7 Relevant considerations arising from this statutory duty and the development context for the proposed interconnector are set out in the following sections.

2.2 EXISTING TRANSMISSION NETWORK INFRASTRUCTURE AND DEVELOPMENT CONTEXT

2.2.1 Existing Electricity Infrastructure

8 The nature of electrical power transmission systems is such that electricity generation and demand must always be balanced, since it is impractical for electrical energy to be stored in bulk quantities. This means that a strategic electricity transmission system must be capable of providing a continuously stable and reliable supply of electricity throughout a wide geographic area, but also capable of immediately coping with significant changes in operating conditions.

9 Transmission systems were originally designed to cater for the receipt of power from a relatively small number of large reliable sources of power generation and to distribute that power to widely dispersed load centres (primarily centres of population). However, the requirements of the modern transmission system have changed. Firstly, to enable use of the cheapest energy sources transmission system capacity needs to be capable of transferring a greater range of power flows between generators and load centres. Secondly, more small-scale and renewable energy-sourced generation is seeking connection to, or use of, transmission systems. Much of this is wind-powered generation, which has intermittent output. Transmission System Operator‘s (TSOs) therefore need to exchange large amounts of power to efficiently manage the variability.

10 The transmission system on the island of Ireland provides a substantial, reliable and proven corridor for balancing bulk power flows and ensuring stable system performance across the entire island. It operates at high voltages, to enable power to be transferred most efficiently, and is designed and constructed to provide a high standard of reliability and dependability. **Figure 2.1** shows the existing transmission networks in both jurisdictions as well as the existing interconnection between Northern Ireland and Scotland and between Ireland and Wales.

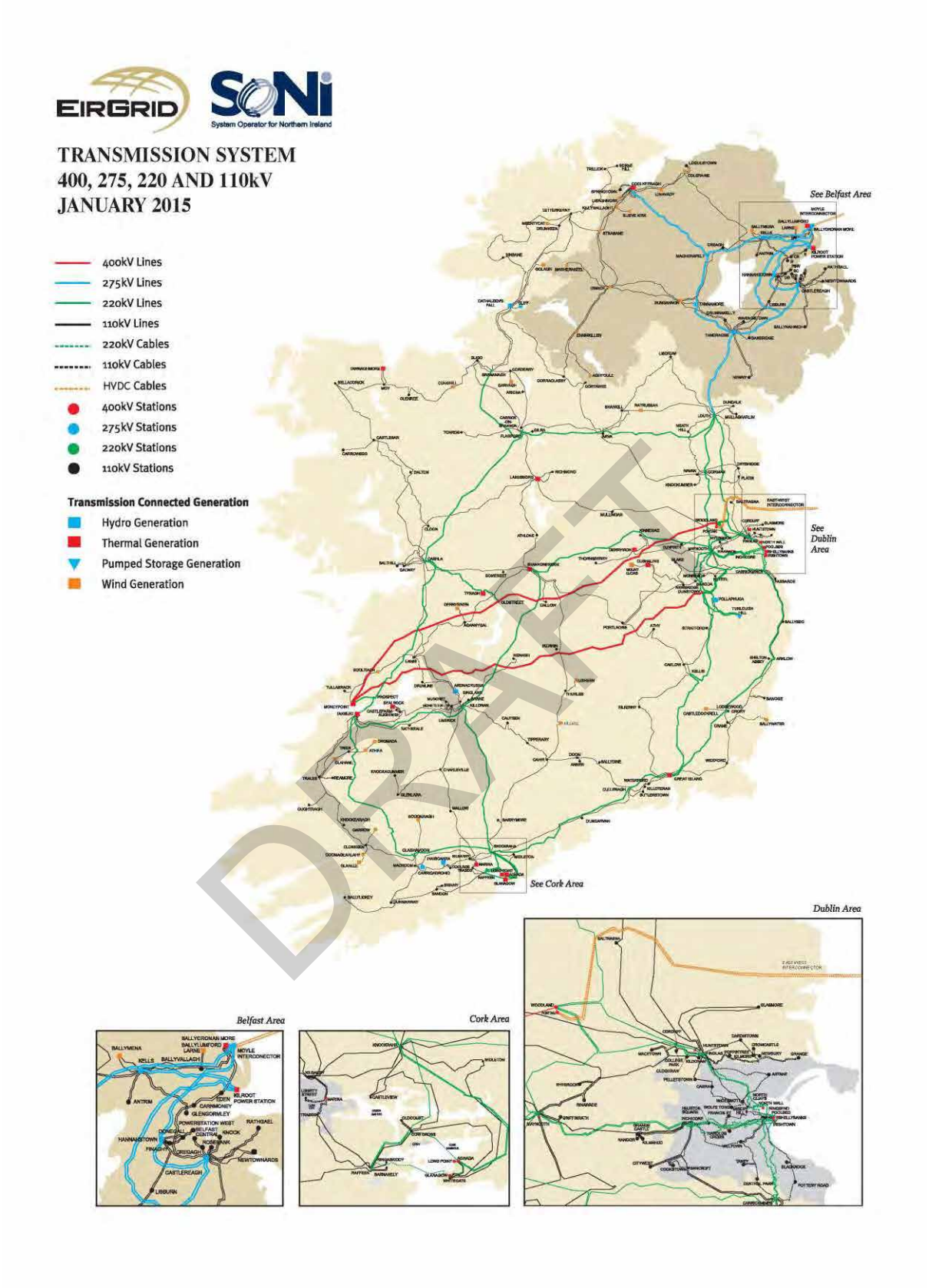

Figure 2.1: Transmission Systems in Ireland and Northern Ireland (2015)