

Appendix C

Power flow diagrams

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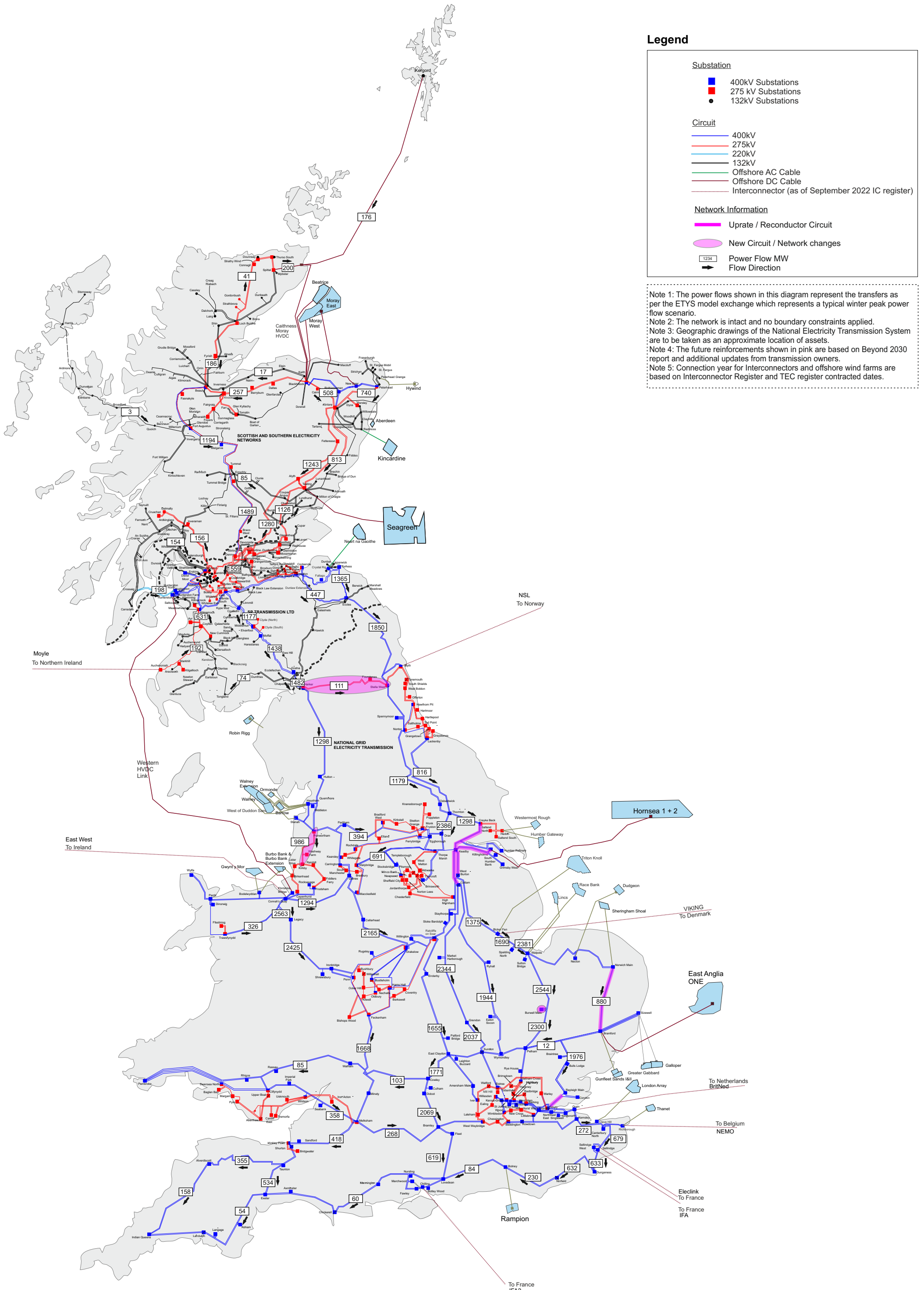
To demonstrate the impact of future changes on the transmission network a set of winter peak power flow diagrams are presented in Appendix-C. These show snapshots of present and future power flows along major circuit routes for the Holistic Transition scenario as well as future reinforcements based on 2024/25 TCSNP2 results.

New transmission circuits and substations that are still to be built are shown in the future year's diagrams. They represent one scenario and could change. The diagrams are not completely geographical precise and should not be used for detailed planning purposes.

