

## **Brechfa Forest Connection**

Development Consent Order Application - Reference EN020016

# **DLV19 Appendix 1 Options Comparison**

**November 2015**

Regulation 8(1)(b) of the Infrastructure Planning  
(Examination Procedure) Rules 2010

**WESTERN POWER  
DISTRIBUTION**

Change requests received from PILs and NRW

Option	Compliance/deliverability	Environmental	Cost
<p><b>1</b></p> <p>Blaengwen: A 132kV connection to the substation serving Alltwalis wind farm then utilisation of existing WPD infrastructure to Rhos and ultimately Swansea North GSP</p>	<p>Reinforce in excess of 100km of existing circuitry (otherwise overloaded) with at least 30km requiring new build alongside existing lines in order to maintain operations during any construction phase.</p> <p>The existing line from Alltwalis to Rhos would be replaced with one able to carry a larger conductor</p> <p>Technical and/or commercial impacts (increasing leading power factor or unable to export at agreed capacities) upon SP Manweb circuitry in mid wales.</p>	<p><b>Landscape and Visual:</b> Localised impacts around Alltwalis substation, replacement 132kV connection following existing Alltwalis line to Rhos would potentially affect a LANDMAP High Value landscape. Replacement of existing towers with larger towers off-line between Rhos and Carmarthen has the potential to give rise to landscape and visual effects, the circuit runs through a LANDMAP High Value (visual and sensory) area north and south of Cynwyl Elfed, and south of Newchurch as the circuit extends towards the tie-in point at Carmarthen. Re-conductoring including new towers off line along some section to Swansea North GSP will pass through LANDMAP High Value areas, and SLAs.</p> <p><b>Historic Environment:</b> three SAMs lie within 1km of existing Alltwalis line (which would be replaced). Also 1 Listed Building within 1km from tie-in point at Rhos. Replacement of existing towers with larger towers off-line between Rhos and Carmarthen would run through an area designated as a Registered Landscape of Special Historic Interest south of the terminal point at Rhos. Also a SAM 200m from Carmarthen substation. Re-conductoring would take place through an area designated as a Registered Landscape of Outstanding Historic Interest, and Historic Landscape Characterisation areas with archaeological and historic features within 200m of existing line which also runs close to a Registered Historic Park and Garden east of Pwll.</p> <p><b>Ecology:</b> Alltwalis substation and the existing line (which would be replaced) to Rhos together with the re-conductoring required south of Rhos lie outside areas designated for biodiversity. There is a SSSI located alongside the existing tower line 500m from the proposed tie-in point at Carmarthen.</p> <p><b>Settlement and Land Use:</b> The route crosses a number of important recreational routes, avoiding settlements but in close proximity to individual dwellings and to the western side of Carmarthen.</p>	<p>Construction costs (all OHL) of approximately £50 million.</p>
<p><b>2</b></p> <p>Rhos/Lampeter: A new 132kV connection to Rhos or Lampeter Substation and utilisation of existing WPD network to Swansea North GSP</p>	<p>Reinforce in excess of 100km of existing circuitry with at least 30km requiring new build alongside existing lines in order to maintain operations during any construction phase.</p> <p>New OHL required from Brechfa Forest West, west to Rhos.</p> <p>Technical and/or commercial impacts upon SP Manweb circuitry in mid wales.</p>	<p><b>Landscape and Visual:</b> A new (not replacement) OHL to Rhos heading away from the ultimate point of connection would conflict with Holford Rules. Replacement of existing towers with larger towers off-line between Rhos and Carmarthen has the potential to give rise to landscape and visual effects, the circuit runs through a LANDMAP High Value (visual and sensory) area north and south of Cynwyl Elfed, and south of Newchurch as the circuit extends towards the tie-in point at Carmarthen. Reconductoring including new towers off line along some section to Swansea North GSP will pass through LANDMAP High Value areas, and SLAs.</p> <p><b>Historic Environment:</b> 1 Listed Building within at 1km from tie-in point at Rhos. Replacement of existing towers with larger towers off-line between Rhos and Carmarthen would run through an area designated as Registered Landscape of Special Historic Interest south of the terminal point at Rhos. Also a SAM 200m from Carmarthen substation. Reconductoring would take place through an area designated as a Registered Landscape of Outstanding Historic Interest, and Historic Landscape Characterisation areas with archaeological and historic features within 200m of existing line which also runs close to a Registered Historic Park and Garden east of Pwll.</p> <p><b>Ecology:</b> No designated site affected although there is a SSSI located alongside the existing tower line 500m from the proposed tie-in point at Carmarthen.</p> <p><b>Settlement and Land Use:</b> The route crosses a number of important recreational routes, avoiding settlements but in close proximity to individual dwellings and to the western side of Carmarthen.</p>	<p>Construction costs (all OHL) of approximately £50 million.</p>

