Llantarnam BSP and associated 66 kV Network

Network Development Report – South Wales

May 2024

Electricity Distribution

nationalgrid

Contents

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1. Network Overview

Llantarnam Bulk Supply Point (BSP) supplies an area north of Newport covering a couple of suburb villages and some commercial/light industry. A legacy of heavy industry leaves the BSP lightly loaded now with only a small amount of secondary network still supplied from the site.

The site is fed from two 132 kV circuits from Uskmouth GSP, supplying a pair of 132/11 kV Grid Transformers (GTs) and a pair of 132/66 kV GTs. The 132/11 kV site has been considered under the Uskmouth 132 kV network report, this report covers only the 66 kV network. Llantarnam 66 kV BSP and its secondary networks supplies approximately 16,600 customers.

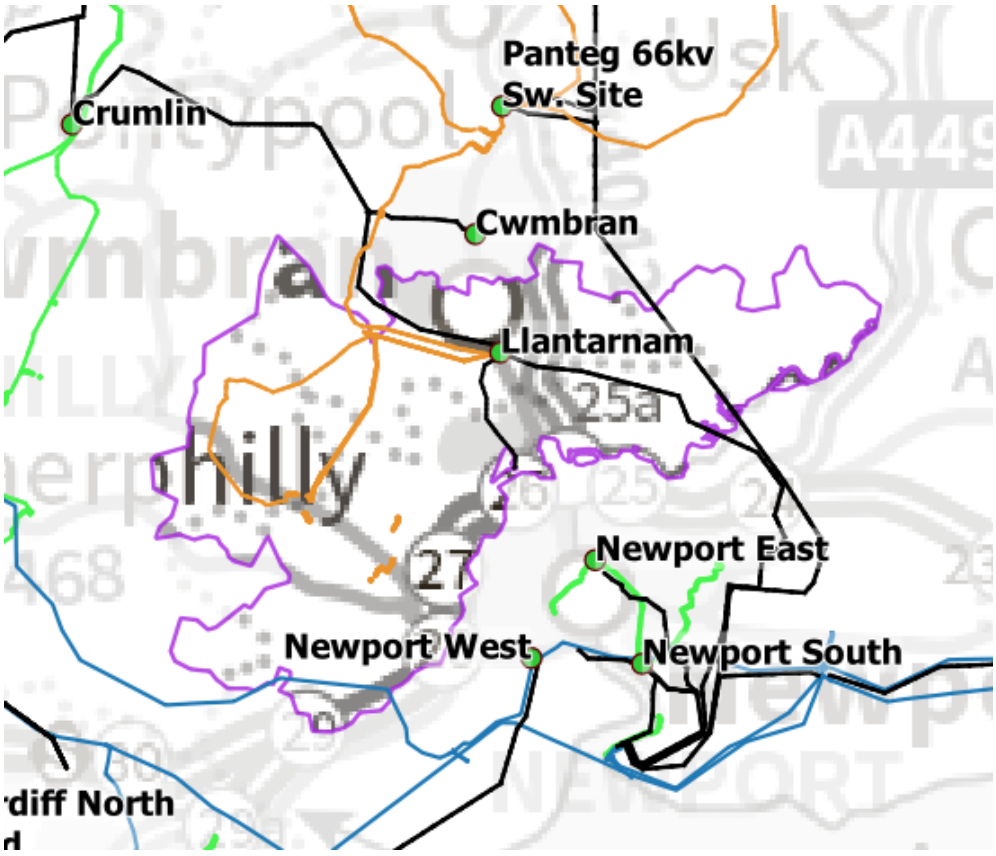

Figure 1.1 – Llantarnam BSP geographic network coverage

This report discusses all existing and future network constraints over a 0-10 year horizon associated with the 66 kV circuits and 66/11 kV transformers which supply the Llantarnam 66 kV BSP area. This uses the methodology outlined in the Network Development Plan Methodology Report with Network Operability Modelling applied as outlined below.

For the purposes of this analysis the NGED Best View Distribution Future Energy Scenario (DFES) has been used to study the years 2022 (baseline), 2028 and 2034, with consideration given to how proposals could change under the other scenarios. Five representative days have been studied across the four seasons: Winter Peak Demand, Intermediate Warm Peak Demand, Intermediate Cool Peak Demand, Summer Peak Demand and Summer Peak Generation.

1.1 Network Topology

The Llantarnam BSP network is arranged as follows:

- Two GTs running in parallel, one connected to each of the incoming 132 kV circuits.

- A 66 kV busbar comprised of three parallel operable sections, two ‘main’ bars and a central ‘reserve’ bar. Circuits are connected via selector switches between one of the main bars and the reserve bar. This has been modelled as a two section double busbar due to programming constraints but as the modelled “RES2” section is the same physical asset as the “RES1” section they are connected with a zero impedance link.
- Rogerstone 66/11 kV primary substation is fed via two 66 kV circuits.
- Pontypool North is supplied by two circuits, one 66 kV circuit from Llantarnam BSP and separately by a 132 kV circuit which is currently fed from Uskmouth 405.

