Appendix A

System schematics and geographic drawings

Contents

Appendix A includes a set of system schematics and geographic drawings of the current NETS, with the approximate locations of existing power stations and reactive compensation plants shown. The schematics also show the NETS boundaries and ETYS zones we have used in our analysis.

Appendix A

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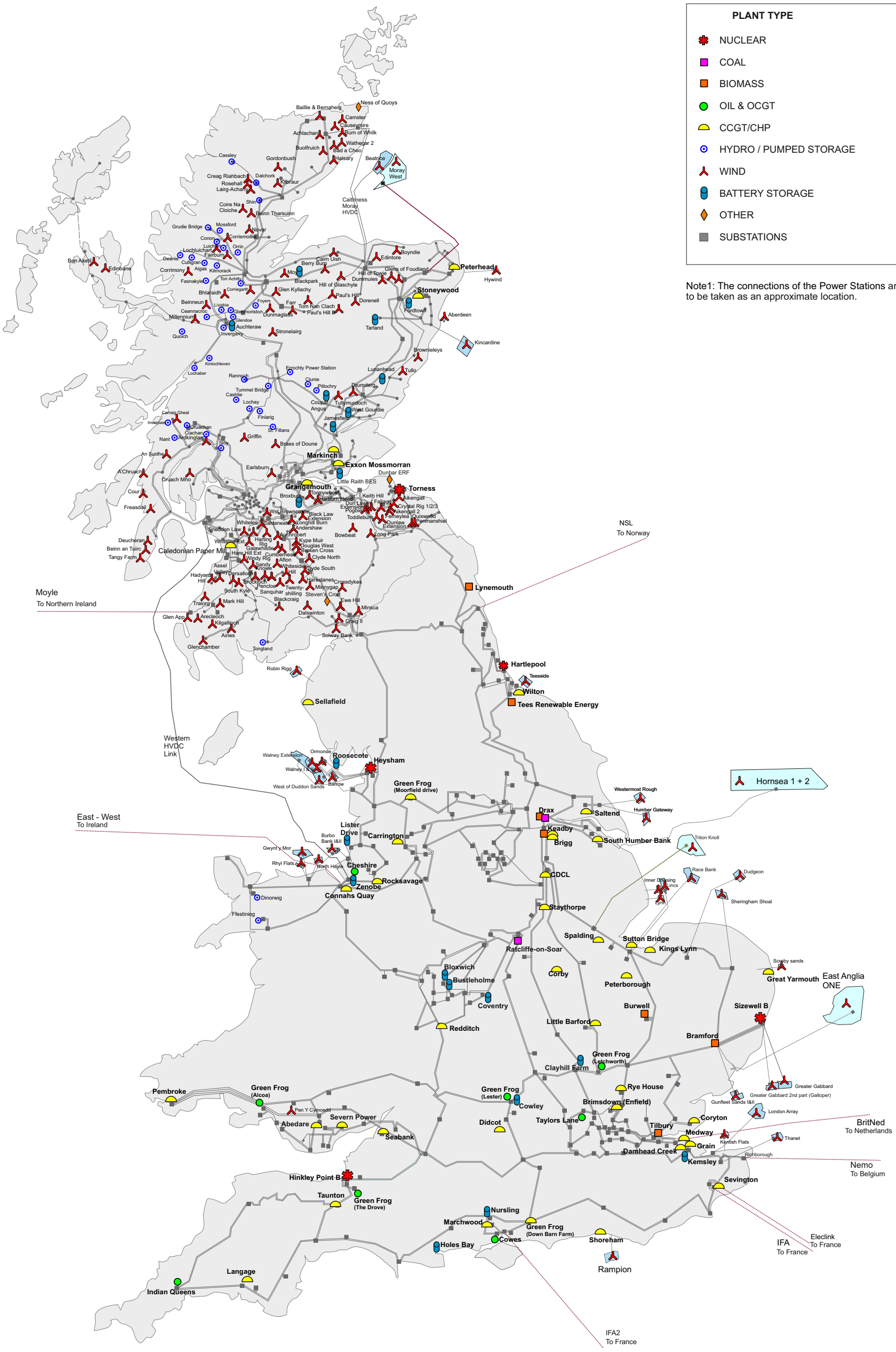
Figure A1: GB Existing Power Stations

