

TECHNICAL NOTE 3

Project: Kellystown Wind Farm	Ref:	Rev0
Section: Feasibility Tech Note UGC Route from Drybridge to R-132	Job No:	05-949
	Date:	04.06.25
Made By: CK	Checked By: DB	Sheet No: 1 of 13

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Instruction:

Technical Lead:	Damien Browne - TLI Group
Date of Writing:	04.06.25
Scope of Note:	Kellystown Wind Farm – Feasibility Technical Note for Underground Cable (UGC) Route from Drybridge to R-132
Documents & Data Issued for Review:	04.06.25

Overview:

TLI Group (the Consultant) were engaged by EDF Renewables c/o Jenning’s O Donovan (the Client) to complete the detailed design of the 38kV grid connection from the appointed grid connection point at Drybridge 110kV Substation to the proposed Kellystown Wind Farm in Kellystown, Co Louth.

Drybridge 110kV Substation is located 3km west of the M1 motorway and Drogheda town center. The proposed Kellystown Windfarm is located 7km north of Drogheda town center and east of the M1 motorway. Therefore, one of the key constraints and considerations, facing the grid route designer is to establish the optimum point for the grid route to cross the M1.

A feasibility study (Ref: 05949-R01-01 Grid Route Feasibility Report) was carried out which identified Route Option A in figure 1 below, shown in green, as the preferred route. This underground cable route (UGC) route option heads east along the Slane Road, where a HDD under the M1 motorway underpass on the Slane road would be employed. The UGC would then continue along the Slane Road L-20000 and onto Barrack Lane(L-95109).

Route Option A was discussed with Louth County Council(LCC) at a meeting in February 2024. LCC advised that a high density of existing and planned infrastructure, water, telecoms and power, are present in the Slane Road making Route Option A challenging. In order to investigate this further, the Client engaged the Consultant to carry out a Ground Penetrating Radar (GPR) survey of the Slane Road.

A second option, Route Option B was put forward by Louth County Council, shown in figure 1 below , in orange which exited Drybridge 110kV substation turning west and then north, along the L-20000, L-2322, N-51 and R-168. This option would employ a HDD crossing under the M1 at a point north of junction 10, onto the L-63324.

The **remit** of this technical note is as follows:

- 1. Examine the results of the GPR Survey of Slane Road and the implications for Route Option A.**
- 2. Feasibility analysis of Route Option B from Drybridge 110kV Substation to R-132.**