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3	<p>Carmarthen: A new 132kV connection to Carmarthen Substation and utilisation of existing WPD network to Swansea North GSP</p>	<p>New 132kV line approximately 30km direct to Carmarthen, expansion of substation then approximately 80km of existing circuitry to be reinforced with approximately 19km requiring new build.</p> <p>Connection of additional generation at Carmarthen substation could result in technical and/or commercial impacts upon SP Manweb circuitry in mid wales.</p>	<p><b>Landscape and Visual:</b> Effects of connection of approximately 30km to Carmarthen dependent upon route taken. Carmarthen substation is not in a designated landscape. Rebuild of existing line between Carmarthen and Burry Port which runs through a LANDMAP High Value (Visual and Sensory) area and SLA.</p> <p><b>Historic Environment:</b> The substation is located immediately adjacent to the eastern boundary of the Towy Valley Registered Landscape of Outstanding Historic Interest, and with a SAM 900m distant. South of Carmarthen the line passes through the Registered Landscape of Outstanding Historic Interest Historic Landscape Characterisation areas with archaeological and historic features and within close proximity to SAMs and historic buildings.</p> <p><b>Ecology:</b> two SSSIs located 70m from Carmarthen substation are unlikely to be affected. The existing line south of Carmarthen crosses close (within 200m) to ten Areas of Ancient and Semi-Natural Woodland, through a SSSI and RSPB Nature reserve and within 100m of one other SSSI and nature reserve.</p> <p><b>Settlement and Land Use:</b> Carmarthen substation is to the west of Carmarthen. The allocated West Carmarthen Urban Extension would bring the settlement closer to the site. The existing (reinforced) circuit south of Carmarthen passes through the western fringe of Trimsaran settlement, and then through Burry Port. The circuit passes through a network of nationally important recreational routes at the start of the route, and again towards the end of the route around Burry Port.</p>	<p>Construction cost (all OHL) of approximately £30.5 million.</p>
4	<p>Ammanford: A new 132kV connection to Ammanford 132kV Substation and utilisation of existing WPD network to Swansea North GSP</p>	<p>New 40km OHL to Ammanford with a requirement to upgrade 13km of circuitry from Ammanford to Swansea North GSP.</p>	<p><b>Landscape and Visual:</b> Effects of 132kV connection of approximately 40km to Ammanford dependent upon route taken. Ammanford substation lies 400m from an SLA and area of High Value (Visual and Sensory) LANDMAP. Reconductoring between Ammanford and Swansea would take place through two SLAs and two areas identified under LANDMAP as High Value (Visual and Sensory).</p> <p><b>Historic Environment:</b> No designated assets in proximity the substation. The existing (to be re-conducted) circuit south of Ammanford passes within 200m of two SAM and two listed buildings with other assets within 1km. The corridor to the wind farms runs through the Towy Valley Registered Landscape of Outstanding Historic Interest. The corridor contains a SAM, and bisects a cluster of Listed Buildings east of Milo. There are a number of other SAMs and Listed Buildings in proximity to the corridor. There are two Historic Parks and Gardens to the east of the corridor, near Golden Grove and Llandybie.</p> <p><b>Ecology:</b> The substation is not on land designated for its ecological value although an Ancient Semi Natural Woodland (ASNW) is located 500m distant. The existing circuit (to be reconducted) runs through two areas of ASNW, others are within 200m of the circuit and there is an SSSI 300m distant where it passes to the west of Mynydd y Gwair.</p> <p><b>Settlement and Land Use:</b> The closest area of settlement to the substation is 400m distant and there is a public right of way within 200m. The circuit to be reconducted does not pass through settlements but is in proximity to individual dwellings and also crosses a network of footpaths including three which are nationally important recreational routes.</p>	<p>Construction cost (all OHL) of approximately £5.6 million.</p>