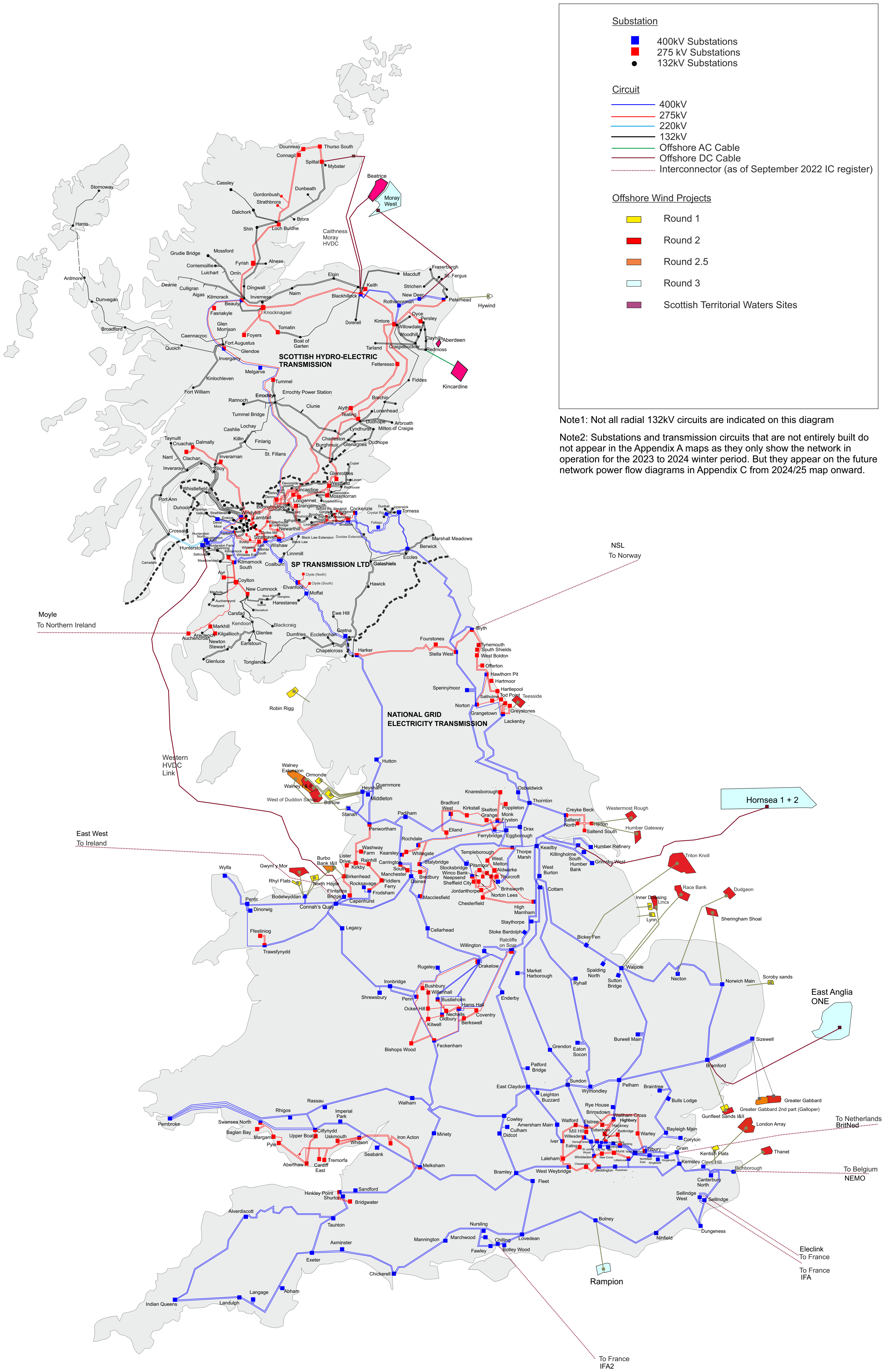


PLANT TYPE

- NUCLEAR
- COAL
- BIOMASS
- OIL & OCGT
- CCGT/CHP
- HYDRO / PUMPED STORAGE
- WIND
- BATTERY STORAGE
- OTHER
- SUBSTATIONS

Note1: The connections of the Power Stations are to be taken as an approximate location.

