nationalgrid

400/132 kV Imperial Park Upgrade Submission Summary

National Grid Electricity Transmission
Combined Eligibility Letter & Needs Case

May 2026

T3 – 400/132 kV Imperial Park Upgrade

Executive Summary

Background

Imperial Park is an existing 400 kV AIS transmission substation in South Wales. This is a load-driven investment submitted as a Track 3 Eligibility Letter and Needs Case under the RIIO-ET3 Load Re-opener mechanism. The project is required to upgrade the existing Imperial Park 400/33 kV AIS substation to enable a contracted direct customer connection, which will in turn supply embedded data centre demand.

Investment Drivers

Customer connections:

- Connect DNO demand at Imperial Park, enabling embedded demand connection for data centres.

The existing 400 kV substation configuration cannot accommodate the required level of capacity without reinforcement. Without the investment, NGET would be unable to meet contractual and licence obligations.

Options

A structured, multi-stage optioneering process was undertaken to identify a proportionate and deliverable solution. A wide range of strategic options were initially considered, including do-nothing, market-based, whole-system, reuse/uprating, and new-build approaches.

Options A, B and C – do nothing, market-based solution and non-transmission whole-system solution – were discounted because they would not deliver the required compliant customer connections.

We assessed further options through **three stages**.

- **Stage 1:** Feasibility of meeting requirements at the existing Imperial Park site was ruled out due to space and configuration constraints. New-build options (on-site and alternative locations) were explored but faced significant land, environmental, and consenting challenges. The preferred new site could not be secured.
- **Stage 2:** Assessment of further new-build 400/132 kV substation options at the existing 400 kV site and newly identified site through a siting study, which would provide greater capacity and future expansion potential but carried significant land, environmental and consenting challenges. These were not progressed due to inability to agree land arrangements. An adjacent-site GIS substation option was also discounted due to planning and ecological constraints.
- **Stage 3:** Following engagement with customers, the connection approach was reconfigured, enabling an existing-site uprating solution to deliver acceptable non-firm capacity within required timescales.

Shortlisted options include:

- Option E-10: Construction of a new 400/132 kV GIS substation adjacent to the existing Imperial Park substation – was retained as a reference case for cost comparison.
- Option D-4: Uprating the existing SGTs from 400/33 kV to 400/132 kV using one AIS DCB bay and one conventional AIS bay – was shortlisted.
- Option D-5: Uprating the existing SGTs from 400/33 kV to 400/132 kV using two DCB bays – was shortlisted.

Preferred Solution

The preferred solution is Option D-4: uprating the existing Imperial Park SGTs from 400/33 kV to 400/132 kV using one AIS DCB bay and one conventional AIS bay.

Option D-4 is preferred because it meets the contracted customer need through a customer-accepted non-firm connection, while avoiding the land, environmental and consenting risks associated with a new substation. It is also lower cost than the alternative shortlisted options.

Key outputs include delivery of the contracted DNO demand connection at Imperial Park, replacement of 400/33 kV SGTs with 400/132 kV SGTs, and creation of additional non-firm capacity.