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Figure C1: GB Power Flow Diagram Holistic Transition 2024/25



Legend

Substation

- 400kV Substations
- 275 kV Substations
- 132kV Substations

Circuit

- 400kV
- 275kV
- 220kV
- 132kV
- Offshore AC Cable
- Offshore DC Cable
- Interconnector (as of September 2022 IC register)

Network Information

- Uprate / Reconductor Circuit
- New Circuit / Network changes
- Power Flow MW
- Flow Direction

Note 1: The power flows shown in this diagram represent the transfers as per the ETYS model exchange which represents a typical winter peak power flow scenario.

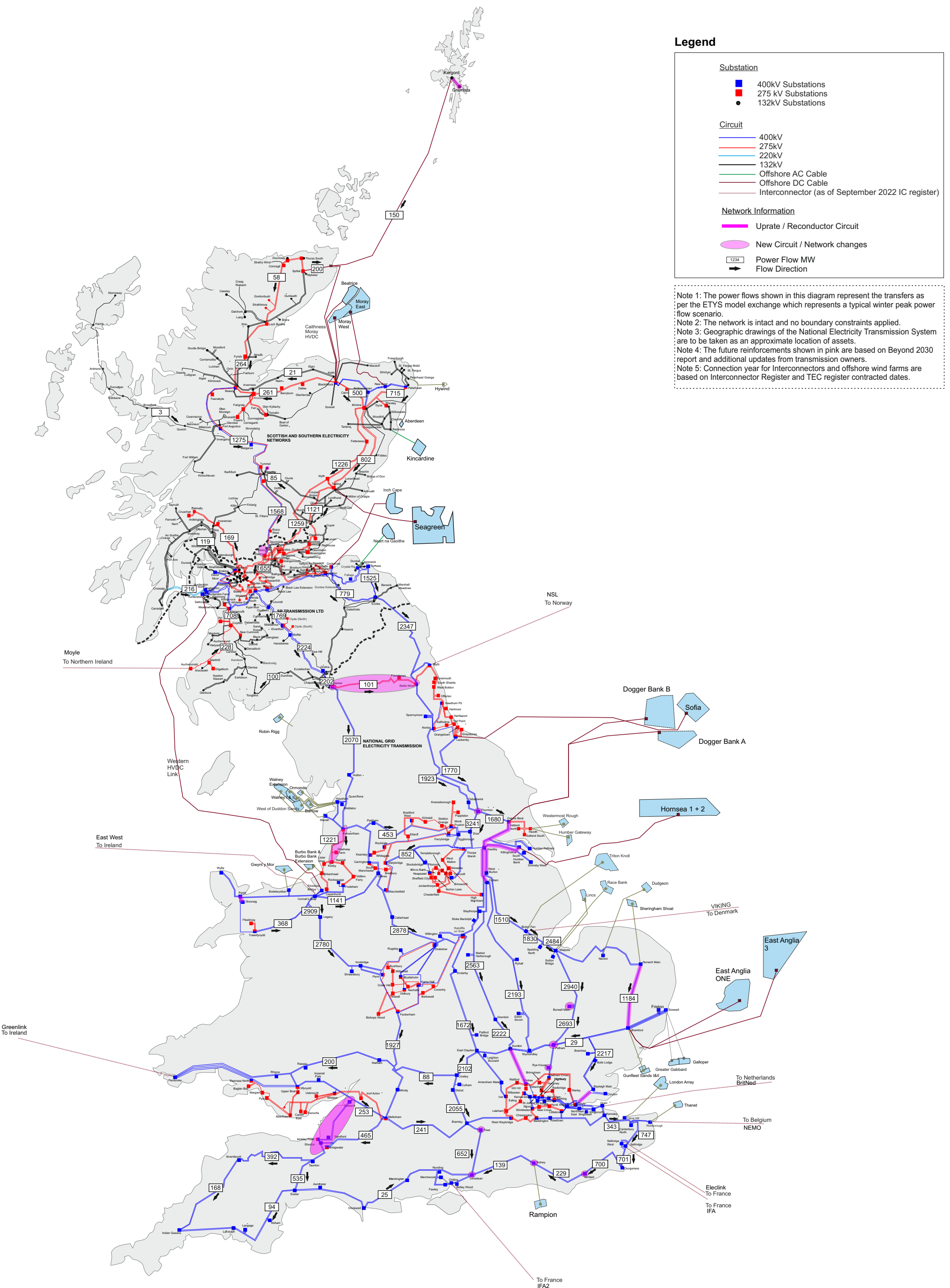
Note 2: The network is intact and no boundary constraints applied.