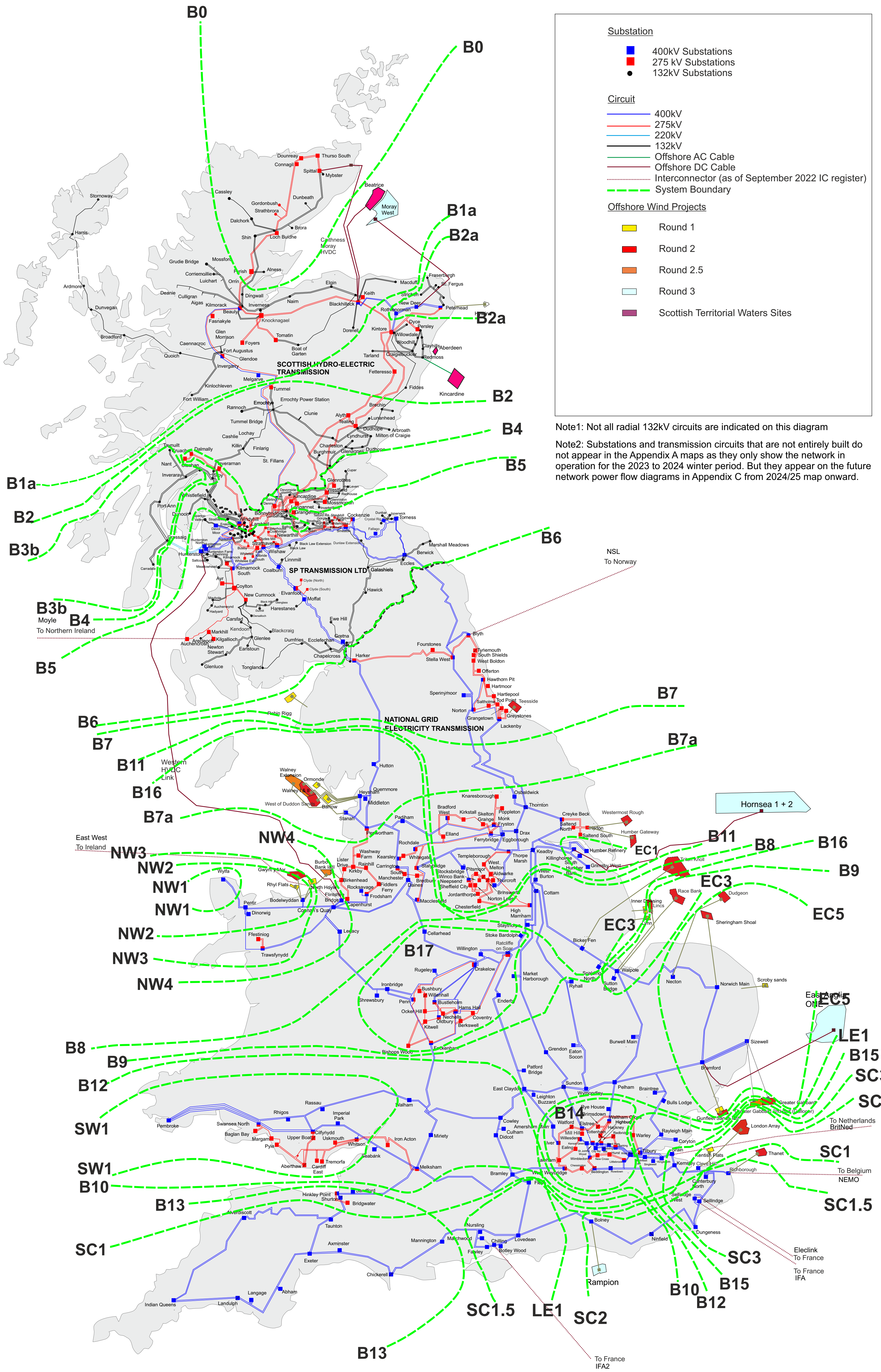
Figure A2: GB Existing Transmission System



Note1: Not all radial 132kV circuits are indicated on this diagram

Note2: Substations and transmission circuits that are not entirely built do not appear in the Appendix A maps as they only show the network in operation for the 2023 to 2024 winter period. But they appear on the future network power flow diagrams in Appendix C from 2024/25 map onward.

