

Reduced network of GB power system

Figure 1 shows the single-line-diagram of the reduced network studied in this project. The reduced network has been derived from the complete GB transmission system model provided by National Grid UK. The reduced network has six HVDCs and three Wind Farms (consisting of 12 Wind Turbine Generators) connected at the 400 kV busbars. Additional 43 aggregated Renewable Energy Sources (RESs) connected at lower voltage levels, mostly 132 kV, are included.

The additional RESs (including 7 WTGs, 26 PVs and 10 batteries) were added based on information retrieved from online databases for the area under study. The RESs in most substation are connected via a single 33 kV transformer, with the exception of RESs in Herne Bay (one for each RES device), Richborough (one for PV and one for wind), Worthing (one for each battery) and Sittingbourne (one for all PV and one for battery) that employ more than one transformer, because they have large installed capacity. The additional devices and they are shown in red in Figure 2. There may be more than one RES connected at some busbars (for example there are 5 PVs at Lewes), but a single component was drawn in Figure 1 due to space limit.

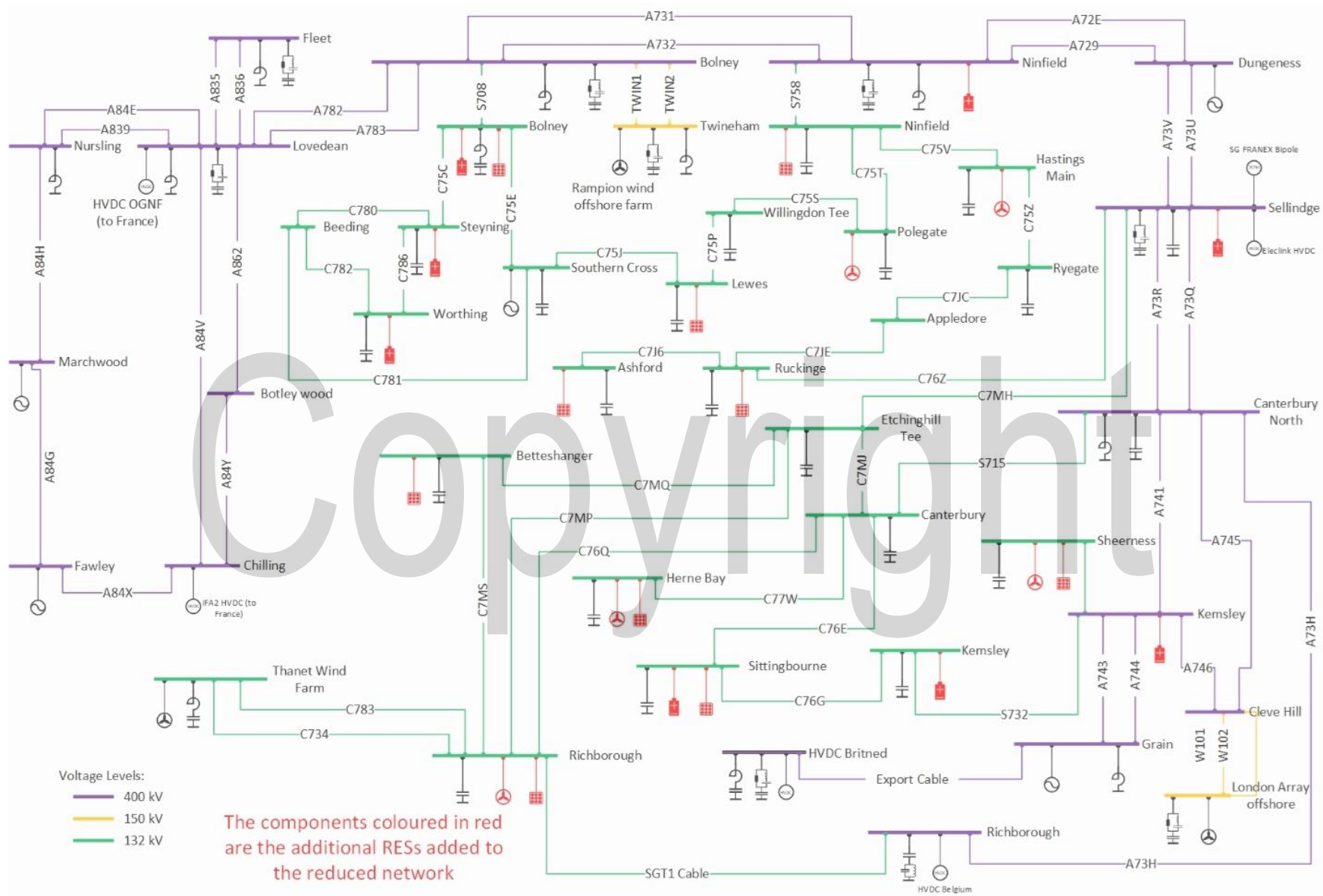


Figure 1: Single Line Diagram of the Reduced Network.