Note 3: Geographic drawings of the National Electricity Transmission System are to be taken as an approximate location of assets.

Note 4: The future reinforcements shown in pink are based on Beyond 2030 report and additional updates from transmission owners.

Note 5: Connection year for Interconnectors and offshore wind farms are based on Interconnector Register and TEC register contracted dates.

Figure C2: GB Power Flow Diagram Holistic Transition 2025/26



Legend

Substation

- 400kV Substations
- 275kV Substations
- 132kV Substations

Circuit

- 400kV
- 275kV
- 220kV
- 132kV
- Offshore AC Cable
- Offshore DC Cable
- Interconnector (as of September 2022 IC register)

Network Information

- Uprate / Reconductor Circuit
- New Circuit / Network changes
- Power Flow MW
- Flow Direction

Note 1: The power flows shown in this diagram represent the transfers as per the ETYS model exchange which represents a typical winter peak power flow scenario.

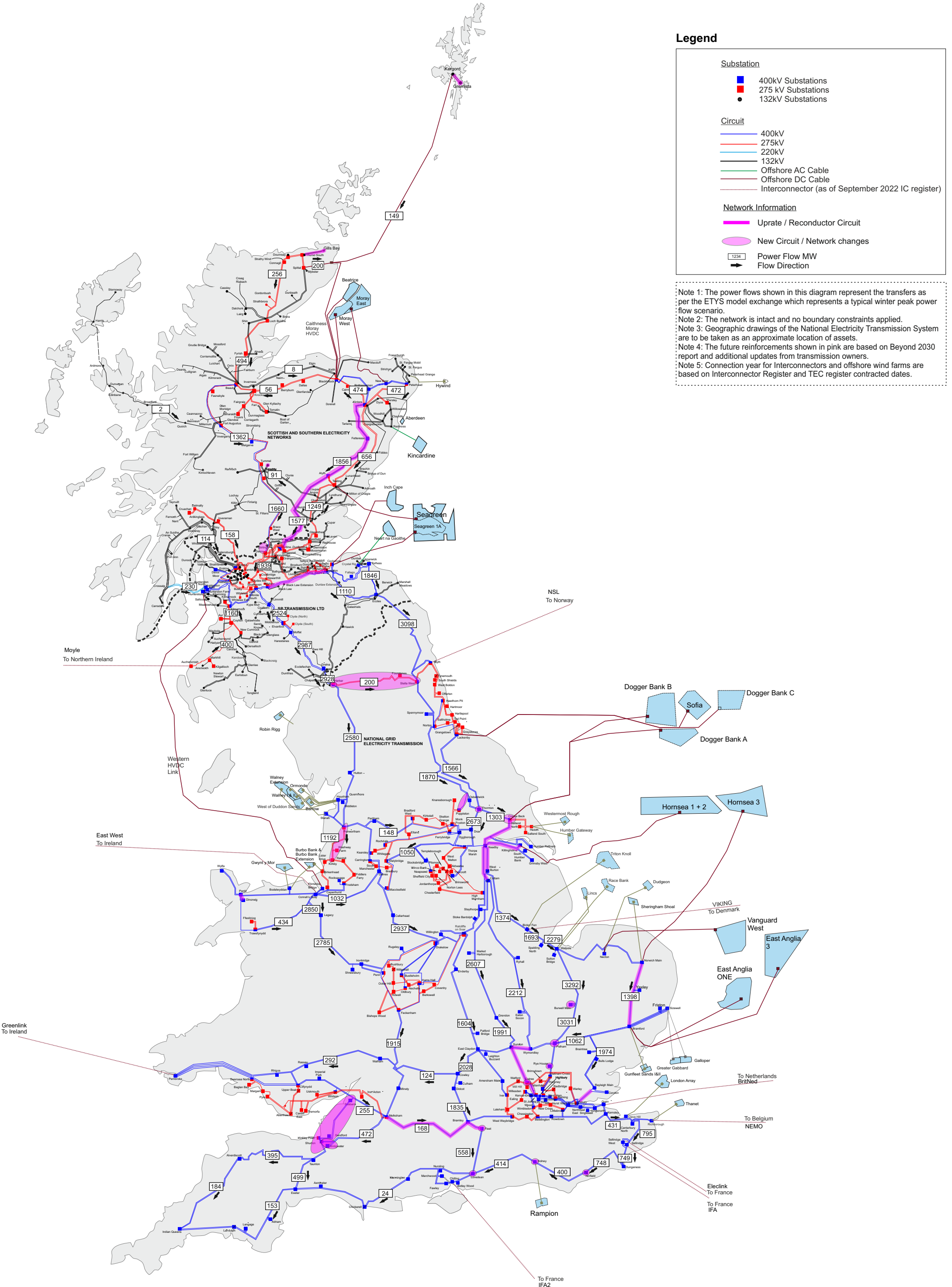
Note 2: The network is intact and no boundary constraints applied.

