocol document is enclosed as Enclosure 4 for information.

12 Please comment on Tll's assertion that the laying of the underground cable within the national road network significantly compromises or could preclude the Authority's ability to vertically or horizontally adjust the alignment of the road for road safety or other purposes, particularly in the case of sections of the N26 which comprise of unimproved legacy roads that may be the subject of significant improvement going forward.

EirGrid does not agree that the laying of the underground cable within the national road network significantly compromises or could preclude the Authority's ability to vertically or horizontally adjust the alignment of the road for road safety or other purposes. In the event of a proposed vertical or horizontal adjustment the Transmission System Operator (EirGrid) and the Transmission Asset Owner (ESBN) will need to be informed. A technical working group will be formed to review the proposed vertical or horizontal adjustment to understand what, if any, issues arise.

In addition, and as previously referred to in RFI 8. TII, ESB and EirGrid signed a protocol in October 2020 which consolidated very positive engagement between representatives of TII, ESB and EirGrid. The protocol document outlines interaction between TII and Local Authorities with the ESB and EirGrid during the development phases of major national road schemes. It is equally applicable to vertical or horizontal adjustment of national roads. The protocol will ensure the early identification of potential conflicts and the timely design and approval of all necessary alterations to existing transmission circuits. The protocol will also ensure the early identification of opportunities that may arise between national road development schemes and new transmission circuits. It is EirGrid’s view that this protocol can be implemented successfully should vertical or horizontal adjustments ever be required on national roads. The protocol document is enclosed as Enclosure 4 for information.

13 "Further details are required as to how the proposed installation of cables will comply with the TEN-T Regulations which introduces an obligation on member state to ensure (inter alia):

a) **The safety of road transport infrastructure is ensured, monitored and when necessary, improved in accordance with 'The Updated infrastructure Safety Management Directive'**
b) **The roads are designed, built or upgraded and maintained with the highest level of safety of traffic through, in particular, the implementation of the latest technologies;**
c) **The roads are designed, built or upgraded with the highest level of environmental protection, including as appropriate through low noise surfaces and the collection, treatment and release of water run-off.**

The applicant is requested to demonstrate that the proposed installation of cabling will not undermine or compromise any of the States long-term objectives or obligations under the current or any future long- term requirements set out for national road infrastructure set out under the TEN-T Regulations. "

It should be noted, as we have set out at the outset of this response, that the issues related to developing UGC in the national road network and EU TEN-T Comprehensive Network arose in the case of the EirGrid's Celtic Interconnector (ABP Ref: VA04.310798). In TII's submission in respect of the Celtic Interconnector, it was acknowledged by TII that the issues of concern are of technical or engineering nature that cannot fully be identified and resolved ahead of the detailed design process and TII would welcome the application of appropriate conditions.

The submission notes, and EirGrid accepts, that there may arise specific and detailed issues of a technical or engineering nature in respect of the laying of cables within the National Road. In this regard, EirGrid is of the view that these are matters that are best addressed as part of post-consent engagement between the developer, TII and the planning authority regarding the detailed design of the development; this includes specific details of cable trenching, and matters of traffic management, operation and maintenance. In this regard, EirGrid confirms that it is willing to abide by any relevant condition of Approval for such engagement and agreement as may be deemed appropriate by the Board.

14 Please provide any additional comments in respect of the TII submission received by the Board on August 2nd which the applicant considers relevant to the Board's determination of the application.

The submission notes, and EirGrid accepts, that there may arise specific and detailed issues of a technical or engineering nature in respect of the laying of cables within the National Road. In this regard, EirGrid is of the view that these are matters that are best addressed as part of post-consent engagement between the developer, TII and the planning authority regarding the detailed design of the development; this includes specific details of cable trenching, and matters of traffic management, operation and maintenance. In this regard, EirGrid confirms that it is willing to abide by any relevant condition of Approval for such engagement and agreement as may be deemed appropriate by the Board.

In this context, EirGrid is satisfied that there is sufficient information before the Board in this application for Approval to enable it to make a reasoned and robust Decision including an Appropriate Assessment, and that the nature of details for subsequent agreement between the developer, TII and the planning authority all derive from the application particulars before the Board.

15 "The submission from Irish Water notes that there are 79 locations along the route where the 110kV underground cable will cross Irish Waters assets. It is noted that at 14 of these location points, EirGrid propose for the cable to cross above existing Irish Water Assets. The applicant is requested to provide clear and detailed information to demonstrate that there will be no impact on Irish Waters assets as a result of the cabling works undertaken. Where there is no other option but to cross above Irish Water assets, the applicant is required to demonstrate that adequate mitigation measures are put in place to ensure that inter alia:

(a) That mitigation measures can be put in place to ensure that there are no adverse impacts on any of Irish Waters Assets.