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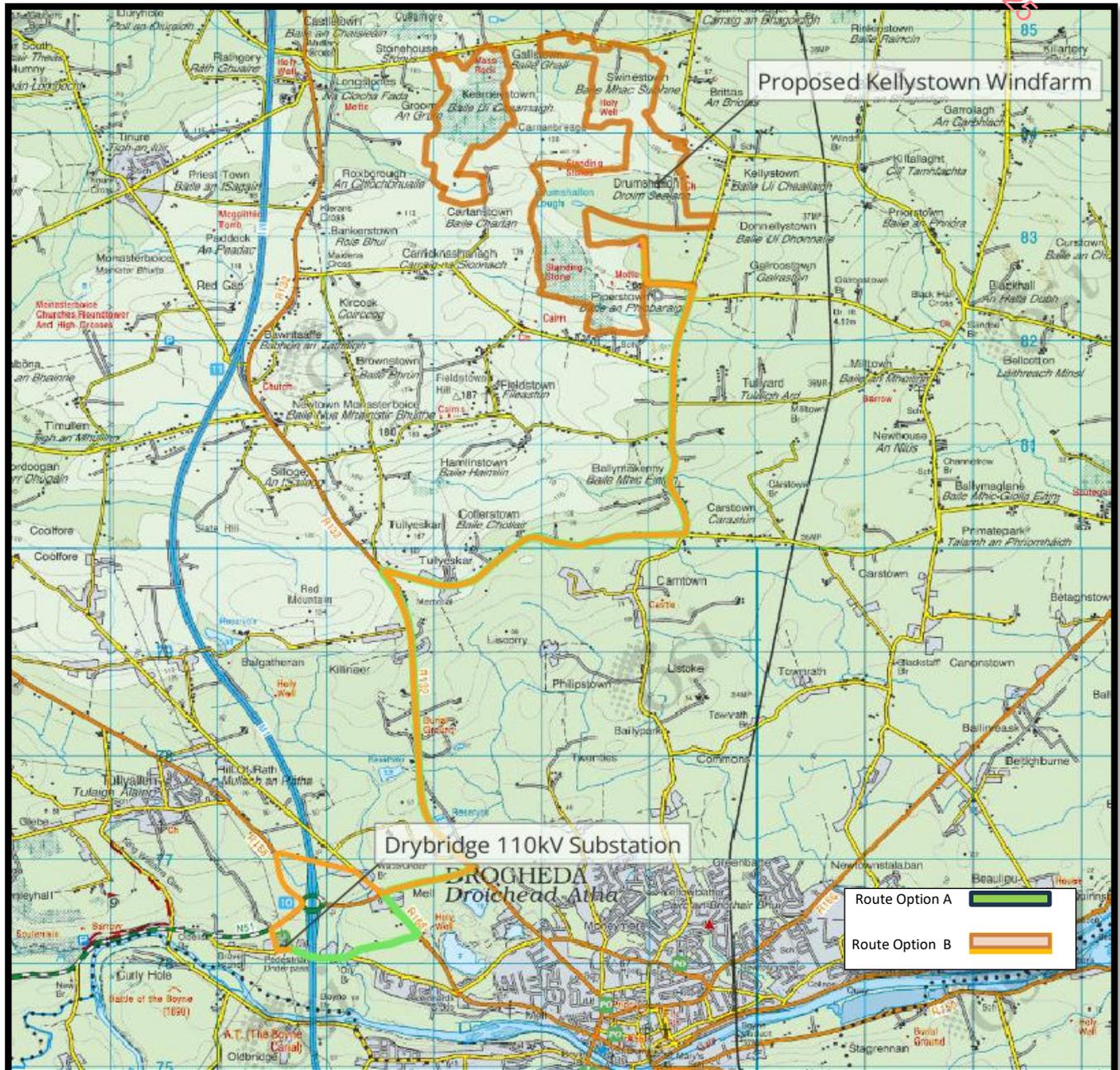


Figure 1 Route Options A & B, showing different crossings of M1 motorway

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1. Examine the Results of the GPR Survey of Slane Road and implications for Route Option A.

