SP Energy Networks | DSO

Distribution Network Options Assessments (DNOA)

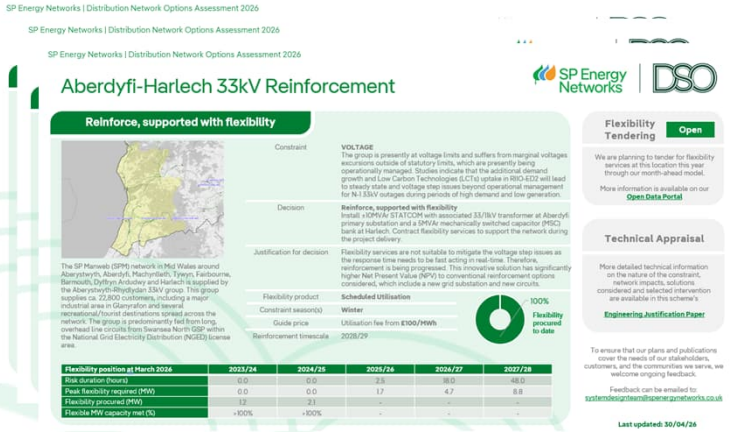
SP Manweb
May 2026

Introduction to DNOA

For every location where our network assessments have identified that there will be insufficient network capacity to meet customer needs, we have a decision to make – how should we best intervene to provide the capacity?

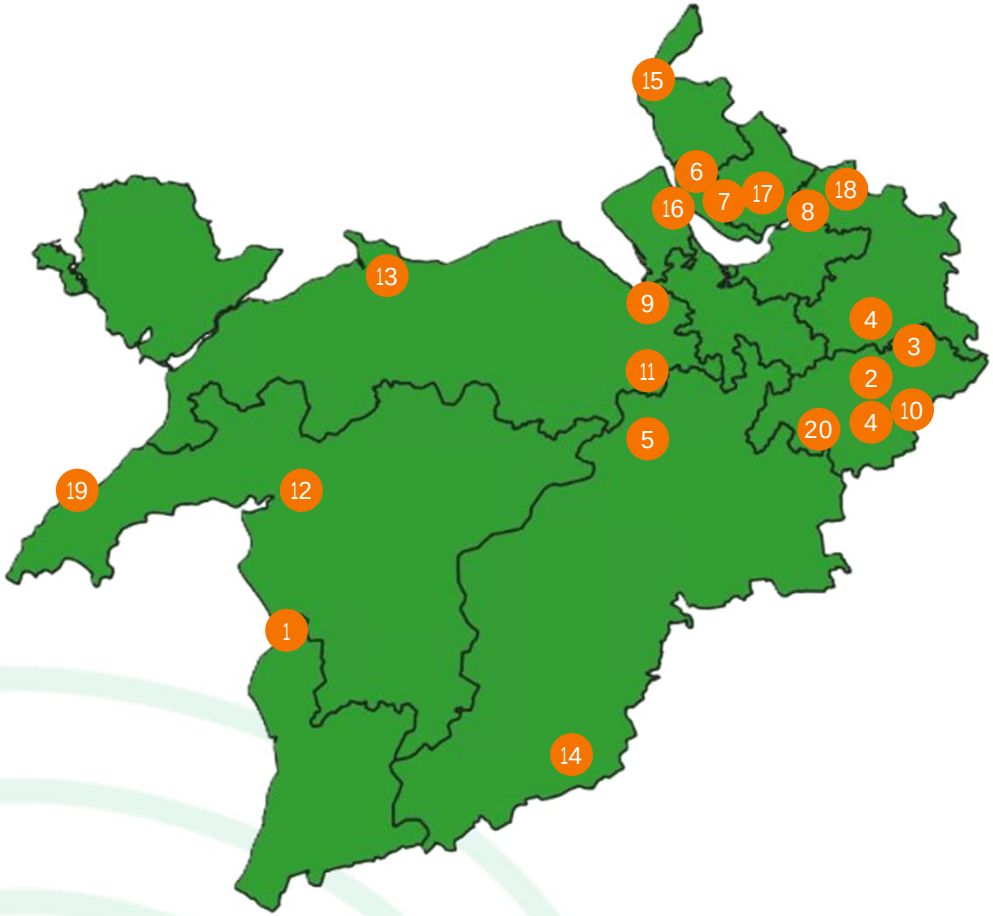
Our DSO Decision Making Framework provides detail and transparency on the processes we follow to impartially select optimal solutions, and how we decide when and where to rely on flexibility services instead of other network interventions.