Note 3: Geographic drawings of the National Electricity Transmission System are to be taken as an approximate location of assets.

Note 4: The future reinforcements shown in pink are based on Beyond 2030 report and additional updates from transmission owners.

Note 5: Connection year for Interconnectors and offshore wind farms are based on Interconnector Register and TEC register contracted dates.

Figure C3: GB Power Flow Diagram Holistic Transition 2027/28



Legend

Substation

- 400kV Substations
- 275 kV Substations
- 132kV Substations

Circuit

- 400kV
- 275kV
- 220kV
- 132kV
- Offshore AC Cable
- Offshore DC Cable
- Interconnector (as of September 2022 IC register)

Network Information

- Uprate / Reconductor Circuit
- New Circuit / Network changes
- Power Flow MW
- Flow Direction

Note 1: The power flows shown in this diagram represent the transfers as per the ETYS model exchange which represents a typical winter peak power flow scenario.

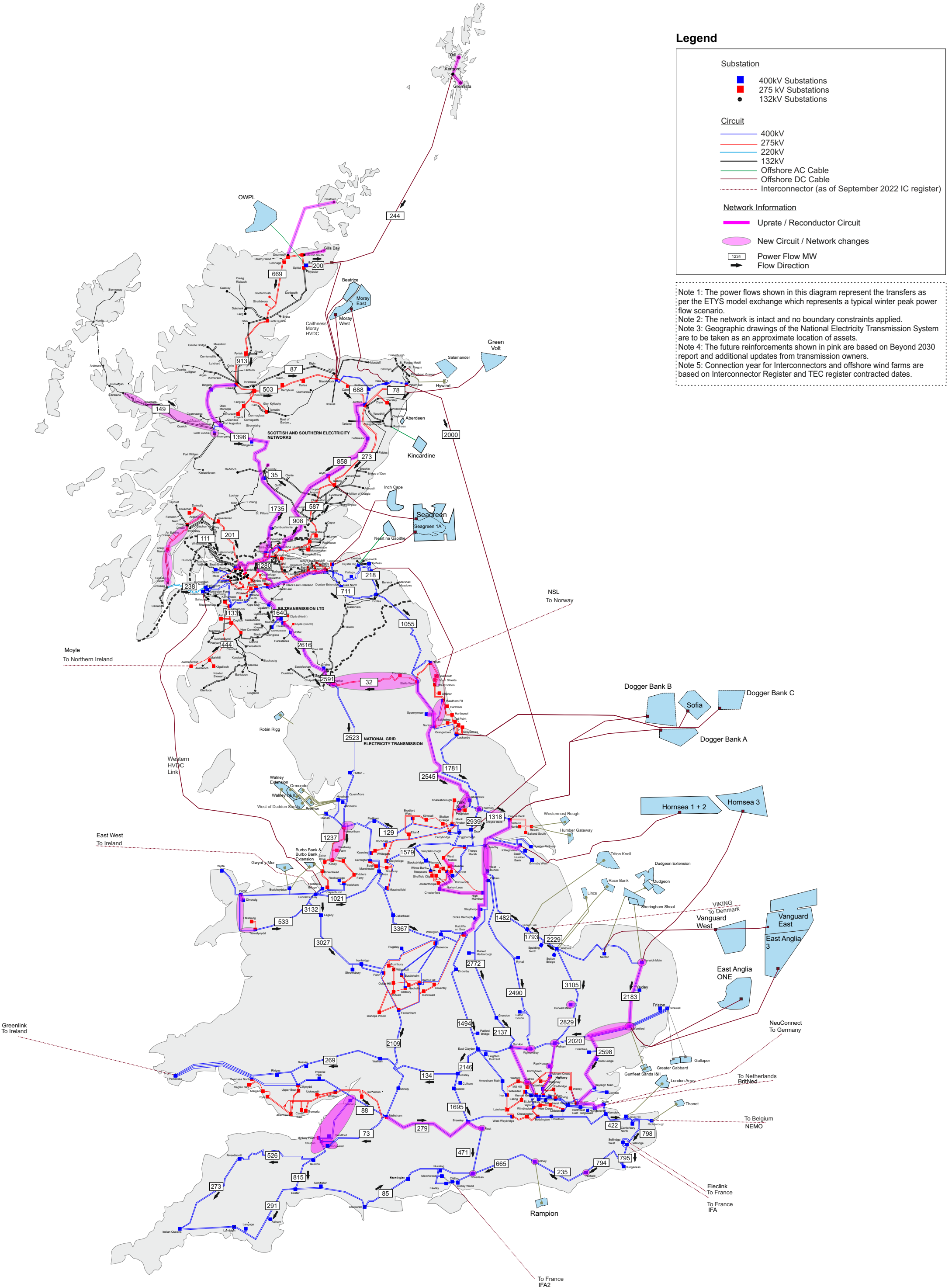
Note 2: The network is intact and no boundary constraints applied.