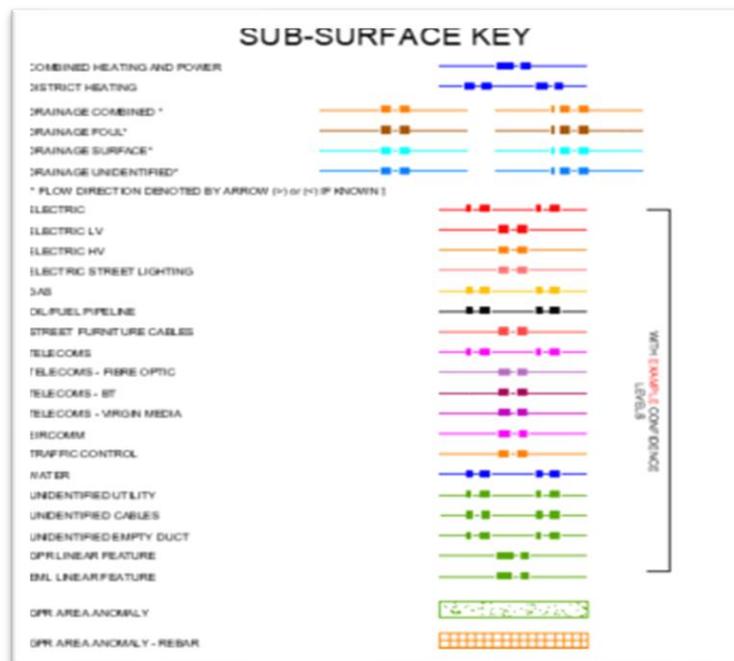
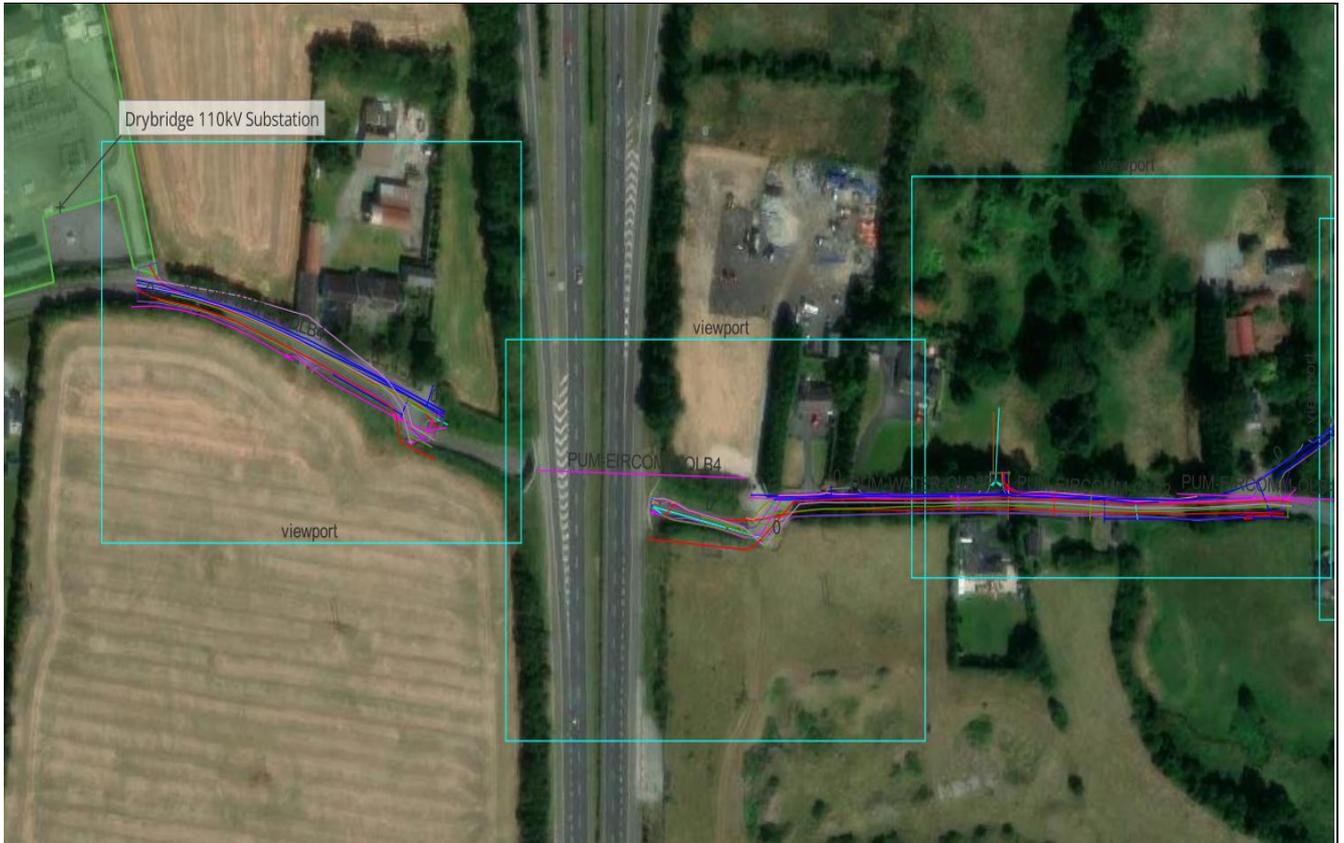


Figure 2 Snap shot of GPR Survey Of Slane Road with Sub-Surface Key

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In order to determine the feasibility of Route Option A, as shown in figure 1 above, a Ground Penetrating Radar(GPR) survey was carried out of the Slane Road. The GPR Survey was carried out on a 1.2 km stretch of road from Drybridge 110kV Substation east to the M1 motorway underpass on the L-20000. East of the M1, the survey continued along the L-95109, Slane Road and Barrack Lane, to the R168.

