

Substitution of 110-kV-Powerline by Underground Cable

- an extraordinary compensation measure at the Eider estuary -

Background

TenneT TSO GmbH is constructing a high-capacity 380-kV-powerline along the west coast of Schleswig-Holstein with a total length of 140 km. This has a severe impact on the ecosystem, especially for the avifauna as this region marks a major bird migration zone (Fig. 1).

Bird markers, nowadays a standard mitigation measure, are planned to be installed along the new 380-kV-West Coastline as it is a proven technique effectively reducing collision risk for birds. These black and white deflectors are subsequently mounted to the ground cable (Fig. 6).

In order to compensate the remaining conflicts TenneT is planning an additional functional compensation measure by partly substituting an existing powerline with an underground cable within a high stress-zone for migrating birds.

This functional compensation measure is situated at the river Eider and represents a major migration channel due to nearby Wadden Sea in this area (Fig. 2). The goal of this compensation measure is to substantially reduce the number of bird disturbances and fatalities in this zone (Fig.4). The underground cable is planned to cross the river over a distance of 1.8 km near the town of Tönning (Fig. 3).

Permit within planning approval process was given in March 2017

Avifauna & Landscape

- Highly frequented by resting and breeding birds supported by nearby Wadden Sea as resting area for millions of migrant birds
- Numerous EU-protected bird and conservation areas: Sites of Community Importance (SCI), Special Protected Areas (SPA)
- High importance for tourism and recreation

Conception & Benefits

Impacts of ecosystem caused by the construction of high-capacity powerline are unavoidable despite substantial prevention measures (e.g. scare effects)

Hence functional compensation by creating compensation areas is not possible the idea is to discharge and upgrade potential higher-rated but stressed areas

- Removal of powerline and 3 poles within Eider river estuary (Fig. 4)
- Place underground cable below Eider estuary over a distance of 1.8 km
- Resulting in substantial stress relief for avifauna and upgrading landscape scenery



Figure 5: Carcass of Barnacle Goose found near Heide caused by collision with powerline. Photography © K. Jödicke (BIA)

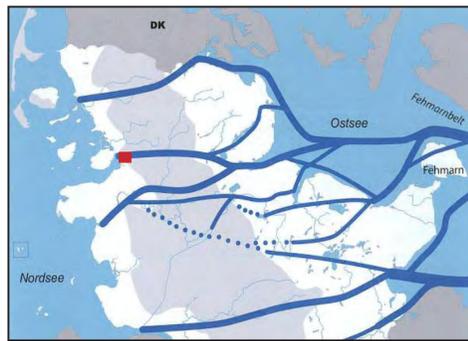


Figure 1: Main migration channels in Schleswig-Holstein. Red box marks area of compensation measure

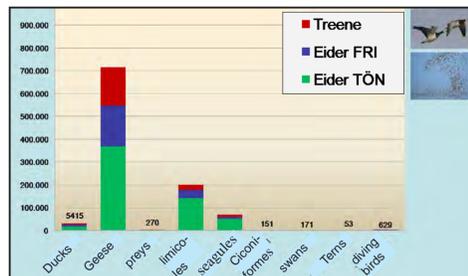


Figure 2: Bird counting results at 3 locations within Schleswig-Holstein showing highest counts at Eider estuary near Tönning. Locations are marked in overview map (Fig. 3)

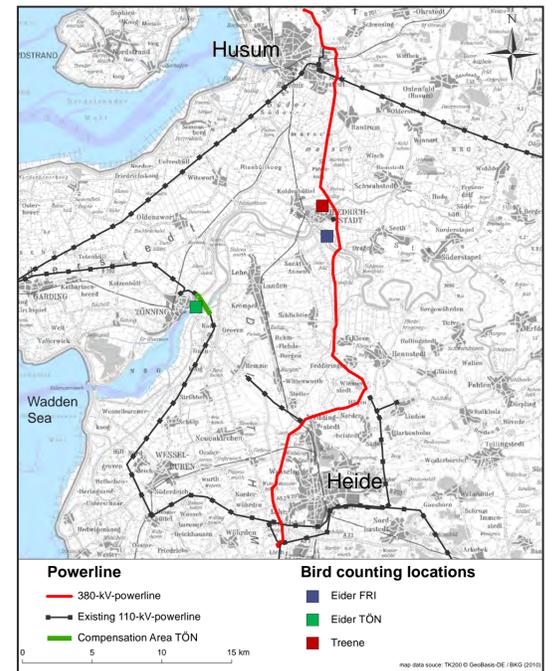


Figure 3: Overview map: Green line marks powerline compensation measure with underground cable substitution. Blue, green and red boxes reflect bird counting locations (see Fig. 2)

