

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

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Appendix 9 – Summary of Reference 29 – Bird Strike Issues

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Review of L B Muirhead (1991) - The ornithological implications of power line construction on Teesside.

Birds may either be killed on power lines by electrocution or by striking the cables. The likelihood of a bird hitting a power line is related to the bird's size, manoeuvrability and the habitat which it uses. On a regional or local scale the habitat pattern, landscape features, and the nature of the surrounding areas are probably of greatest influence.

According to Muirhead, who is quoting earlier work in this area dating from 1972, there is some evidence that birds respond to the electric field around the conductor. Observations suggest that birds will fly between live conductors up to 66KV. At 132 KV any small birds will fly between them and at 275 KV and above no birds will approach the lines. Based on this, it is suggested that birds are at a greatest risk during the construction phase when no current is running through the cables and they are unable to detect the conductors. This risk is increased at night or in poor weather conditions.

The report notes that particular hazards to birds are overhead lines built near estuaries, between bodies of water, and in river valleys. This is due to the fact that they may cross the flight lines of water birds (e.g. waders, wildfowl) between their feeding and roosting sites. Work carried out in the Clyde River Valley showed that power lines running close to flooded fields were causing casualties of Mute and Whooper Swans in particular, as the lines were sited across a regularly used flight path between water bodies.

Muirhead notes that some level of mitigation can be achieved through design adaptations, and it is noted that earthing wires are a greater hazard than conductors. The report also suggests that problems arise from insulators mounted at the top of crossarms, transformers in pole-mounted arrangements and steel crossarms. Mitigation might include using more hanging insulators, making crossarms of non-conductive material or insulating them and / or mounting of 'bird protection on spark gaps. In respect of the latter observations, it is inferred that they aimed at distribution voltage OHLs as the comments made would not be relevant to OHL design and construction at 400kV (which use "hanging insulators" and which do not incorporate pole-mounted transformer arrangements).