

The Highland Council, Cairngorms National Park Authority & Scottish Natural Heritage Undergrounding of Extra High Voltage Transmission Lines

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Executive Summary

Introduction

This report has been commissioned by The Highland Council, Cairngorms National Park Authority and Scottish Natural Heritage to provide advice on the technical, environmental and economic issues regarding the undergrounding of extra high voltage (EHV) electricity transmission circuits with particular consideration to the environments typical of the Scottish Highlands. The objective of the report is to provide information enabling readers to be objectively briefed on the issues associated with undergrounding with reference to the proposed Beauly-Denny transmission upgrade.

Whilst specifically addressing the issues surrounding the proposed Beauly - Denny transmission line, the document provides information which will also be applicable to other 400kV transmission schemes planned for The Highlands area.

The study reviews current transmission technology and considers the technical and environmental issues surrounding their installation and operation. Earlier reports on undergrounding (referred to in this report as the 'ICF' and 'EC' reports) are appraised as part of this study and relevant recent worldwide EHV underground cable projects have been identified and reported on.

Indicative capital costs of overhead lines and underground cables were researched and calculated and a life-cycle cost model created using these capital costs and operational parameters obtained from a variety of sources. The capital costs and life-cycle cost calculations in this report are all based on parameters typical of those proposed for the Beauly-Denny line.

The generic environmental impacts of undergrounding transmission circuits is studied within this report and particular attention made to ground reinstatement concerns. Two case study route sections, typical of upland and of lowland environments, have been considered with regard to the technical, environmental and economic issues of using both overhead and underground technology in these environments.