We have continued the publication of Distribution Network Options Assessments (DNOA) to provide stakeholders with more information on individual scheme decisions. This provides an overview of the individual constraint, how we are managing it; and where flexibility forms part of our solution, we provide details of the flexibility requirements at this location. Following the move to monthly tendering for flexibility, the annual DNOA publication will signpost upcoming longer-term requirements. We intend to publish our DNOA annually, but we may refresh information more frequently if there are any changes in our decision making at individual sites.



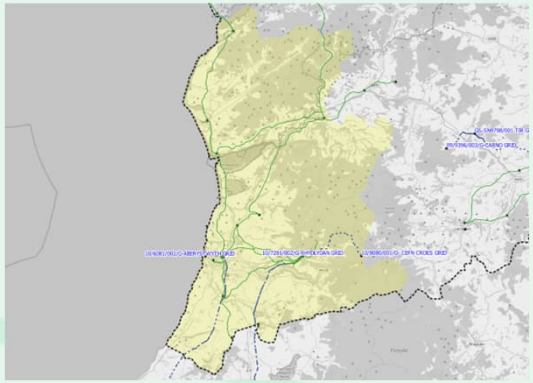
SPM DNOA Site List

1. Aberdyfi-Harlech 33kV Reinforcement
2. Acer Avenue Primary Reinforcement
3. Sandbach Primary Reinforcement
4. Middlewich Primary Reinforcement
5. Legacy 132kV Reinforcement
6. Bootle Canal Quarter Reinforcement
7. Lister Drive 132kV Reinforcement
8. Carrington / Fiddler's Ferry 132kV Reinforcement
9. Connah's Quay 132kV Reinforcement
10. Radway Green 33kV Reinforcement
11. Brymbo / Hawarden / Holywell 33kV Reinforcement
12. Maentwrog-Porthmaclog 33kV Reinforcement
13. Colwyn Bay-Dolgarrog 33kV Reinforcement
14. Newtown-Morda 33kV Reinforcement
15. Formby-Southport Reinforcement
16. Woodside Grid 33kV Fault Level Mitigation
17. Prescot Grid Fault Level Mitigation
18. Dallam-Sankey Bridges-Warrington Reinforcement
19. Edern Primary Reinforcement
20. Nantwich Primary Reinforcement



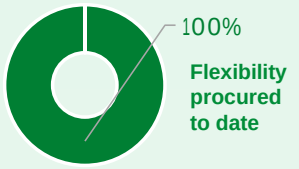
Aberdyfi-Harlech 33kV Reinforcement

Reinforce, supported with flexibility



The SP Manweb (SPM) network in Mid Wales around Aberystwyth, Aberdyfi, Machynlleth, Tywyn, Fairbourne, Barmouth, Dyffryn Ardudwy and Harlech is supplied by the Aberystwyth-Rhydlydan 33kV group. This group supplies ca. 22,800 customers, including a major industrial area in Glanyrafon and several recreational / tourist destinations spread across the network. The group is predominantly fed from long, overhead line circuits from Swansea North GSP within the National Grid Electricity Distribution (NGED) license area.

