nationalgrid

Bridgend Submission Summary

National Grid Electricity Transmission
Eligibility Letter

May 2026

T3 – Bridgend (South Wales West Connection Node B)

Executive Summary

Background

This investment relates to the development of a new 400/132 kV transmission connection node at Bridgend (South Wales West Connection Node B). The project is intended to provide new transmission capacity to support both contracted strategic demand and anticipated future system requirements.

The primary purpose of the investment is to enable the connection of contracted data centre demand. In addition, the design has been developed having regard to wider system-planning outcomes, including anticipated floating offshore wind generation, to ensure the solution remains aligned with coordinated network development.

System studies confirm that existing infrastructure in South Wales West cannot accommodate these requirements within required timescales. As a result, a new transmission node at Bridgend has been identified as the most appropriate solution.

The project is being progressed under the RIIO-ET3 Load Re-opener, the optioneering remains ongoing and a preferred solution has not yet been formally confirmed.

Investment Drivers

The investment is primarily load-driven, with supporting strategic system considerations:

Contracted strategic demand

- Demand from data centre
- Generation - floating offshore wind, identified through NESO-led planning as requiring additional 400 kV capability in South Wales in the mid-2030s.

Network capability constraints

- Existing 275 kV and 400 kV substations in the region are constrained, geographically unsuitable, or would require extensive reinforcement to accommodate the scale of demand and generation.
- System coordination and future efficiency
- Investment developed on a least-regret basis to align with coordinated system design and avoid inefficient future reinforcement.

Reallocation of wider regional demand

- Approximate additional data-centre demand has been re-localised to a separate node, reducing scope and delivery risk at Bridgend.

Options

A structured optioneering process identified a proportionate and deliverable solution, considering strategic demand, regional growth, and NESO planning outcomes. Non-transmission, reuse, and market-based options were ruled out early as they could not meet requirements, leaving a new transmission node as the only viable approach. Siting analysis confirmed DEV7 as the most deliverable location, with two reduced-footprint configurations—AIS and GIS—shortlisted to meet contracted demand from Vantage Data Centres while accommodating anticipated Celtic Sea offshore wind generation.

The scope evolved following system planning updates, which reassigned around 1.1 GW of regional data centre demand to a new Swansea-area connection node (South Wales West Connection Node D). This reduced the required capacity at Bridgend, enabling smaller, lower-risk substation designs focused on core drivers, while retaining flexibility for future expansion.

Preferred Solution

A preferred solution has not yet been formally confirmed; however, **Option E-11 (GIS)** is currently emerging as the preferred direction due to its smaller footprint and greater delivery certainty on a constrained site, although the AIS option remains under consideration. A final decision will be taken following further development and risk assessment, to be confirmed in the subsequent Needs Case and Optioneering submission.

Preferred solution (emerging):

- 400/132 kV SF_6-free GIS substation at preferred site.
- Four 400/132 kV supergrid transformers supplying demand at 132 kV.
- Capability to connect:
    - Contracted data centre demand; and
    - Anticipated offshore wind generation.

Rationale for emerging preference:

- **Smaller footprint**, enabling avoidance of landfill and reduced interaction with subsurface constraints.
- **Improved deliverability**, with lower construction and remediation risk.
- **Greater programme certainty**, with potential earlier delivery.
- **Lower cost** relative to AIS alternative due to reduced earthworks and mitigation requirements.

Alternative retained option:

- Option E-10 (AIS) remains credible but involves:
    - Larger footprint;
    - Greater interaction with landfill and mining constraints;
    - Higher delivery risk and later programme.

Delivery of the enduring solution remains dependent on completion of design and consenting activities, long-lead equipment procurement, system access and effective management of site-specific risks, notably ground conditions and access.