A snap shot of the GPR results are shown in figure 2 above. It can clearly be seen that the road is heavily populated with existing services including water, telecoms and two LV-MV cables. A detailed desktop analysis of each section of the route, utilising the GPR survey results, was carried out to determine if an additional 38kV cable could be accommodated while maintaining the clearance distances required between services. It was found that no space was available for an additional 38kV cable on the Slane Road.

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2. Feasibility of Route Option B:



Figure 3 Route Option B, from Drybridge Substation to R132

A desktop analysis was carried out followed by an on the ground survey to ascertain the constraints present in this section of route. This route option exits Drybridge 110kV Substation and veers west along the L-20000 which bounds Drybridge 110kV Substation for 100m. There is existing 150mm uPVC water services in this road and clearance distances must be maintained. The underground cable (UGC) then turns northwest onto the L-2322 which is approximately 6m in width with 150mm uPVC water services present.

After approximately 200m the UGC turns northeast onto the N51. This is a busy carriageway measuring 7m in width. Utilities mapping show that there are no existing water, gas or power services in this section of the N51. The UGC travels for 350m along the N-51 before reaching the roundabout at the M1, junction 10. The UGC skirts close to the road edge on the roundabout and exits northwest onto the R-168.

Engagement with Transport Infrastructure Ireland (TII) as well as Louth County Council will be necessary for sections of route on the N-51 and in the roundabout of the M1 Junction 10. We understand from previous experience that TII will endeavour to consider and respond to development proposals referred to it given its status and duties as a statutory consultee under the Planning Acts. We understand that the approach adopted

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by TII in making such submissions or comments will seek to uphold official policy and guidelines as outlined in the Section 28 Ministerial Guidelines 'Spatial Planning and National Roads Guidelines for Planning Authorities' (DoECLG, 2012). Also, we have regard to relevant guidance given by TII at www.TII.ie.

National Strategic Outcome 2 of the National Planning Framework includes the objective to maintain the strategic capacity and safety of the national road network. In addition, Chapter 7 'Enhanced Regional Accessibility' of the National Development Plan, 2021 – 2030, sets out the key sectoral priority of maintaining Ireland's existing national road network to a robust and safe standard for users. This requirement is further reflected in the publication of the National Investment Framework for Transport in Ireland and also the existing Statutory Section 28 Ministerial Guidance; 'Spatial Planning and National Roads Guidelines for Planning Authorities' (DoECLG, 2012).

We understand from previous experience that with respect to grid connection routing proposals generally, TII provides the following observations:

- Grid connection and cable routing proposals should be developed to safeguard proposed road schemes as TII will not be responsible for costs associated with future relocation of cable routing where proposals are catered for in an area of a proposed national road scheme. In that regard, consideration should be given to routing options, use of existing crossings, depth of cable laying, etc. Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to locations of existing and future national road schemes.

The above applicable guidance and policy will be adhered to in the development of detailed designs for the project. A topological survey of the M1 Junction 10 roundabout has been carried out in order to identify an optimal route for the UGC through the roundabout to minimise disruption to public. A detailed drawing was compiled, Drawing Ref: 05949-DR-001, of the trajectory of the UGC through the M1 Junction 10 roundabout. A detailed traffic management plan shall be developed for N51 and M1 Junction 10 roundabout to minimise the impact of construction work in this heavily trafficked section of route. A statement of compliance with government and industry specifications is included in the Construction Methodology (Document Ref: 05949-R01-02, Chapter 18) submitted with this planning application. Survey images of the route are shown in figure 4 below.

