Appendix C

Power flow diagrams

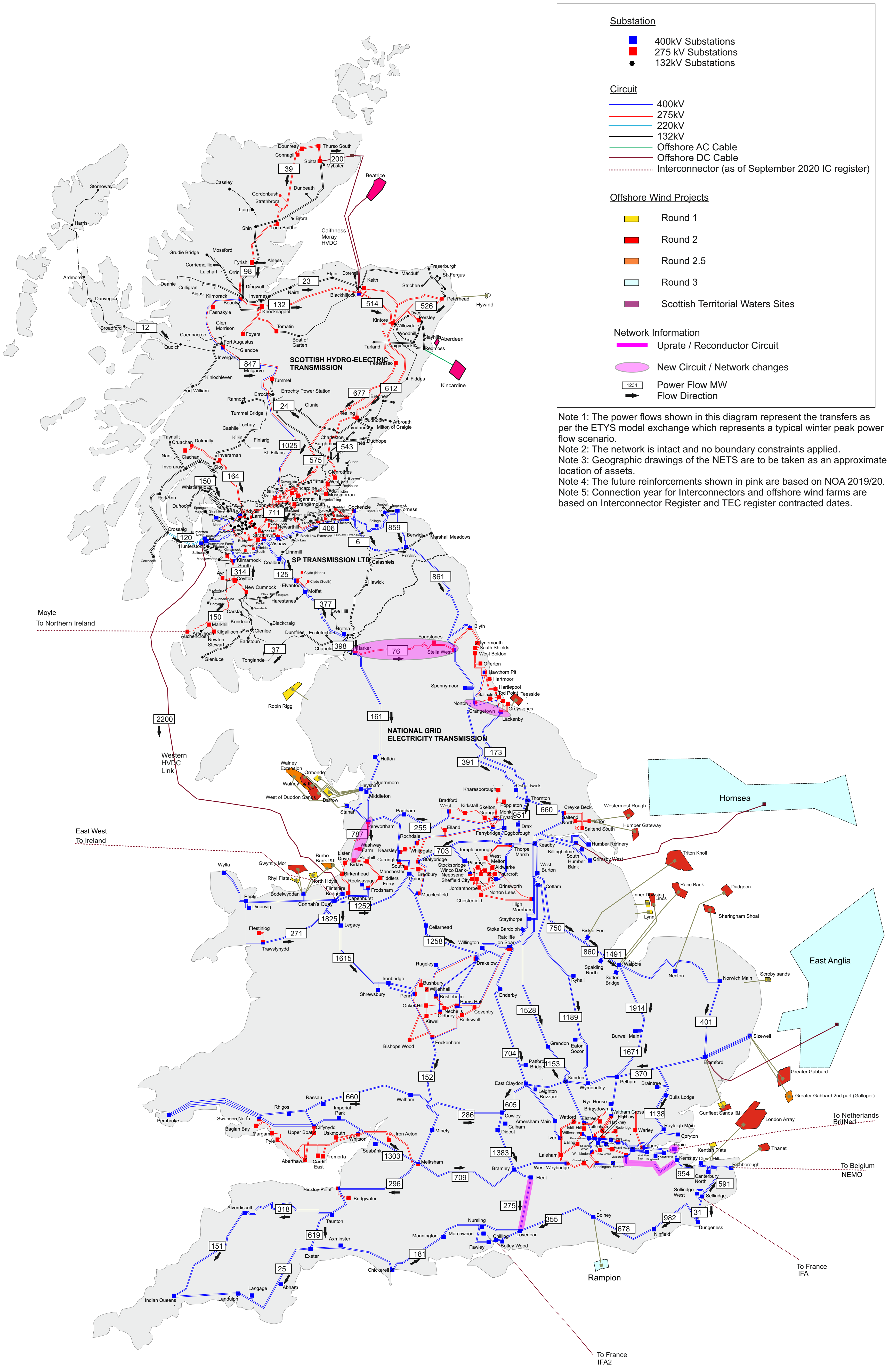
Contents

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 Leading the Way Scenario as well as future reinforcements based on 2019 NOA 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 geographically precise and should not be used for detailed planning purposes.

Appendix C

Figure C1: GB Power Flow Diagram Leading the Way 2020/21



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.