Note 3: Geographic drawings of the National Electricity Transmission System are to be taken as an approximate location of assets.

Note 4: The future reinforcements shown in pink are based on Beyond 2030 report and additional updates from transmission owners.

Note 5: Connection year for Interconnectors and offshore wind farms are based on Interconnector Register and TEC register contracted dates.

Figure C4: GB Power Flow Diagram Holistic Transition 2029/30



Legend

Substation

- 400kV Substations (Blue square)
- 275 kV Substations (Red square)
- 132kV Substations (Black circle)

Circuit

- 400kV (Blue line)
- 275kV (Red line)
- 220kV (Light blue line)
- 132kV (Black line)
- Offshore AC Cable (Green line)
- Offshore DC Cable (Red line)
- Interconnector (as of September 2022 IC register) (Dotted line)

Network Information

- Uprate / Reconductor Circuit (Pink line)
- New Circuit / Network changes (Pink oval)
- Power Flow MW (Box with number)
- Flow Direction (Arrow)

Note 1: The power flows shown in this diagram represent the transfers as per the ETYS model exchange which represents a typical winter peak power flow scenario.

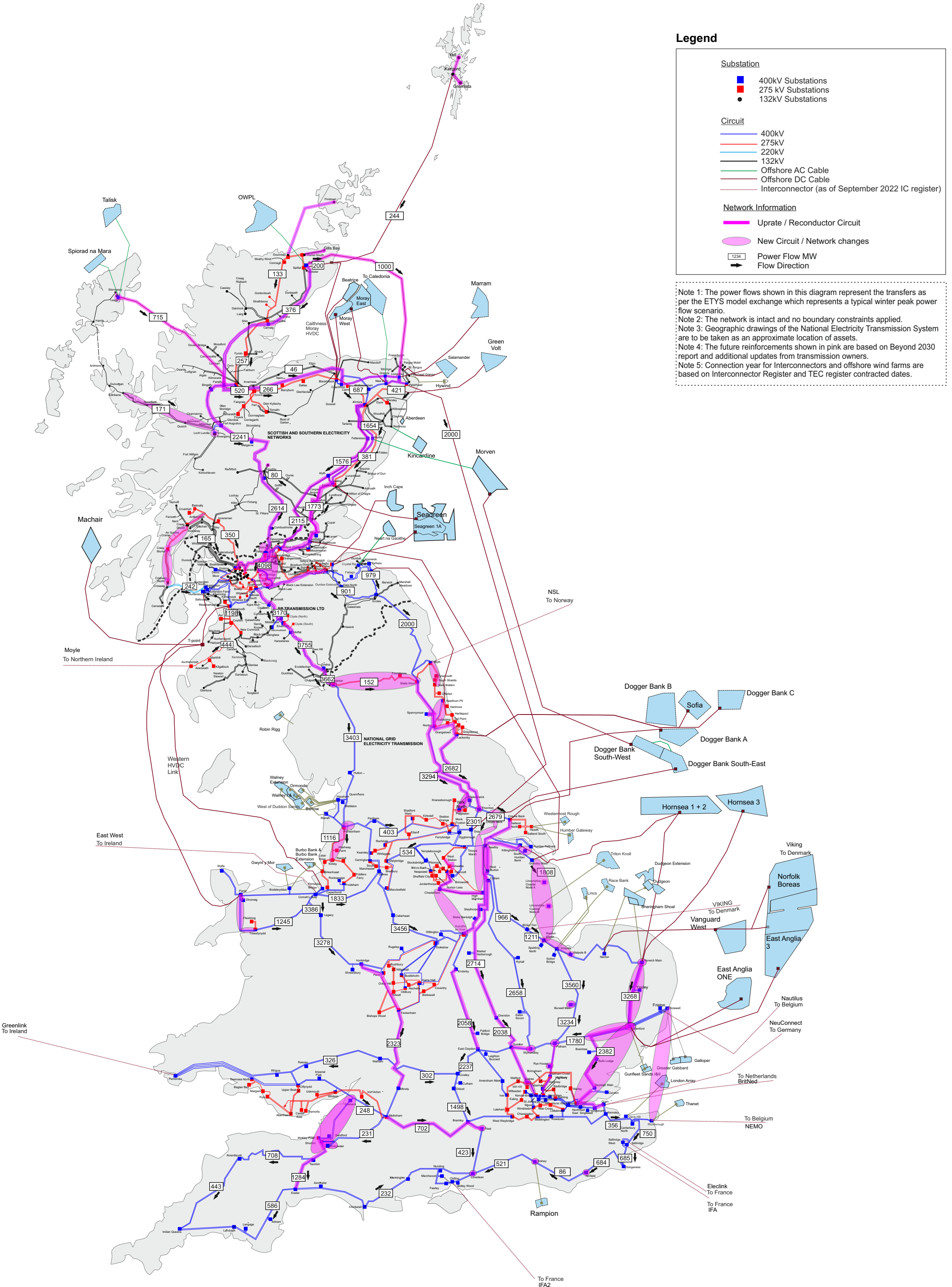
Note 2: The network is intact and no boundary constraints applied.

Note 3: Geographic drawings of the National Electricity Transmission System are to be taken as an approximate location of assets.

Note 4: The future reinforcements shown in pink are based on Beyond 2030 report and additional updates from transmission owners.

Note 5: Connection year for Interconnectors and offshore wind farms are based on Interconnector Register and TEC register contracted dates.

Figure C5: GB Power Flow Diagram Holistic Transition 2032/33



Legend

Substation

- 400kV Substations (Blue square)
- 275 kV Substations (Red square)
- 132kV Substations (Black circle)

Circuit

- 400kV (Blue line)
- 275kV (Red line)
- 220kV (Light blue line)
- 132kV (Black line)
- Offshore AC Cable (Green line)
- Offshore DC Cable (Brown line)
- Interconnector (as of September 2022 IC register) (Dotted line)

Network Information

- Uprate / Reconductor Circuit (Pink line)
- New Circuit / Network changes (Pink oval)
- Power Flow MW (Box with number)
- Flow Direction (Arrow)

Note 1: The power flows shown in this diagram represent the transfers as per the ETYS model exchange which represents a typical winter peak power flow scenario.