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Entrance of Drybridge
110kV Substation



L-3222



Turn East onto N51



Roundabout N51/R-
168

Figure 4 Survey Images from Drybridge Substation to Junction 10 Roundabout

The UGC continues to traverse the R-168 for 450m before turning east onto a disused gated section of road. This section of road with registered folios, LH20541F and LH23973F, are under the ownership of Meath County Council. Landowner approval will be necessary. Both gas and water ducts are present here and clearance distances must be maintained. A HDD will be employed for the UGC to cross under the M1 and onto the L-63324. It is proposed to launch the HDD west of the M1 motorway and position the receptor pit on the L-63324. Landowner consent from Meath County Council must be obtained.

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The L-63324 is a cul-de-sac road 5m in width. There is existing gas and water services with ribbon development on both sides of the road. The UGC continues for 350m along the L-63324. A T-junction is reached where UGC turns south east onto the L-6332.

An old stone-built bridge is encountered on the L-6332, known as Water Under Bridge. It is proposed to cross under this using HDD. The UGC encounters a roundabout at Mell and skirts eastward onto the R-166. The R-166 is wide at 8m. The UGC continues eastward on the R-166 for 800m before reaching another roundabout at Moneymore, where the UGC tacks northward onto the R132. Survey images of the route are shown in figure 5 below.



Private Lane



Cul de Sac on L-63324



Water Under Bridge



R 166

Figure 5 Survey Images from Junction10 Roundabout to R132

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An alternative route, for a section of this route was investigated. The route from the junction of the L-63324/ L-6322 ,where the UGC would veer north along the L-6332 and east on Chapel Lane, through IDA lands was investigated. This analysis is shown Technical Note 2(Document Ref: 05949-TN02-00) attached in appendix 1 below. However, this was not progressed as approval was not granted by IDA to trench through their lands.

3. Underground Cable Design:

The underground cable sections of the proposed 38kV grid connection have been designed in accordance with the Standard Specification for ESB 38 KV Networks Ducting/Cabling.

Cable Trench in Local Road:

The cable trench design for installation in the local road section is shown in figure 6 below and can be found in Drawing No. 05949-DR-110, this design will apply to the UGC section to be installed in the local road section. It should be noted that all works carried out in the sections of UGC in regional public roads will need to be carried out in conjunction with Louth Co. Council and Meath Co. Council. The current road build-up and reinstatement requirements will need to be confirmed by Louth Co. Council prior to construction.