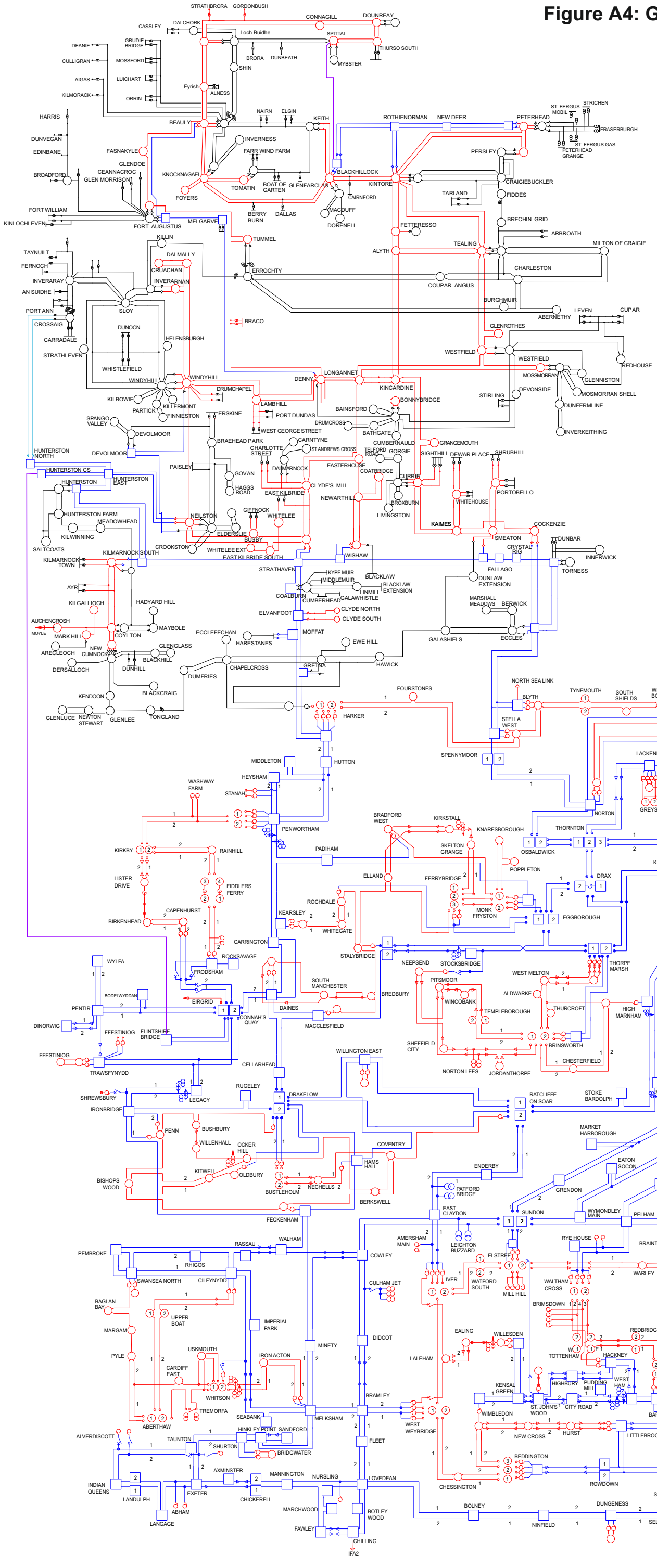
Figure A3: GB Transmission System Boundaries



Note1: Not all radial 132kV circuits are indicated on this diagram

Note2: Substations and transmission circuits that are not entirely built do not appear in the Appendix A maps as they only show the network in operation for the 2023 to 2024 winter period. But they appear on the future network power flow diagrams in Appendix C from 2024/25 map onward.