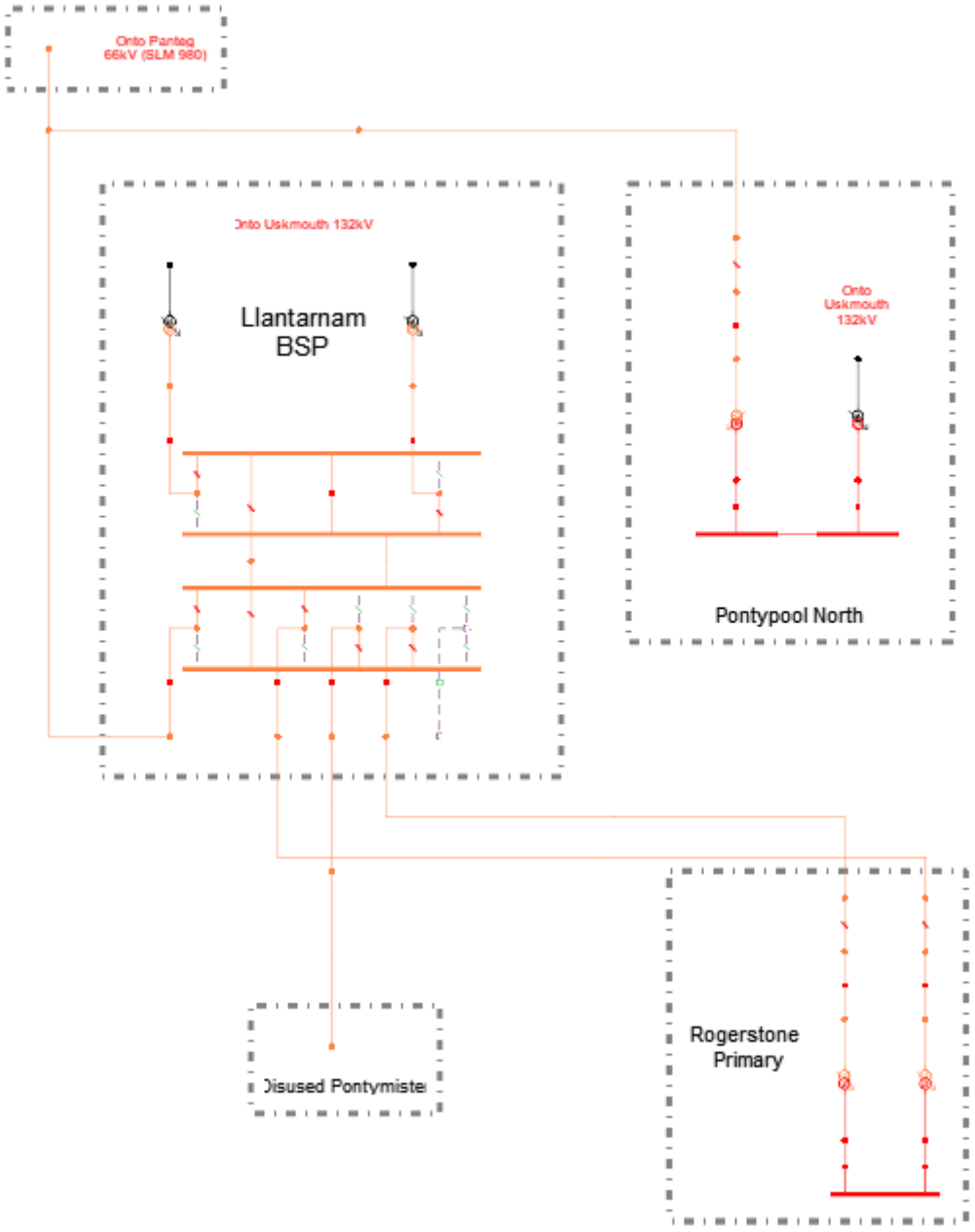

Figure 1.1.1 – Llantarnam BSP Single Line Diagram

1.2 Network Operability Modelling

The following network automation and manual switching schemes have been modelled in the analysis of this area, aligning to how the network is currently operated, as well as proposed actions, to manage some constraints identified operationally.

- Llantarnam BSP is a recipient of intertripping signals from Uskmouth GSP, a fault seen by Uskmouth circuit breakers 705 or 1405 will generally trip Llantarnam 1T0 or 2T0 respectively.

2. Summary of Network Constraints

The following constraints were identified for the Best View Scenario, for which mitigation options will be discussed:

- Llantarnam 132/66 kV BSP does not have any apparent constraints to achieve compliance out to 2034.
- The adjacent Llantarnam 132/11 kV BSP discussed in section 3.4 of the Uskmouth GSP report is constrained within the assessment period, please see that report for full details. An additional 66/11 kV primary substation is proposed and 11 kV load from the 132/11 kV primary substation would be transferred towards the 66 kV.

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