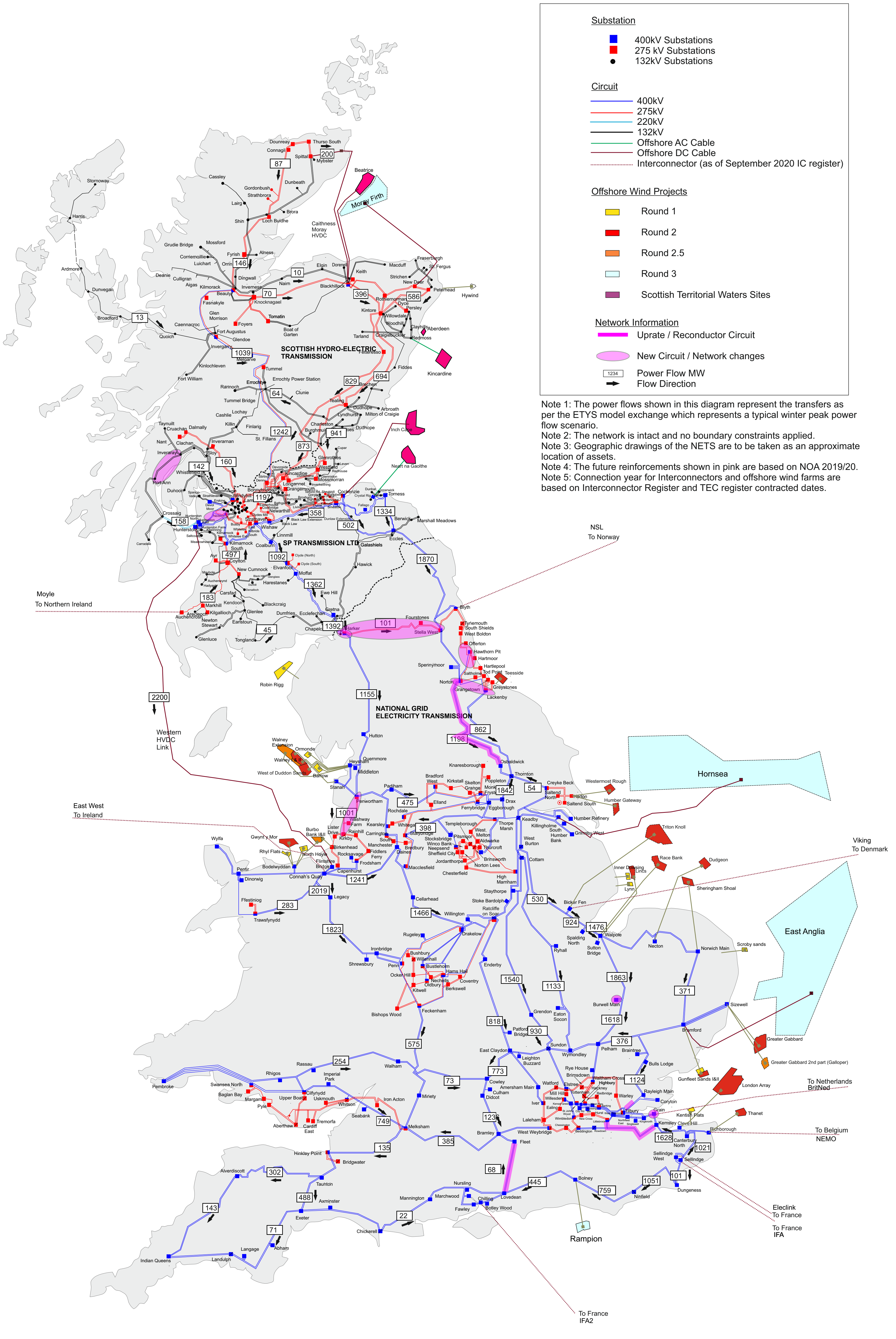
Note 2: The network is intact and no boundary constraints applied.

Note 3: Geographic drawings of the NETS are to be taken as an approximate location of assets.

Note 4: The future reinforcements shown in pink are based on NOA 2019/20.

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 Leading the Way 2022/23



Substation

- 🟦 400kV Substations
- 🟥 275 kV Substations
- ● 132kV Substations

Circuit

- 400kV
- 275kV
- 220kV
- 132kV
- Offshore AC Cable
- Offshore DC Cable
- Interconnector (as of September 2020 IC register)

