

MULBARTON PARISH COUNCIL

Offshore wind farm infrastructure

Discussion paper

The challenge of connecting the Round 3 offshore wind farms along the East Coast of England to the onshore transmission grid was recognised when the seabed leases were first issued. Studies soon found that the best results arise from north-to-south integration across the different wind farm zones, provided that the total capacity is more than 10.0GW.

This type of grid connection scheme is called integrated offshore transmission because it joins the offshore and onshore infrastructure into one highly efficient overall scheme. The transmission infrastructure is mostly offshore and is shared between the different projects.

The scheme was temporarily put on hold because Ofgem did not expect that 10.0GW of offshore wind farm capacity would be built, but the Hornsea Three project increased the expected total to 12.2GW. Norfolk Vanguard and Boreas then raised it further to 15.8GW and the East Anglia One North and Two projects will increase the total again to 17.5GW.

The 'Split DCO' approach keeps the offshore wind turbine approvals and moves most of the other infrastructure back offshore to re-establish integrated offshore transmission.

Figure 1 shows the benefits of this approach:

- Highly efficient energy transfer for Net Zero
- Costs are reduced by sharing infrastructure
- Offshore capacity strengthens the onshore grid
- Timescales are reduced by offshore construction
- Smaller substations and fewer landing points
- Less impact on coastal and marine wildlife.

This scheme requires new onshore substations at Peterhead and Canterbury North. The offshore link to Canterbury North enables the higher level of offshore wind energy to reach London and the south east, where it can be used to reduce CO₂ emissions.

Figure 2 shows what will happen if this is not done:

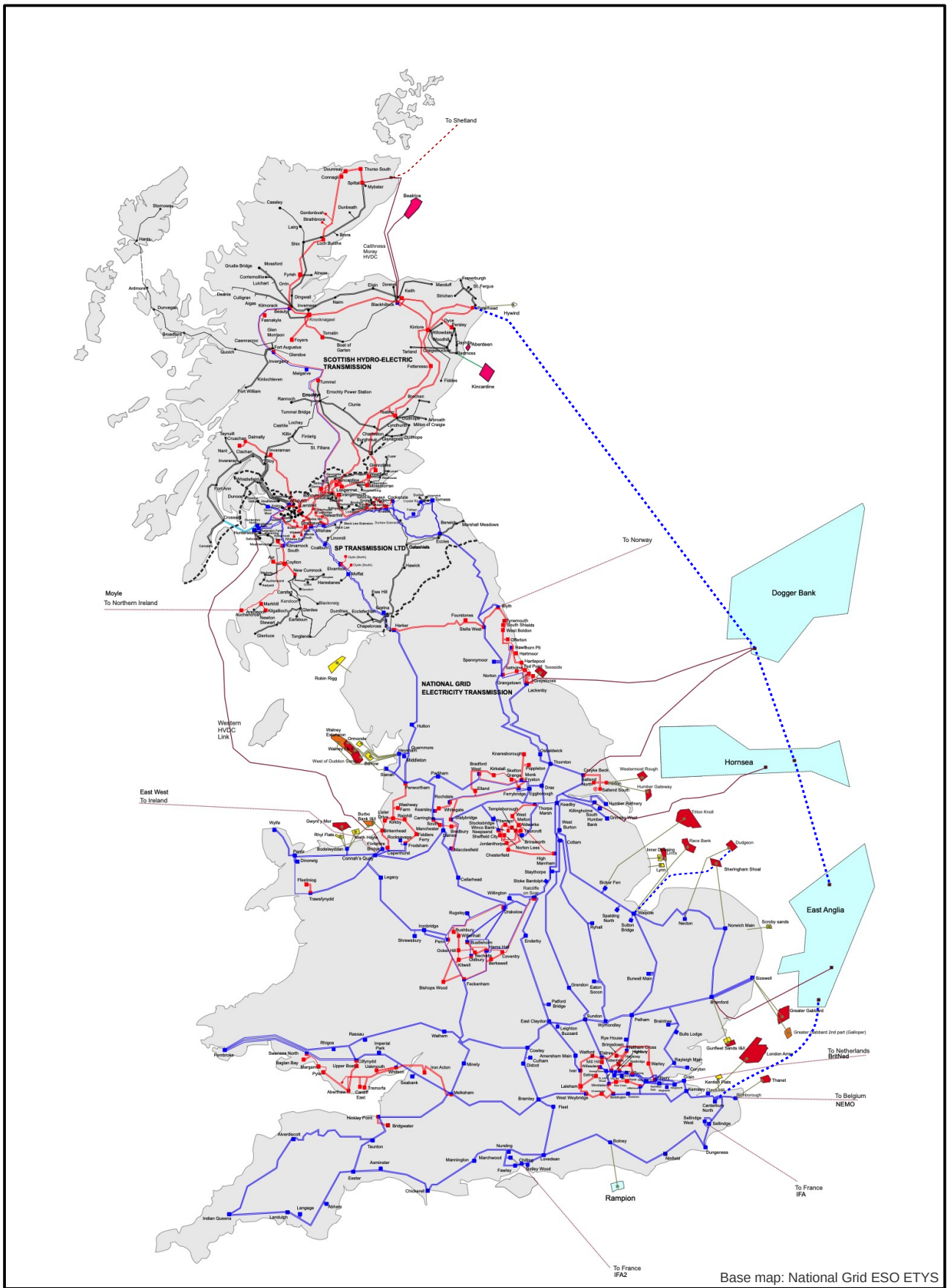
- Restricted energy transfers will slow down Net Zero
- Costs are increased by using stand-alone infrastructure
- The onshore grid needs new pylon routes and upgrades
- Longer timescales for planning approval and construction
- Larger substations, batteries, and more landing points
- More impact on coastal and marine wildlife.