Figure A4: GB Existing Transmission System



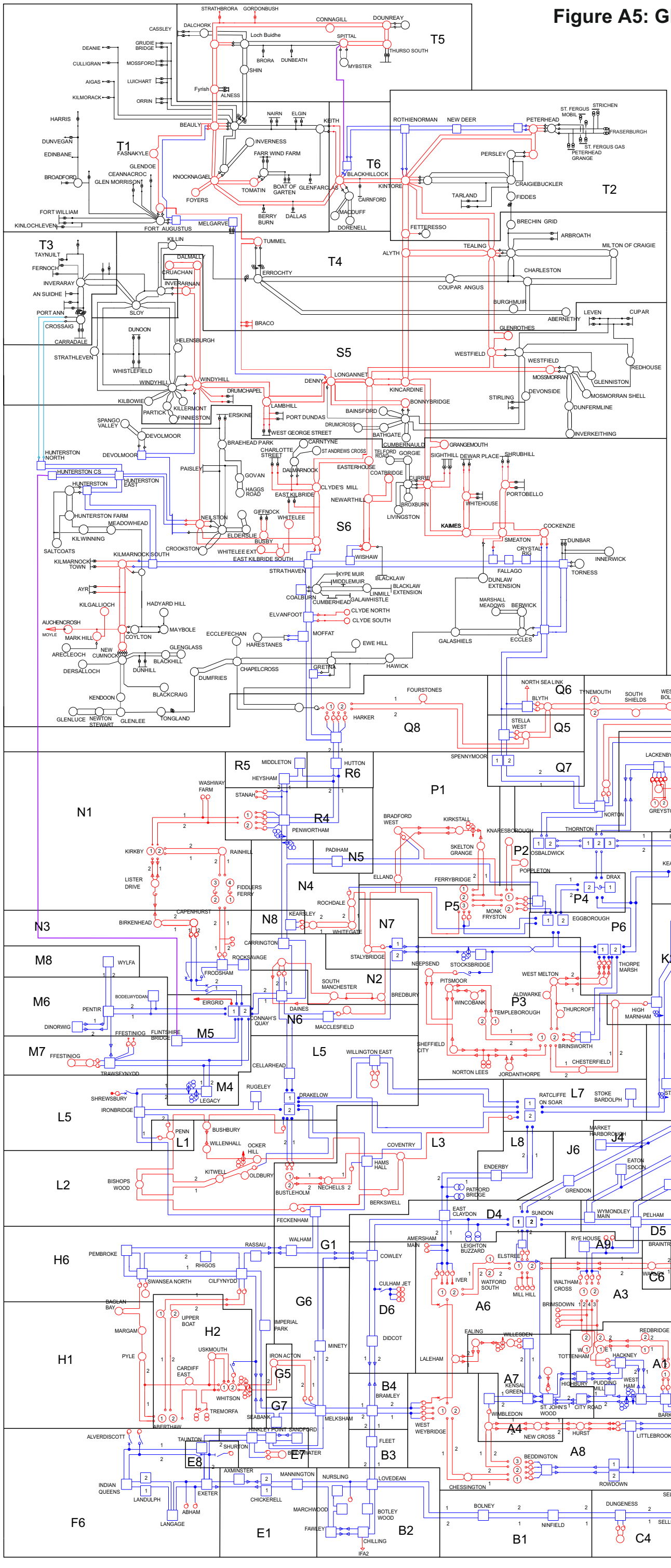
Legend

- 400kV Circuit
- 275kV Circuit
- 220kV Circuit
- 132kV Circuit
- HVDC Circuit
- 400kV Substation
- 275kV Substation
- 132kV Substation

Note1: Not all radial 132kV circuits are indicated on this diagram

Note2: Substations and transmission circuits that are not entirely built do not appear in the Appendix A maps as they only show the network in operation for the 2023 to 2024 winter period. But they appear on the future network power flow diagrams in Appendix C from 2024/25 map onward.