Option	Compliance/deliverability	Environmental	Cost	
5	Swansea North (via EE circuit): A new 132kV connection to the EE route, south of Carmarthen, at Llandyfaelog, and utilisation of existing WPD network to Swansea North GSP	<p>New 30km OHL to connect to EE route then use of existing infrastructure from EE route to Swansea North GSP.</p> <p>Existing infrastructure can be upgraded where required without affecting existing distribution operations and hence technically compliant.</p>	<p><b>Landscape and Visual:</b> The SOR does not set out the effects potentially arising from the wind farm substation to the EE route and these were set out within other reports. However it is known that the route would pass across the Towy Valley SLA and Registered Historic Landscape which is also identified by LANDMAP as being of Outstanding value with other areas identified as High. Works to towers on the EE route would take place on the circuit which runs through the eastern edge of an SLA and passes through a LANDMAP High value area north of New Lodge. From the substation to the C Route the existing circuit passes through an SLA and LANDMAP High value area and then through another High value area before reaching Swansea North GSP.</p> <p><b>Historic Environment:</b> The wind farm substation to the EE route runs through a Registered Landscape of Outstanding Historic Interest. There are scattered Listed Buildings and Scheduled Ancient Monuments within the corridor. There is a concentration of Listed Buildings and Conservation Areas in/around Carmarthen. There are Registered Parks and Gardens to the east of Carmarthen associated with the Towy River Valley. The EE route would pass through one Registered Landscape of Outstanding Historic Interest and within 200m of three listed buildings with the closest SAM being less than 1km distant. The route to Swansea North GSP passes within approximately 100m of a number of SAMs and Listed Buildings, and through the northern tip of a Registered Park and Garden at Penllergaer.</p> <p><b>Ecology:</b> The SOR does not set out the effects potentially arising from the wind farm substation to the EE route. However it is known that the route would cross the River Towy SAC/SSSI and would avoid areas of Ancient Semi Natural Woodland (ASNW). The EE route lies close to an SSSI and ASNW whilst between the C Route and Swansea North GSP the existing circuit passes through a SSSI and RSPB Nature reserve and between two areas of ASNW.</p> <p><b>Settlement and Land use:</b> Whilst the potential effects arising from a new OHL from the wind farm substation to the EE Route are not set out in the SOR it is known that it would avoid settlements but would cross 19 Public Rights of Way whilst long distance footpaths and country walks lie within the study area. The existing EE Route crosses a proposed National Cycle Route and the existing C Route to Swansea GSP passes within 100m of existing settlements and passes through two nationally important recreational routes, and through a Proposed National Cycle Route.</p>	Construction cost (all OHL) of approximately £4 million
6	Swansea North (direct): A new a 132kV connection direct to Swansea North GSP without using any existing WPD network	<p>A new approximately 50km OHL to connect Brechfa Forest West wind farm to Swansea GSP.</p>	<p><b>Landscape and Visual:</b> Effects dependent upon route taken but the connection may run through two or three pockets of land which designated as Special Landscape Areas. In addition, the connection may run through a LANDMAP Outstanding (visual and sensory) and three LANDMAP High Value (visual and sensory) areas at Mynydd y Gwair, west of the Brecon Beacons National Park and around the Brechfa Forest area. The connection could also run within 1.2km from the Brecon Beacons National Park</p> <p><b>Historic Environment:</b> The wind farm substation to the EE route runs through a Registered Landscape of Outstanding Historic Interest. This corridor contains a SAM, and bisects a cluster of Listed Buildings east of Milo. There are a number of other SAMs and Listed Buildings in proximity to the corridor. There are two Historic Parks and Gardens to the east of the corridor, near Golden Grove and Llandybie.</p> <p><b>Ecology:</b> The connection could run through six areas of Ancient and Semi Natural Woodland, although some but not all could be unavoidable. In addition, the connection could pass through a SSSI, which is to the west of Betws. The route may also cross the River Towy (SAC, SSSI) south east of Felindre.</p>	Construction cost (all OHL) of approximately £7.5 million.

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			<p><b>Settlement and Land use:</b> The connection could runs past the north eastern fringes of Ammanford. In addition, it may pass through a network of footpaths; in particular there are four Long Distance Footpaths, a National Cycle Route and Proposed National Walking/Cycling Route, which are categorised as nationally important recreational routes. The connection may also run through Pontardawe Strategic Search Area (SSA) E identified by the Welsh Government in Technical Advice Note 8: Planning for Renewable Energy (July 2005) as a location for onshore wind farms.</p>	