(b) Updated designs demonstrating that there will be no additional loads applied to Irish Water Assets from the laying of grid connection cables associated with the project.

(c) Detailed proposals demonstrating how it will be possible for Irish Water to access, maintain and without difficulty replace Irish Water assets in the locations beneath the 110kV underground cables in the future "Should the Board have any queries in respect of the documentation, please contact the undersigned.

EirGrid has been in proactive and positive engagement with Irish Water regarding the envisaged interface and interaction of the proposed transmission infrastructure development with existing and planned water infrastructure, and such engagement will continue as the project develops.

The submission notes that ongoing engagement is necessary, and this is acknowledged and welcomed by EirGrid. Notwithstanding the request made and for which details are provided, EirGrid is satisfied that it can comply with any requirements set out by Irish Water by way of condition(s) of Approval relating to post-consent agreement of matters of detailed design and methodology.

As referenced in RFI 9, EirGrid have standard drawings for crossing above and below of third-party services. EirGrid accepts that there may arise specific and detailed design issues of a technical or engineering nature in respect of the 110kV underground cable crossing Irish Waters assets. In this regard, EirGrid are of the view that these are matters that are best addressed as part of post-consent engagement between the developer, Irish Water and the planning authority regarding the detailed design of crossing Irish water assets. This will also include for the maintenance and replacement of Irish Water assets. EirGrid respectfully suggests that this can best be dealt with by the Board by way of any appropriate Condition of Approval, and confirms it is willing to abide by any such condition.

Conclusion:

Having regard to the Further Information Request, EirGrid is entirely satisfied that the proposed development is in accordance with governing national, regional and local planning policy.

EirGrid is also satisfied that the application is robust and comprehensive, and that its submission follows an extensive and appropriate process of project development, incorporating public, landowner and stakeholder consultation and engagement that informed the consideration of alternatives, and has resulted in the project proposal now before the Board. Such engagement has in particular included TII, as well as Irish Water.

EirGrid notes all submissions made. It is also noteworthy that there are no third-party submissions from private residents or groups before the Board – this is notable on a Strategic Infrastructure Development project of approximately 59 kilometres. While outside the scope of this application process, EirGrid will continue to seek to engage with stakeholders, communities and landowners to address and resolve concerns raised both to EirGrid in pre-application engagement, and to the Board by way of written submissions.

EirGrid reiterates that significant consideration has been given to alternative options for the routing of the proposed cable in this area, with the option within the public road - and along the national road for a portion of its extent, being identified as the Best Performing Option against a variety of criteria. This is comprehensively and transparently documented. It is also documented how alternative local routes were preferred to a portion of the N26 National Road, following engagement with TII.

Overall, EirGrid remains convinced that the proposed development is the optimum solution for the delivery of the North Connacht Project and is fully in accordance with good planning practice, and the principles of proper planning and sustainable development.

EirGrid therefore requests the Board to Grant Approval for the proposed development and confirms its willingness to abide by any Conditions of Approval as may be deemed appropriate by the Board, particularly having regard to the submissions of Prescribed Bodies and recommended conditions contained therein.

Given the importance of this transmission infrastructure project, EirGrid requests the Board to consider this response at its earliest convenience.

Should you have any further queries in respect of this submission please contact the undersigned.

Yours faithfully,

Tomás Bradley
Senior Lead Planner
tomas.bradley@eirgrid.com

ENCL:

1. TII Submission of 6th September 2021in respect of ABP Ref: VA04.310798 Celtic Interconnector
2. North Connacht 110 kV Project Autumn 2021 Update Brochure (EirGrid, 2021)
3. Road Safety Impact Assessment
4. TII, ESB, EirGrid Protocol (October 2020)
5. 110 kV Cable - Typical Trench Cross Section for Ducts in Flat Formation (229100591-MMD-01-XX-DR-E-2105)
6. Cross-section of typical joint bay installation (XDC-CBL-STND-H-012 Sheet 002)
7. Cross-section of typical joint bay installation (XDC-CBL-STND-H-012 Sheet 007)
8. Typical plan of joint bay installation (229100591-MMD-01-XX-DR-E-2101)
9. 110 kV Cable – Reduced Depth for Crossing Over Service (XDC-CBL-STND-H-002 Sheet 002)
10. 110 kV Cable – Crossing Below a Service (XDC-CBL-STND-H-004 Sheet 002)

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ENCL 2 North Connacht 110 kV Project Autumn 2021 Update Brochure (EirGrid, 2021)

ENCL 3 Road Safety Impact Assessment

ENCL 4 TII, ESB, EirGrid Protocol (October 2020)

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