Offshore Wind Projects

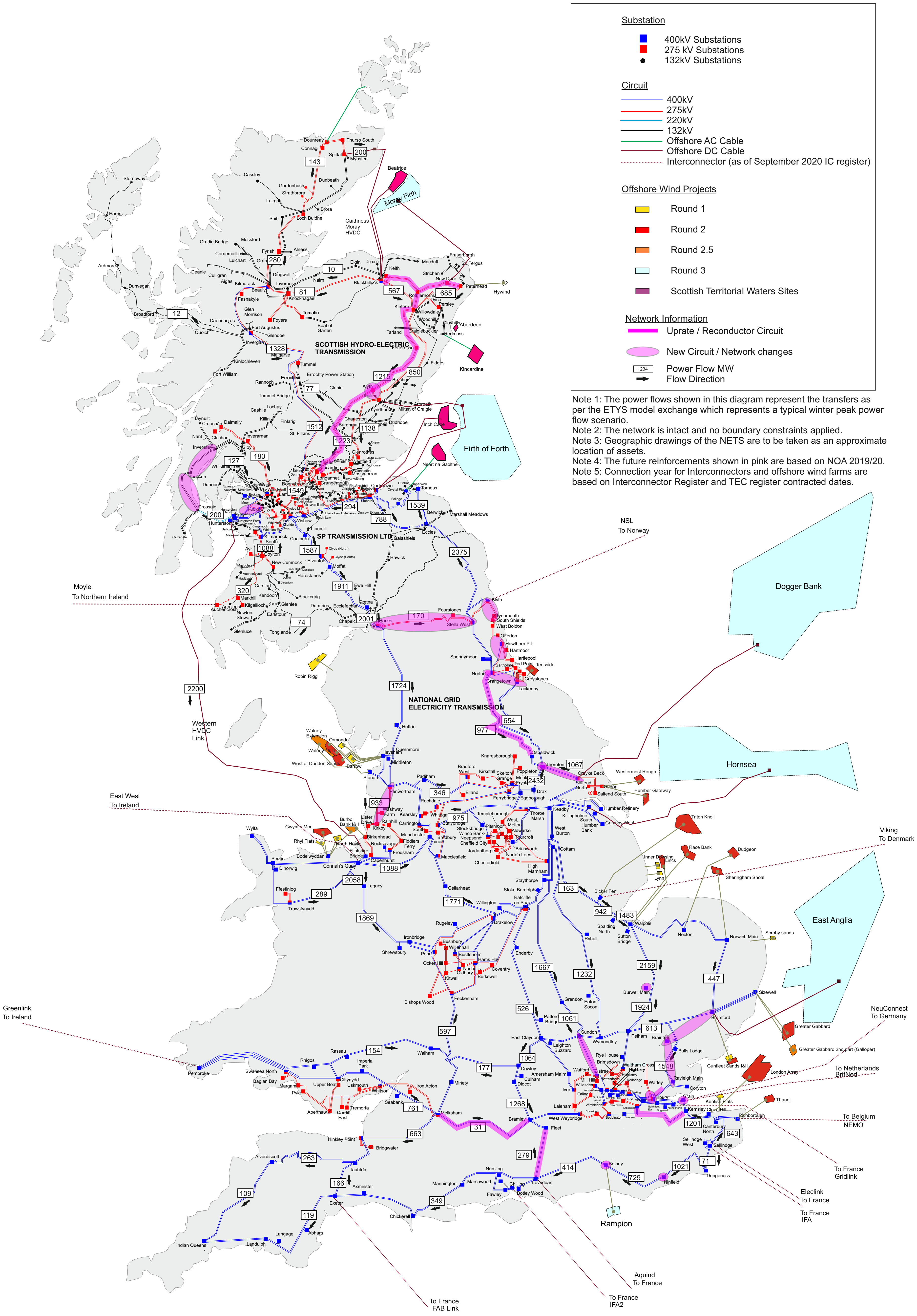
- 🟨 Round 1
- 🟥 Round 2
- 🟧 Round 2.5
- ▢ Round 3
- 🟪 Scottish Territorial Waters Sites

Network Information

- Uprate / Reconductor Circuit
- New Circuit / Network changes
- 1234 Power Flow MW
- ➔ Flow Direction