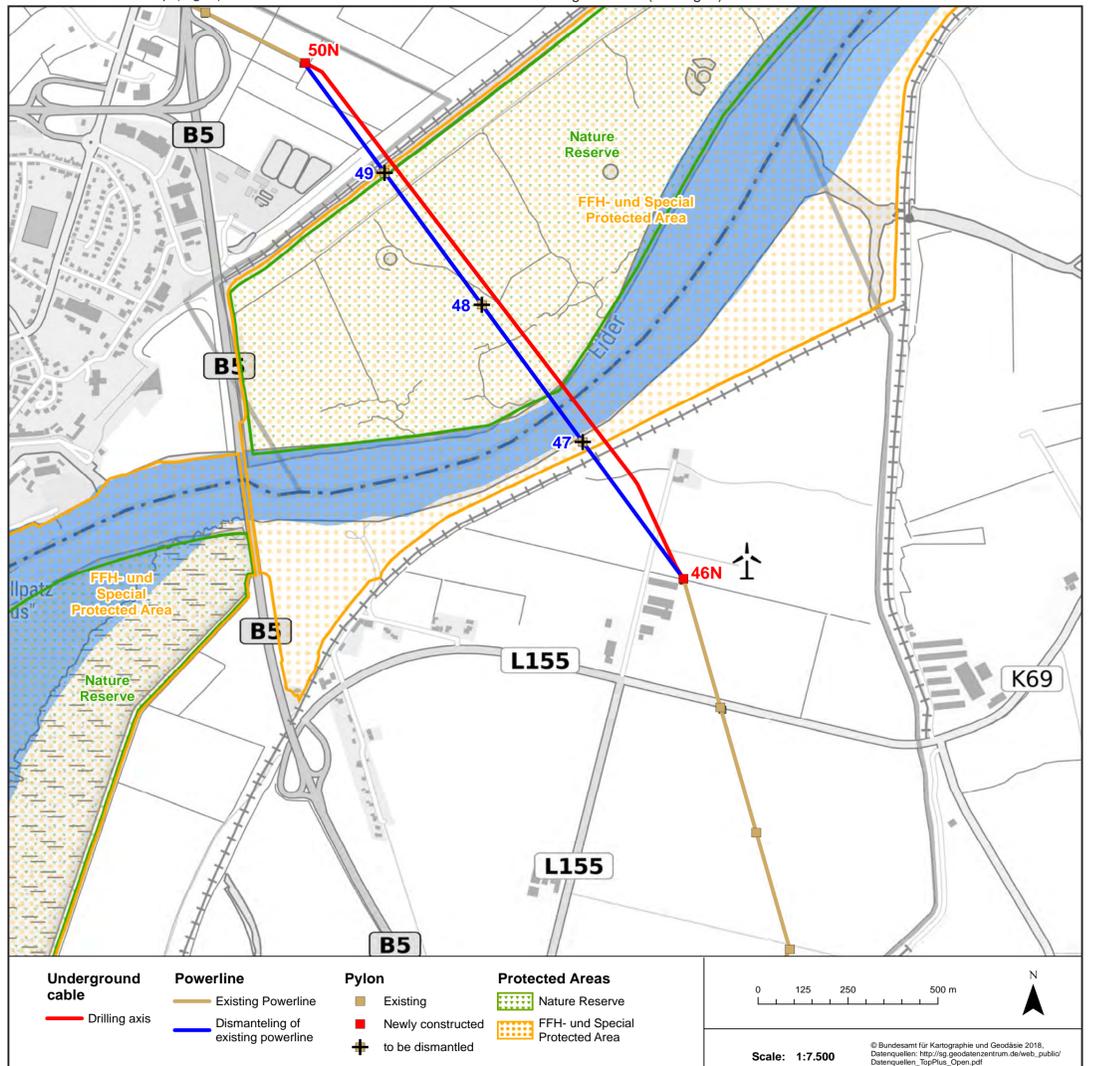


Figure 4: Overview of compensation measure and conservation areas at Eider river estuary near Tönning. Blue line marks high-voltage powerline, which will be replaced by underground cable (red line)



Figure 6: Bird markers are subsequently mounted onto ground cable. Distance between deflectors is roughly 25 m. Photography © S. Ehlers (BIA)