

## APPENDIX 3 – Horizontal Directional Drilling (HDD) Trenchless Solution

This appendix is in support of National Grid Electricity Transmission's (NGET) response to questions 3 and 4 of Ofgem's consultation on the BTNO Project Assessment (PA) with respect to disallowing the request for a Deferred Risk Uncertainty Re-opener for HDD and being minded-to provide a funding route via the ASTI Cost and Output Adjusting Event (COAE) mechanism (at the 5% threshold), based on justification provided in paragraph 3.31 of the consultation.

### Use of HDD for HV Cable Installation: Consumer Rationale, Risk Profile, and Regulatory Ask

HDD is a trenchless construction method used to install underground pipes, cables and conduits along a guided shallow arc from surface level. It is ideal for crossing obstacles such as rivers and railways with minimal disruption and environmental benefits (in comparison to trench construction). Although HDD involves a greater level of uncertainty regarding construction and ground conditions, it proves to be a more cost-effective option compared to other methods, such as micro-tunnelling.

NGET believes that HDD is the most appropriate first choice method to deliver the High Voltage (HV) cable installation at the selected river and railway crossings within BTNO. HDD offers consumers the best value, least disruption, and fastest delivery.

The decision to use HDD was made explicitly to benefit consumers, not to lower NGET's risk profile but it carries inherent execution risk including geotechnical risks associated with ground variability, steering challenges, fluid losses, and ground movement management. These risks are largely outside the control of NGET, even with comprehensive surveying and planning.

### Cost implications

Should these risks materialise to such a level that HDD cannot be completed, the current proposal from Ofgem of a **5% ASTI COAE threshold** would require NGET to absorb approximately **£32 million** of overspend before an application under the ASTI COAE mechanism can be submitted. Given micro-tunnelling is estimated at over [REDACTED], should it be deployed across all 4 locations, this directly exposes NGET to these costs as we would strive to keep micro-tunnelling cost as low as possible and unlikely breach the COAE threshold at 5%.

In our PA submission we requested a re-opener, with a 0% threshold, in the event that the HDD cannot be completed. We fully accept the need for cost and efficiency challenge and that a COAE threshold needs to sufficiently incentivise NGET to make HDD work. However, it should not create a position where NGET is penalised disproportionately for doing the right thing for consumers by choosing a lower cost and quicker technique of HDD over a higher cost but more certain micro-tunnelling solution.

### Proposed regulatory treatment

As a result, NGET requests that Ofgem sets a **HDD specific COAE threshold no higher than 1% (£6.4m)**. In our view this represents a reasonable incentive for NGET to endeavour to ensure HDD is successful and avoids unfair penalties for proceeding with a solution that represents the lowest cost

and is the least disruptive solution for consumers. A 1% threshold would allow NGET to trigger a COAE if the HDD risks that concern us materialise, whilst maintaining our incentives to deliver efficiently.

If Ofgem does not provide this protection, NGET will need to revise the risk allowance requested for HDD. The allowance included in the PA submission was based on the assumption that a 0% re-opener would be granted and therefore certain risks were excluded. If Ofgem does not agree to the  $\leq 1\%$  COAE approach, we will be required to update the associated risk funding.

During this consultation period, we have sourced data from industry which indicates that, should HDD fail at all locations and we need to revert to micro-tunnelling, the associated cost exposure exceeds [REDACTED], which is likely to be below the 5% COAE threshold. Applying indicative analysis suggests this would translate into a required uplift to the risk pot of ~£10m or more. To quantify this fully and accurately, we would need to re-run the QCRA, which we have not had sufficient time to complete since receiving the cost insight.

It is our view that applying a  $\leq 1\%$  COAE threshold relating to the occurrence of qualifying HDD related risks is a fair outcome and will ensure NGET is incentivised to make HDD work and deliver the lowest cost and quickest solution for consumers. At the same time, NGET will not be disproportionately exposed while acting in consumers' best interests. It also importantly sets a precedent to encourage TOs to select **efficient delivery methods**, which may not always be lowest risk option.

Should Ofgem agree, NGET requests that the final determination and subsequent licence modification confirms that any HDD COAE qualifying risk would be subject to this  $\leq 1\%$  COAE threshold.

## **Annex 1 – Supporting rationale for HDD and appropriate COAE threshold - why HDD is in consumers' interests**

HDD minimises disruption and protects critical assets as it allows the cable route to pass beneath the river and railways without disturbing existing surface structures. This avoids:

- River diversions
- Rail possessions and associated compensation costs
- Road traffic management and stakeholder disruption
- Significant environmental impact in areas of high environmental sensitivity

Avoiding these structures translates directly into lower costs and faster delivery all contributing to the achievement of the intent of the ASTI framework by speeding up delivery and mitigating constraint cost impact borne by consumers.

This is **supported by Independent Technical Validation**. Both the BTNO Front End Engineering Design (FEED) and the independent assessment by Dr Sauer & Partners<sup>1</sup> identified HDD as the preferred trenchless crossing method at these locations. Their findings concluded that HDD

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[REDACTED]

provided lower overall cost compared with alternative techniques and a shorter programme duration. Despite this, the report also found that HDD is on the limits of what is possible and carries inherent execution risk including geotechnical risks, including material variability, steering challenges, fluid losses, and ground movement management. As stated on page 36 of the Dr Sauer & Partner's report, *'It is not considered that the HDD solution is completely unfeasible, but multiple mitigations will be required, potentially making an alternative approach more suitable'*. In light of these issues, NGET is seeking a balanced mitigation solution.

## **Impact of adopting an alternative method should HDD be unsuccessful**

### **Micro-tunnelling**

In the event of the HDD technique being unable to complete the HV cable installation, NGET would have to revert to an alternative solution. Micro-tunnelling would be the logical alternative because it offers enhanced likelihood of success in challenging soil conditions including below the water table. However, its costs are significantly higher than those of HDD.

Making this change would result in months of delay for re-design, re-submission to the local councils to secure DCO requirements discharge approval and additional enablement works. The estimated impact on the cable installation programme would be >12 months. We have also reviewed benchmarked costs for this scenario and completing the trenchless crossings using micro-tunnelling indicate costs in the region of [REDACTED].

This combination of higher capital cost and longer programme duration coupled with greater environmental and social disruption and a higher risk of planning and permitting delays through revised secondary consenting activity all contribute to a negative impact on consumer outcomes.