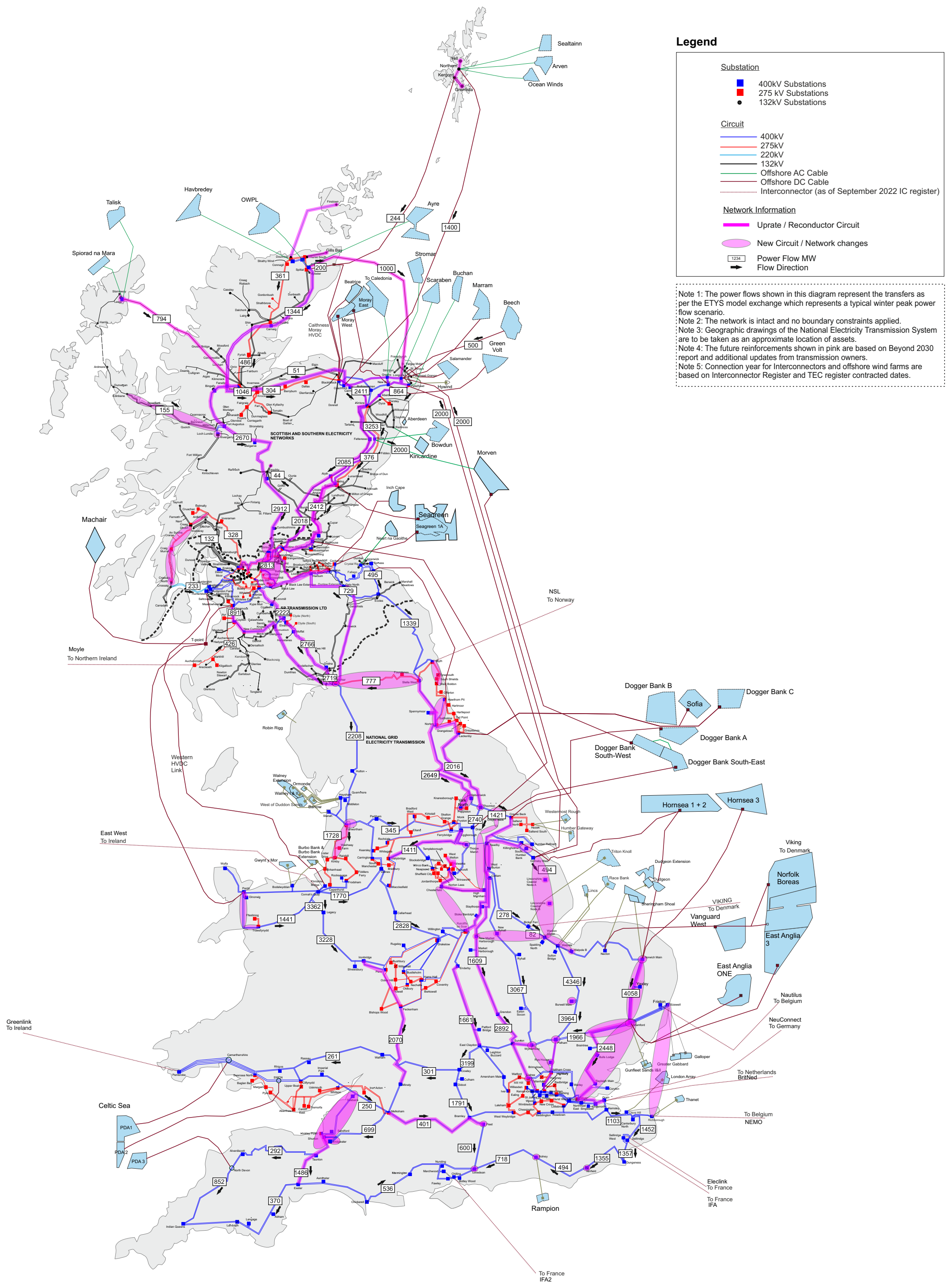
Note 2: The network is intact and no boundary constraints applied.

Note 3: Geographic drawings of the National Electricity Transmission System are to be taken as an approximate location of assets.

Note 4: The future reinforcements shown in pink are based on Beyond 2030 report and additional updates from transmission owners.

Note 5: Connection year for Interconnectors and offshore wind farms are based on Interconnector Register and TEC register contracted dates.

Figure C6: GB Power Flow Diagram Holistic Transition 2035/36



Legend

Substation

- 400kV Substations (Blue square)
- 275 kV Substations (Red square)
- 132kV Substations (Black circle)

Circuit

- 400kV (Blue line)
- 275kV (Red line)
- 220kV (Light blue line)
- 132kV (Black line)
- Offshore AC Cable (Green line)
- Offshore DC Cable (Red line)
- Interconnector (as of September 2022 IC register) (Dotted line)

Network Information

- Uprate / Reconductor Circuit (Thick pink line)
- New Circuit / Network changes (Thin pink line)
- Power Flow MW (Box with number)
- Flow Direction (Arrow)

Note 1: The power flows shown in this diagram represent the transfers as per the ETYS model exchange which represents a typical winter peak power flow scenario.

Note 2: The network is intact and no boundary constraints applied.

Note 3: Geographic drawings of the National Electricity Transmission System are to be taken as an approximate location of assets.

Note 4: The future reinforcements shown in pink are based on Beyond 2030 report and additional updates from transmission owners.

Note 5: Connection year for Interconnectors and offshore wind farms are based on Interconnector Register and TEC register contracted dates.