Figure A5: GB Transmission System ETYS Zones



Note1: Not all radial 132kV circuits are indicated on this diagram

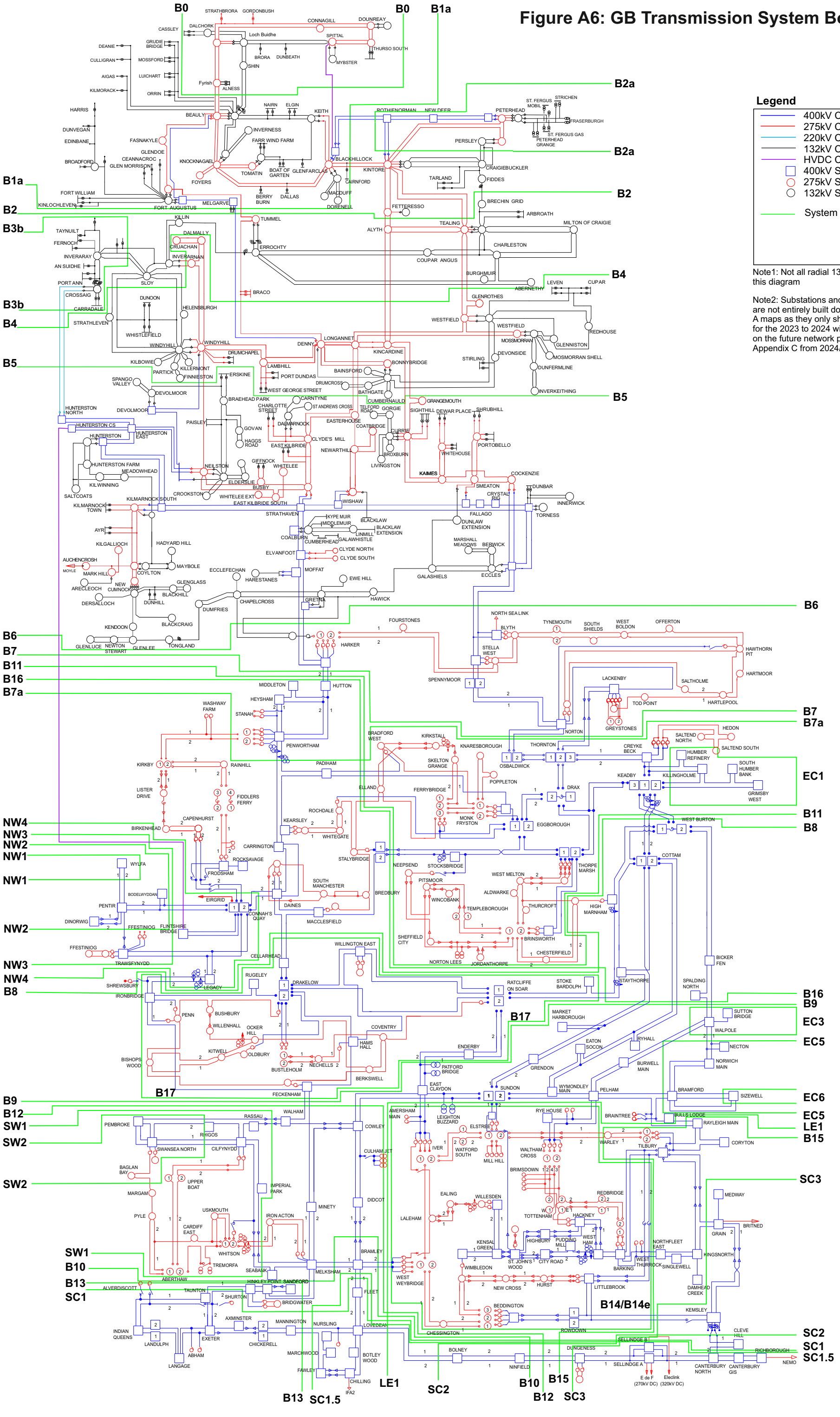
Note2: Substations and transmission circuits that are not entirely built do not appear in the Appendix A maps as they only show the network in operation for the 2023 to 2024 winter period. But they appear on the future network power flow diagrams in Appendix C from 2024/25 map onward.

SHE TRANSMISSION

SP TRANSMISSION

NATIONAL GRID

Figure A6: GB Transmission System Boundaries



Legend

- 400kV Circuit
- 275kV Circuit
- 220kV Circuit
- 132kV Circuit
- HVDC Circuit
- 400kV Substation
- 275kV Substation
- 132kV Substation
- System Boundaries