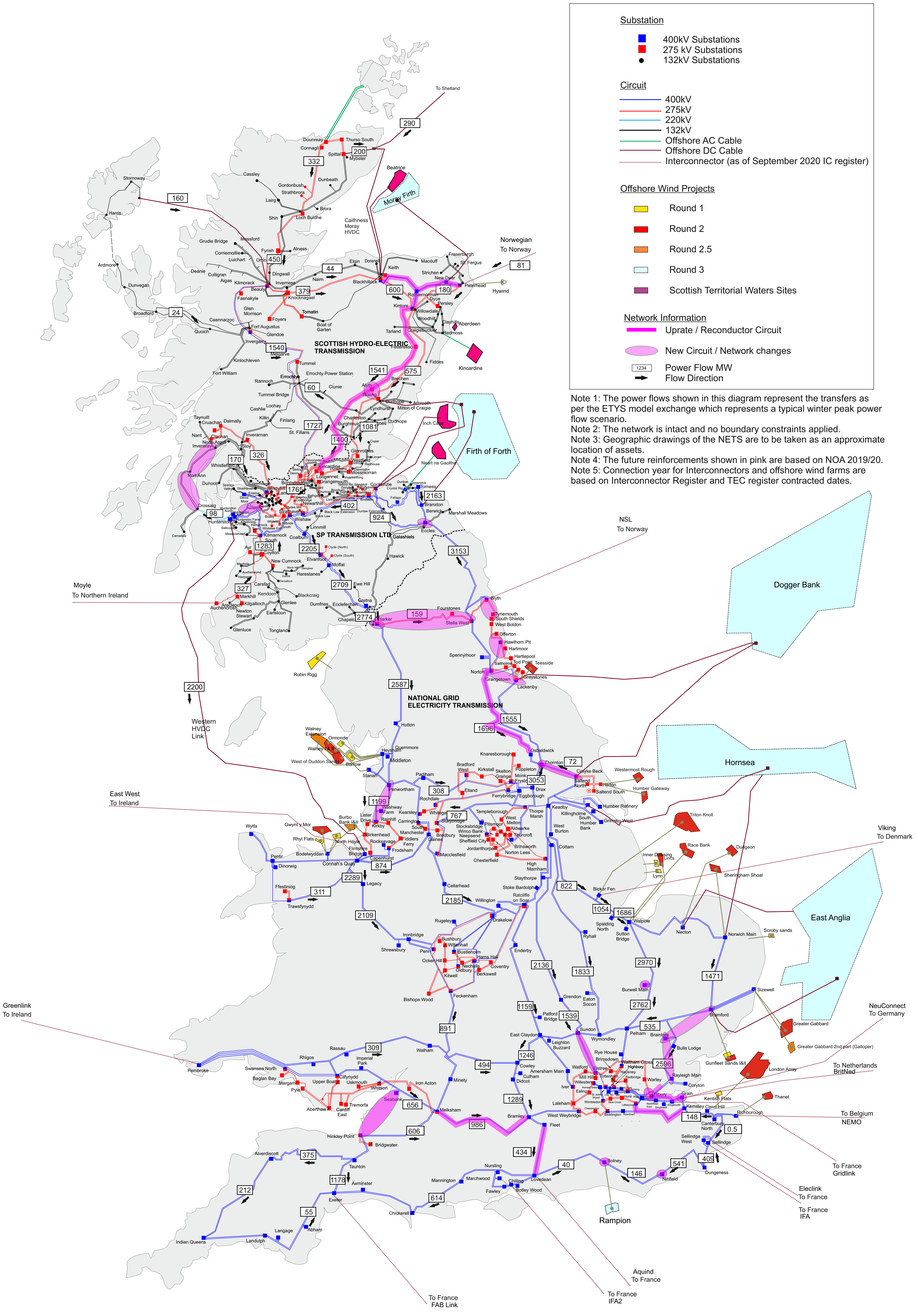
Note 1: The power flows shown in this diagram represent the transfers as per the ETYS model exchange which represents a typical winter peak power flow scenario.
Note 2: The network is intact and no boundary constraints applied.
Note 3: Geographic drawings of the NETS are to be taken as an approximate location of assets.
Note 4: The future reinforcements shown in pink are based on NOA 2019/20.
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 Leading the Way 2024/25



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 NETS are to be taken as an approximate location of assets.
Note 4: The future reinforcements shown in pink are based on NOA 2019/20.
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 Leading the Way 2026/27



<u>Substation</u>

- 🟦 400kV Substations
- 🟥 275 kV Substations
- ● 132kV Substations

<u>Circuit</u>

- — 400kV
- — 275kV
- — 220kV
- — 132kV
- — Offshore AC Cable
- — Offshore DC Cable
- ······ Interconnector (as of September 2020 IC register)

