

## **Fibre Optic Communication Cable Water Crossings**

SSEN Transmission are proposing to install an underground fibre optic communications cable which will be routed between the consented Lairg 132 kV Wind Farm Substation and a joint box on the existing Dalchork-Loch Buidhe 132 kV overhead line (OHL) at Tower 19 via a cable sealing end compound at Tower 31. The fibre communications cable will be installed using a 'Mole Plough' with the depth of the cable ducts assumed to be approximately 1 m. The cable route crosses three watercourses as seen in the Site Layout Plan accompanying this application. The Highland Council have requested further information as to how these water crossings will be achieved which is provided within this document.

Please note, the size and extent of each watercourse will need to be confirmed via a site visit. The design for each watercourse crossing will be carried out by the Contractor at detailed design stage but at this time, we can provide the following detail in relation to potential options for the fibre-optic ducting crossing a watercourse.

## **Option1: Fiber-Optic Duct Fixed to the Underside of Existing Bridge Structure**

For the water crossing indicated on sheet 4 on the accompanying Site Layout Plan, using aerial imagery it appears there is a bridge structure in place at this watercourse crossing, see image below.



Where there are existing structures across the watercourses, we would anticipate that the duct (110mm diameter or less) would be connected to the lower side of the bridge structure, using a system of brackets or cleats. This detail would need to be confirmed by the asset owner as acceptable, before installing the duct.

## **Option2: Fibre-Optic Duct in installed in Access Track**

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If it were possible, the fibre-optic duct could be installed within the existing access track. This option would need to be confirmed with a survey to confirm the on-site conditions are suitable.



## **Option3: Fibre-Optic Duct in installed in Bed of Watercourse**

If the above options were not suitable or viable the fibre-optic duct could also be installed in the bed of the watercourse.

Based on the size and extent of the watercourse this installation could be done via a trench across the watercourse or a HDD solution might be more appropriate. This would depend on ground conditions around the crossing. Both solutions indicated in sections below. Note this detail is very high level at this stage.







Please note that a final design will be based on a site survey of the watercourses at each proposed crossing point. Any crossing proposal can be submitted to The Highland Council for information in advance of any planned works, if requested.

At all stages, the guidance offered in the SEPA document '*Engineering in the water environment: good practice guide'* will be followed as to minimise impact on the watercourse system and minimise risk to the surrounding environment.