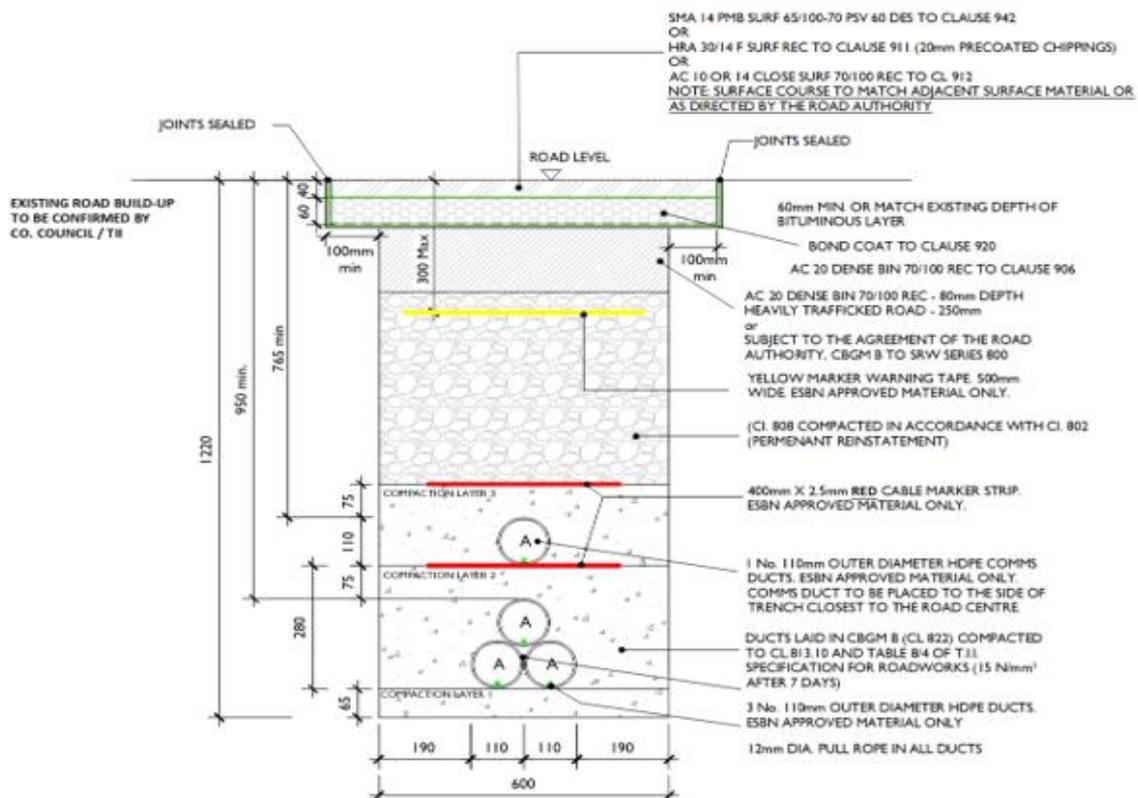


Figure 6 – Cable Trench Design in Regional Road

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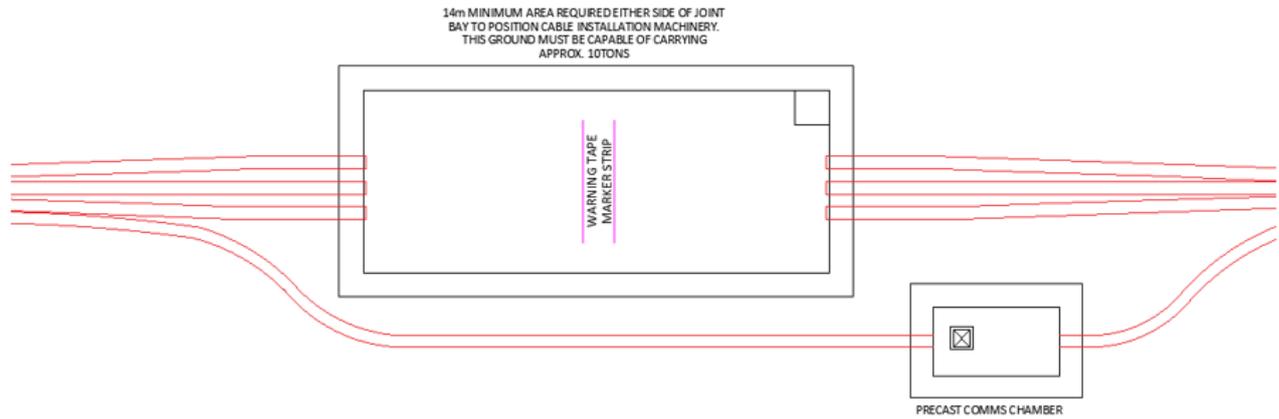


Figure 8 - Typical 38kV Joint Bay Arrangement

Service Crossing Detail:

Sections of existing underground services may be present, if a trench is to be excavated, new ducting and cabling will be installed along the new alignment and connected to the network on either end. The trench will be backfilled with suitable material to the required specification. The works will be carried out in accordance with the utility standards. The Service Crossing detail design that is to be incorporated is shown in figure 9 and the full crossing detail can be found in Drawing 05949-DR-116.