<u>Offshore Wind Projects</u>

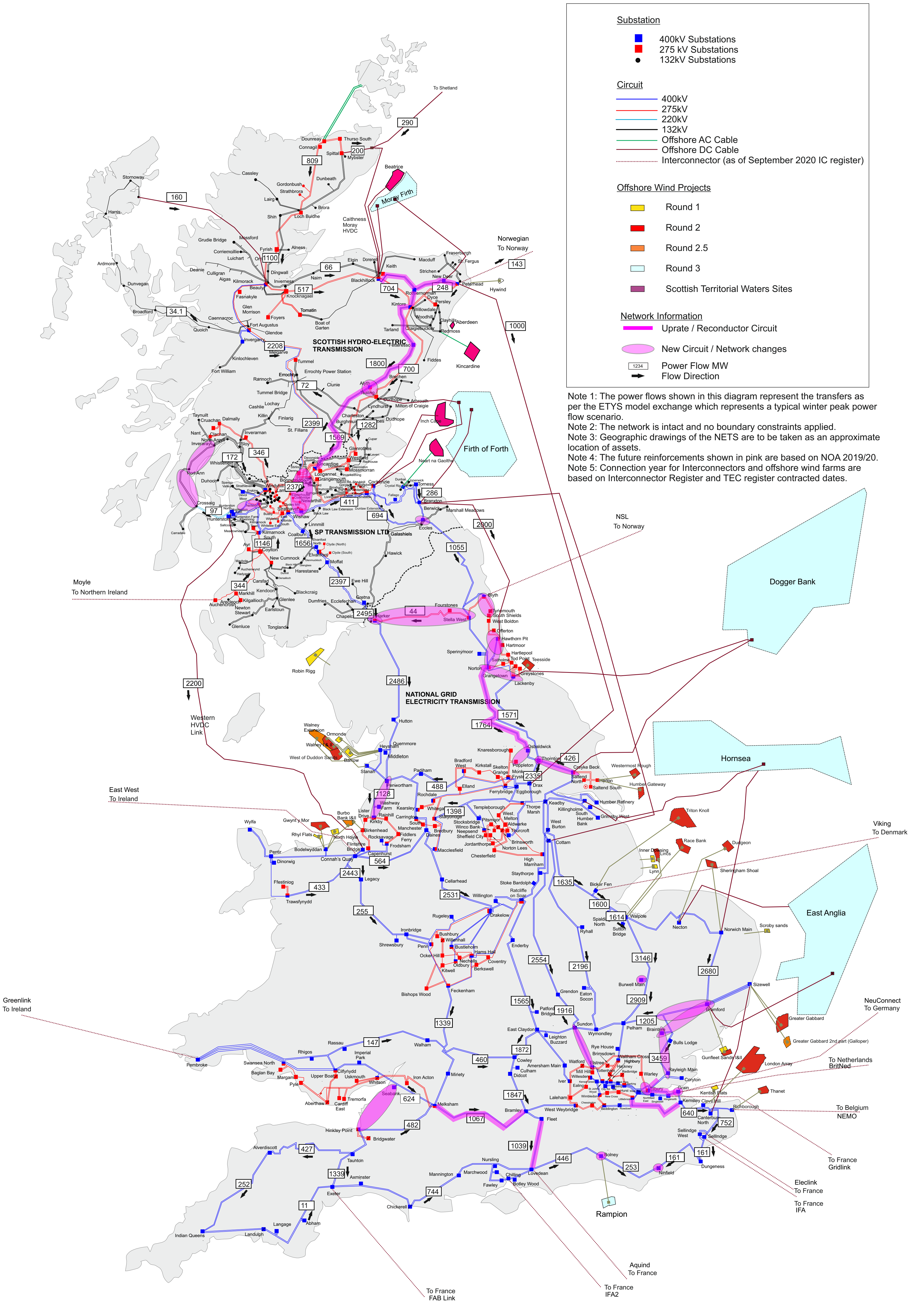
- 🟨 Round 1
- 🟥 Round 2
- 🟧 Round 2.5
- ▭ Round 3
- 🟪 Scottish Territorial Waters Sites

<u>Network Information</u>

- — Uprate / Reconductor Circuit
- ⬭ New Circuit / Network changes
- 1234 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 NETS are to be taken as an approximate location of assets.
Note 4: The future reinforcements shown in pink are based on NOA 2019/20.
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 Leading the Way 2029/30



<u>Substation</u>

🟦	400kV Substations
🟥	275 kV Substations
●	132kV Substations

<u>Circuit</u>

—	400kV
—	275kV
—	220kV
—	132kV
—	Offshore AC Cable
—	Offshore DC Cable
·····	Interconnector (as of September 2020 IC register)

<u>Offshore Wind Projects</u>

🟨	Round 1
🟥	Round 2
🟧	Round 2.5
▭	Round 3
🟪	Scottish Territorial Waters Sites

<u>Network Information</u>

—	Uprate / Reconductor Circuit
⬭	New Circuit / Network changes
1234	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 NETS are to be taken as an approximate location of assets.
Note 4: The future reinforcements shown in pink are based on NOA 2019/20.
Note 5: Connection year for Interconnectors and offshore wind farms are based on Interconnector Register and TEC register contracted dates.