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Blyth 400 kV Submission Summary

National Grid Electricity Transmission
Eligibility Letter

May 2026

T3 – Blyth 400kV

Executive Summary

Background

Blyth 400kV is a load-driven investment to provide additional transmission connection capability at Blyth in Northumberland. The investment is primarily required to meet two contracted connection requirements for a data centre and an offshore wind farm generation connection.

The existing Blyth 400kV site is highly constrained by its coastal and estuarial location, surrounding land uses, existing North Sea Link (NSL) cables and 400kV overhead line infrastructure. The existing 400kV installation also has limited scope for efficient expansion and is affected by the coastal environment.

The project is submitted under the RIIO-ET3 Load Re-opener mechanism and seeks confirmation of eligibility, approval of the needs case and preferred solution and Pre-Construction Funding.

Investment Drivers

Customer connections:

- Data centre demand: Requirement to connect a staged demand connection at Blyth.
- Offshore generation: Requirement to connect an Offshore Wind Farm generation connection.

Options

A structured optioneering process was undertaken, considering strategic options and a shortlist of five credible options:

- Options A, B and C – do minimum, market-based solution and non-transmission whole-system solution – were not progressed because they would not deliver compliant transmission-level customer connections.
- Option D – extension or rebuild of the existing Blyth substation – was not progressed because it could not accommodate the combined data centre demand and Offshore Wind generation customer's requirements.
- Options E-1, E-3 and E-4 – new permanent 400 kV substation options without the preferred phasing/rationalisation – were not progressed. E-1 would delay customer delivery dates and retain wider site inefficiencies, while E-3 and E-4 could not be physically accommodated within the land parcel, adjacent to the existing Blyth substation, as AIS solutions.
- Option X1B – phased temporary AIS extension followed by new 400 kV GIS without NSL diversion – was not progressed because retaining NSL in the existing 400 kV substation would create a congested layout, additional cable crossings and reduced future site optionality.
- Option E-2 – new standalone 400 kV GIS substation at Blyth and 400 kV layout rationalisation – was shortlisted as a feasible enduring GIS solution but does not provide early connection capability for the initial demand requirement.
- Option X1A – phased connection approach comprising a temporary AIS extension followed by a new 400 kV GIS substation on land adjacent to the existing Blyth substation – was shortlisted.
- Option X2 – phased approach using a permanent GIS extension followed by a new 400 kV GIS substation – was shortlisted, but carries greater technical and delivery risk, including bespoke GIS interface requirements and reduced site rationalisation.

- Options E-5 and E-6 – off-site indoor AIS substation options, with E-5 including an initial temporary AIS extension – were shortlisted as AIS comparators, but are subject to significant siting, land, consenting and delivery uncertainty, and are less aligned with the Blyth site strategy.

Preferred Solution

The preferred solution is Option X1A: a phased connection strategy comprising a temporary AIS extension to the existing Blyth 400 kV substation, followed by a new enduring 400 kV SF6-free GIS substation on adjacent land.

Option X1A was selected because it provides the strongest overall balance between meeting contracted delivery timelines and developing an enduring, coordinated Blyth site solution.

The key outputs of this investment are:

- **Long-term network efficient use of the existing network**, including designing for optimal arrangements at the Blyth site in future, accounting for potential future layouts of 275 kV and 66 kV infrastructure and therefore avoiding likelihood of asset rework in the best interests of consumers.
- **Establishes a new 400 kV GIS substation at Blyth to accommodate both large-scale generation and data centre demand**, strengthening transmission capability in the North East.
- **Supports regional economic growth**, supporting employment opportunities, skills development and wider supply chain activity in North East England.