Compared with Figure 1, this requires five additional landing points and new substations at Selby in Yorkshire, Necton and Swardston in Norfolk, and Friston and Sizewell in Suffolk.

4th March 2022

Disclaimer

This discussion paper has been produced on a best efforts basis without professional support and is for illustration purposes only. Details and interpretations may not be accurate and should not be relied upon. Please check with the relevant projects and authorities for the latest information.



Base map: National Grid ESO ETYS

Figure 1: Offshore transmission

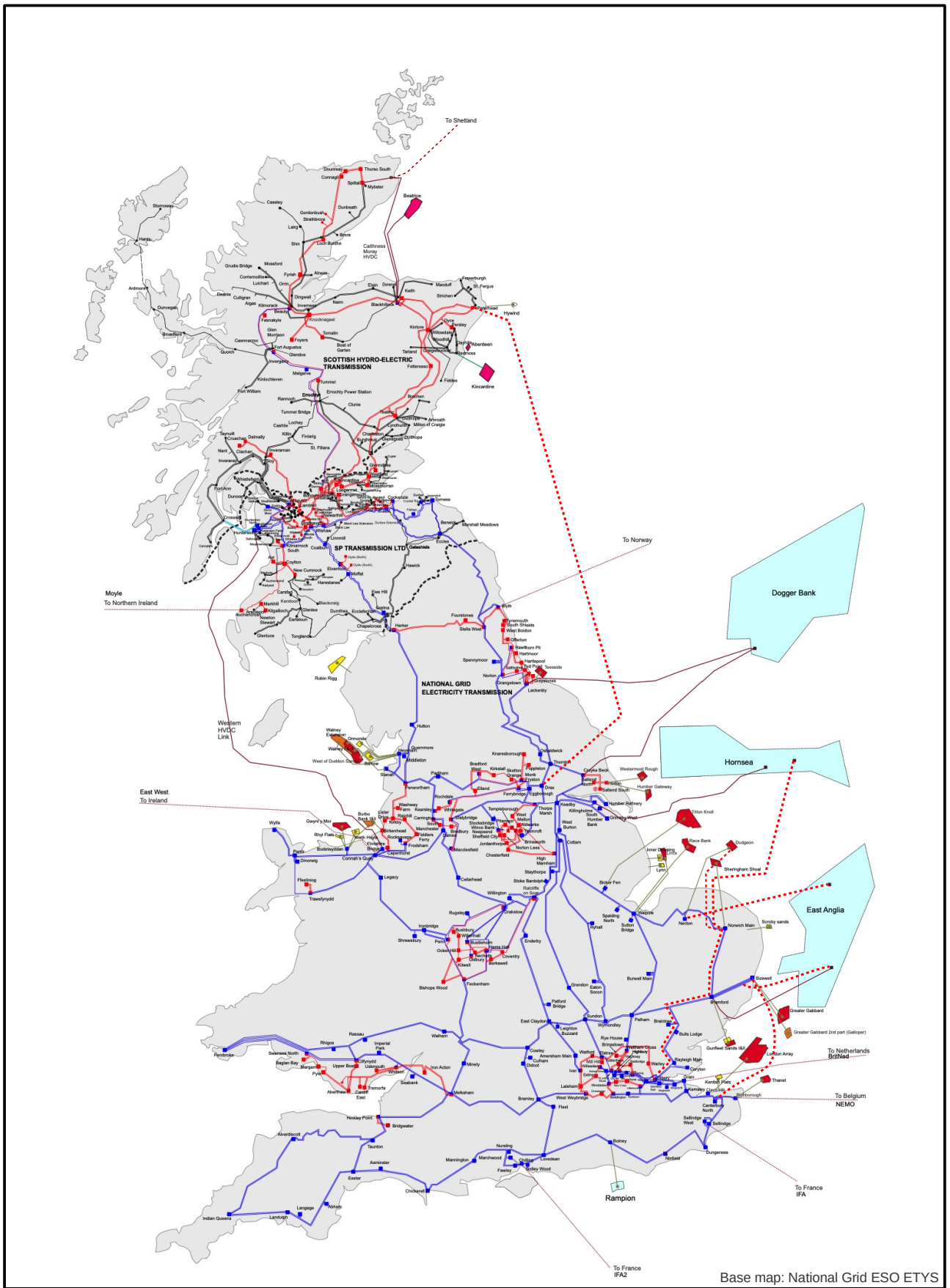


Figure 2: Onshore infrastructure