Note1: Not all radial 132kV circuits are indicated on this diagram

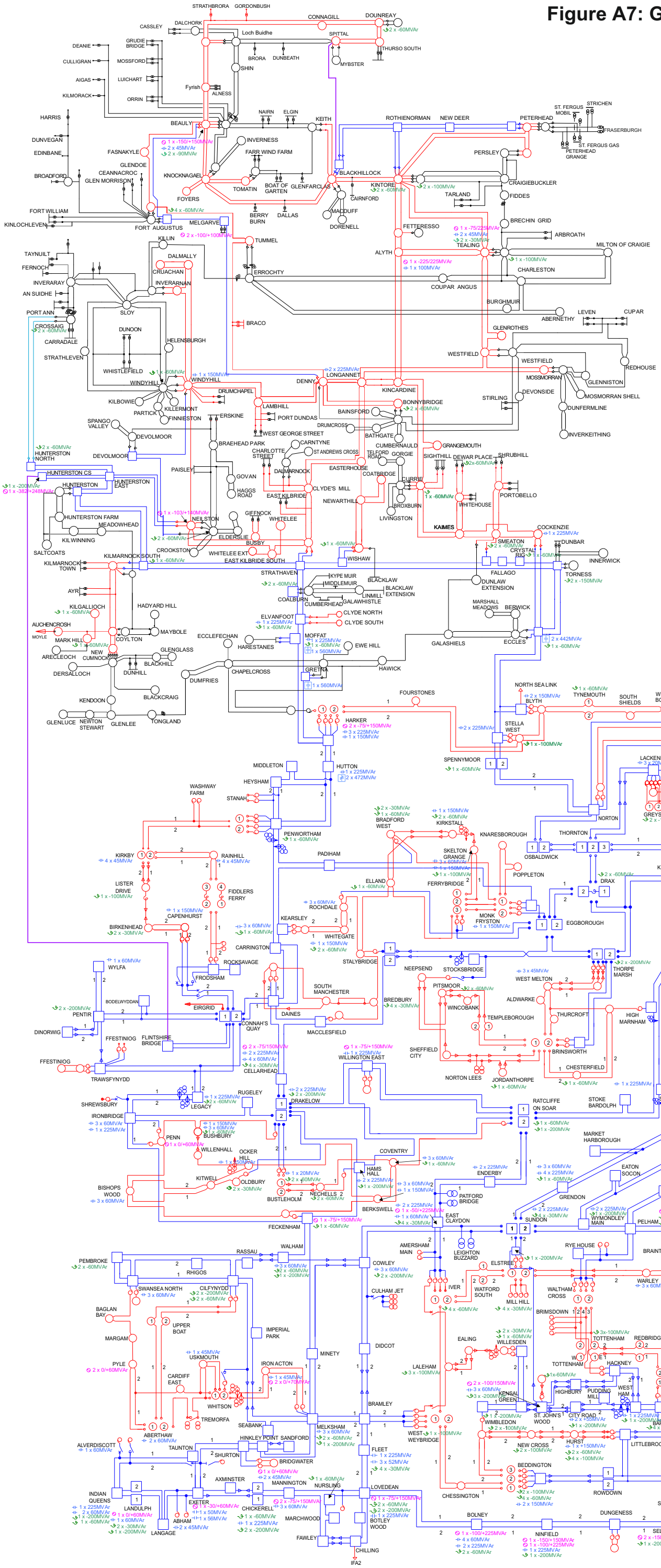
Note2: Substations and transmission circuits that are not entirely built do not appear in the Appendix A maps as they only show the network in operation for the 2023 to 2024 winter period. But they appear on the future network power flow diagrams in Appendix C from 2024/25 map onward.

SHE TRANSMISSION

SP TRANSMISSION

NATIONAL GRID

Figure A7: GB Reactive Compensation Plant



Legend

- 400kV Circuit
- 275kV Circuit
- 220kV Circuit
- 132kV Circuit
- HVDC Circuit
- 400kV Substation
- 275kV Substation
- 132kV Substation
- SVC
- MSC
- Reactor
- Series Capacitor

Note1: Not all radial 132kV circuits are indicated on this diagram

Note2: Substations and transmission circuits that are not entirely built do not appear in the Appendix A maps as they only show the network in operation for the 2023 to 2024 winter period. But they appear on the future network power flow diagrams in Appendix C from 2024/25 map onward.

Note3: Reactive compensation plants at the HVDC terminals are not listed on this diagram