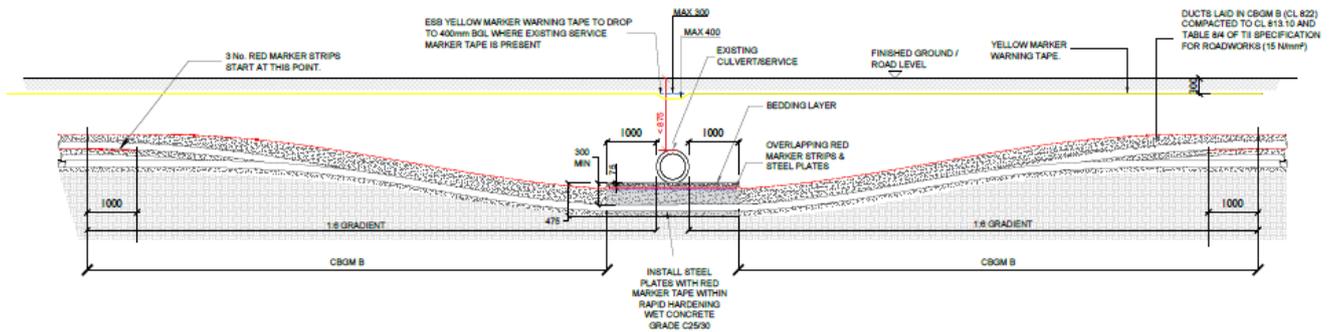


Figure 9 - Service Crossing Detail

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HDD Crossing:

At the Bridge known as Water Under Bridge a HDD crossing will be required. A typical HDD crossing can be seen in figure 10 below. A similar approach is adopted at Water Under Bridge as shown in detailed drawing ref :05949-DR-120.

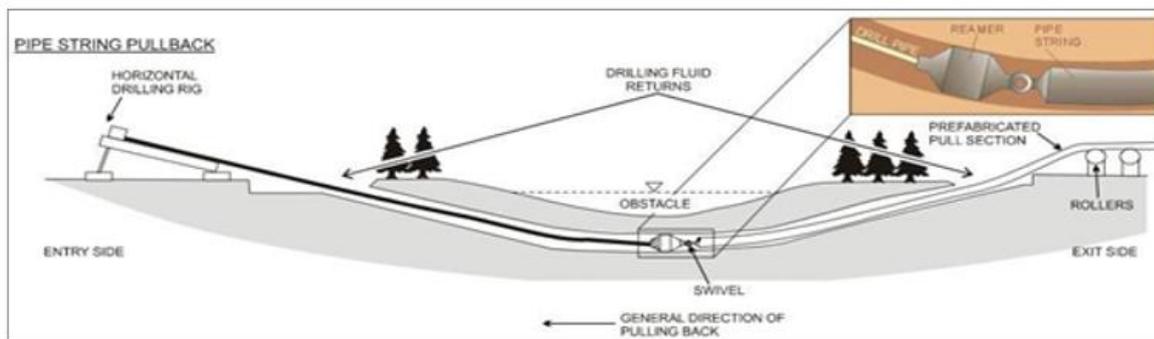


Figure 10 – Hdd Crossing

4. Conclusions:

The following conclusions were reached on the items under analysis

1. **GPR Survey of Slane Road. Results and Analysis and implications for Route Option A.**

The GPR survey has revealed that because of the abundance and complexity of existing services on the Slane Road, it does not present a viable solution for trenching the 38kV cable for Kellystown Windfarm Grid Connection. Therefore, Route Option A is not a feasible solution.

2. **Feasibility analysis of Route Option B from Drybridge 110kV Substation to R-132.**

This route option has significant constraints with a bridge which will require HDD, narrow roads, trenching on national roads which will require engagement with TII. However, none of the constraints are unsurmountable. Therefore, it may be concluded Route Option B represents a viable route option. This is subject to approval by the relevant landowners and approval by Louth County Council, Meath County Council and TII.

Therefore, **Route Option B** is the **most technically feasible** solution and the **preferred option** to proceed to the next stage.

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Appendix 1 Chapel Lane Screening Tech Note

[05949-TN02-00 38kV Grid Design Screening of Chapel Lane Alternative](#)