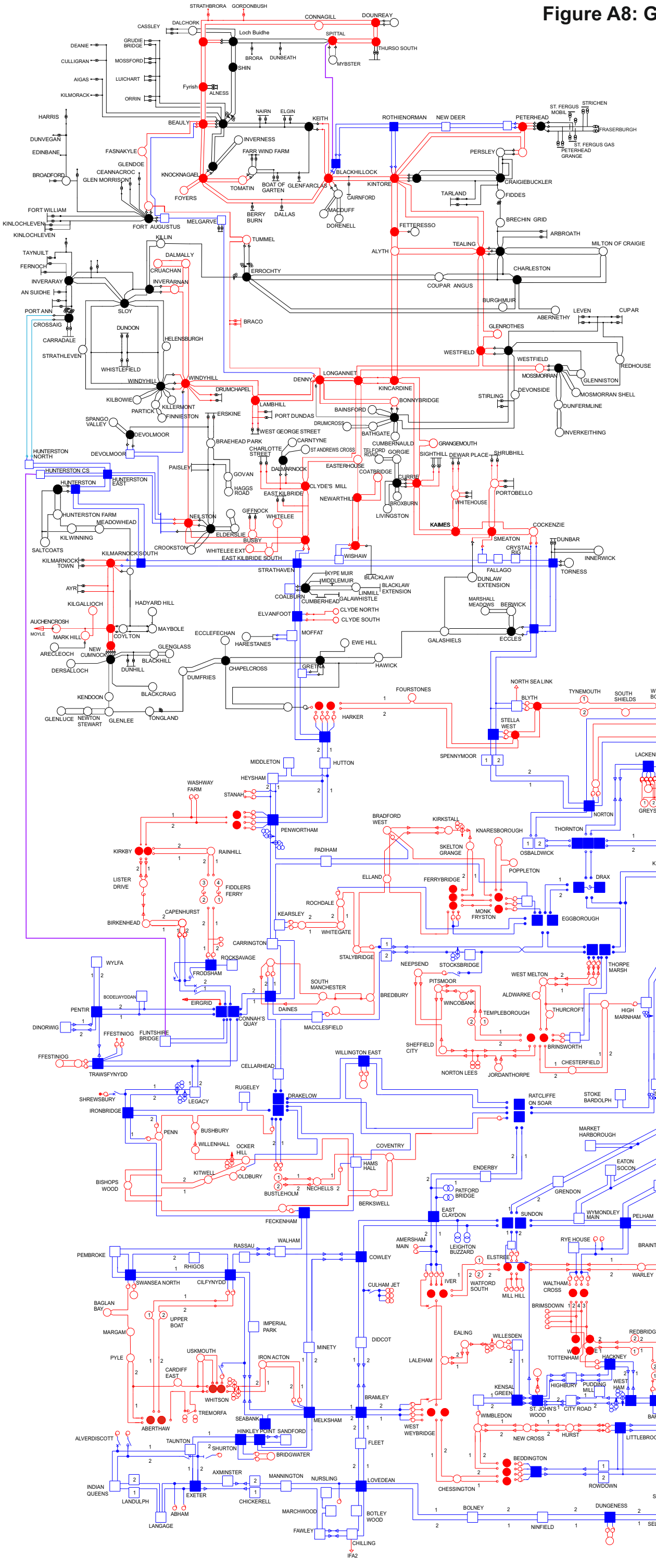
Note4: The -103/+140 Mvar at Neilston substation is a hybrid synchronous compensator and STATCOM

SHE TRANSMISSION

SP TRANSMISSION

NATIONAL GRID

Figure A8: GB Existing MITS Substation



Legend

- 400kV Circuit
- 275kV Circuit
- 220kV Circuit
- 132kV Circuit
- HVDC Circuit
- 400kV Substation
- 275kV Substation
- 132kV Substation

MITS Substations (Notes 3 and 4)

- 400kV
- 275kV
- 132kV

Note1: Not all radial 132kV circuits are indicated on this diagram

Note2: Substations and transmission circuits that are not entirely built do not appear in the Appendix A maps as they only show the network in operation for the 2023 to 2024 winter period. But they appear on the future network power flow diagrams in Appendix C from 2024/25 map onward.

Note3: Some definitions as per CUSC and SQSS:
MITS Substation (CUSC) = a Transmission substation with more than 4 Main System Circuits connecting at that substation;
Main System Circuit (CUSC) = means Transmission Circuits but excluding a Grid Supply Point Transformer;
Transmission Circuit (SQSS) = This is either an onshore or an offshore transmission circuit;
Onshore Transmission Circuit (SQSS) = part of the onshore transmission system between two or more circuit-breakers which include, for example, transformers, reactors, cables and overhead lines and DC converters but excludes busbars, generation circuits and offshore transmission circuits.

Note4: The MITS substation map is for Connect and Manage (C&M) purposes and should not be used for the purpose of TNUoS local circuit charges (which are derived from MITS node instead of MITS substation).