Constraint	VOLTAGE The group is presently at voltage limits and suffers from marginal voltages excursions outside of statutory limits, which are presently being operationally managed. Studies indicate that the additional demand growth and Low Carbon Technologies (LCTs) uptake in RIIO-ED2 will lead to steady state and voltage step issues beyond operational management for N-1 33kV outages during periods of high demand and low generation.
Decision	Reinforce, supported with flexibility Install ±10MVAr STATCOM with associated 33/11kV transformer at Aberdyfi primary substation and a 5MVAr mechanically switched capacitor (MSC) bank at Harlech. Contract flexibility services to support the network during the project delivery.
Justification for decision	Flexibility services are not suitable to mitigate the voltage step issues as the response time needs to be fast acting in real-time. Therefore, reinforcement is being progressed. This innovative solution has significantly higher Net Present Value (NPV) to conventional reinforcement options considered, which include a new grid substation and new circuits.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Guide price	Utilisation fee from £100 / MWh
Reinforcement timescale	2028/29



Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	0.0	0.0	2.5	18.0	48.0
Peak flexibility required (MW)	0.0	0.0	1.7	4.7	8.8
Flexibility procured (MW)	1.2	2.1	-	-	-
Flexible MW capacity met (%)	>100%	>100%	-	-	-

Flexibility Tendering

Open

We are planning to tender for flexibility services at this location this year through our month-ahead model.

More information is available on our Open Data Portal

Technical Appraisal

More detailed technical information on the nature of the constraint, network impacts, solutions considered and selected intervention are available in this scheme's

Engineering Justification Paper

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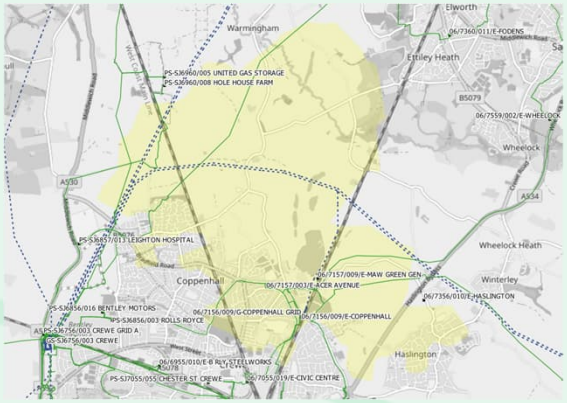
Last updated: 30/04/26

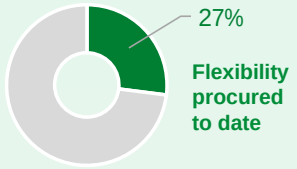
Acer Avenue Primary Reinforcement

Reinforce, supported with flexibility



Acer Avenue primary lies within the Crewe/Coppenhall/Whitchurch/Radway Green 33kV group and is supplied from a single 7.5MVA primary transformer. The underlying 11kV network supplies to ca. 6,400 customers, a mixture of domestic, commercial and light industrial customers in the north-Crewe area, and is normally operated open with the neighbouring 11kV groups.

Constraint	THERMAL The loading at the site has already reached the group's existing Firm Capacity. There is no capacity headroom on the primary transformer and limited thermal capacity on the 33kV and 11kV circuits. Currently the network risk is managed by interim flexible tenders. Demand and Low Carbon Technologies (LCTs) growth in this group is expected to exceed network capacity during the RIIO-ED2 period.
Decision	Reinforce, supported by flexibility Install a new 10MVA 33/11kV transformer at Acer Avenue primary substation, replace the 33kV & 11kV switchgear, and reconfigure the 33kV circuit and underlying 11kV network. Contract flexibility services to support the network during the project delivery and manage the constraint in the interim.
Justification for decision	Sufficient flexibility to defer reinforcement until midway through the period, but not beyond. Therefore, works are planned. Flexibility will support management of the constraint in the interim.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Guide price	Utilisation fee from £100/MWh
Reinforcement timescale	2026/27



Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	188.0	206.5	280	480	830
Peak flexibility required (MW)	1.6	1.7	1.6	2.1	2.5
Flexibility procured (MW)	0.4	0.6	0.3	-	-
Flexible MW capacity met (%)	27%	38%	19%	-	-

Flexibility Tendering

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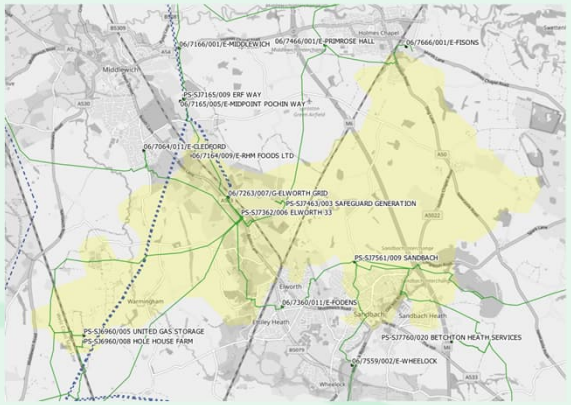
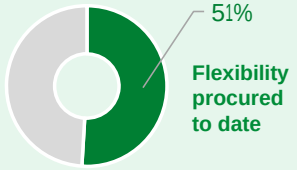
Sandbach Primary Reinforcement

Reinforce, supported with flexibility



The Sandbach primary substation comprises of a single 7.5MVA 33/11kV transformer, supplied from 4 x 33kV circuits in the Crewe/Coppenhall/Radway Green/Whitchurch grid supply group. The Sandbach primary network group supplies ca. 3,400 customers with a mix of domestic, industrial and commercial customers. The 11kV group network is normally operated split from the adjacent primary group network.

Constraint	THERMAL The loading at the site is already very close to capacity. With forecast demand and Low Carbon Technologies (LCTs) growth, this group is expected to exceed network capacity by 2025/26.
Decision	Reinforce, supported by flexibility Install a new 10MVA 33/11kV transformer at neighbouring Fodens, and establish new 11kV interconnector between Sandbach and Fodens. Contract flexibility services to support the network during the project delivery.
Justification for decision	With the increased risk duration, capacity requirements and cost of flexibility services through RIIO-ED2, reinforcement deferral via flexibility services is not commercially viable.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Year round
Guide price	Utilisation fee from £100/MWh
Reinforcement timescale	2026/27



Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	327.5	669.0	235	463	935
Flexibility required (MW)	1.3	1.8	1.2	1.7	2.1
Flexibility procured (MW)	1.0	0.9	0.3	-	-
Flexible MW capacity met (%)	78%	50%	26%	-	-

Flexibility Tendering

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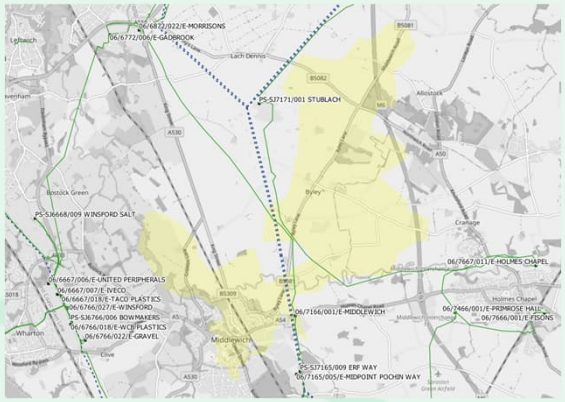
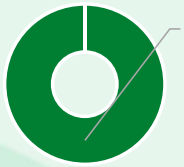
Middlewich Primary Reinforcement

Reinforce, supported with flexibility



The Middlewich primary substation comprises of a single 7.5MVA 33/11kV transformer which is supplied from the 33kV Elworth/Knutsford grid group. The Middlewich primary network group supplies ca. 2,600, predominantly domestic customers. The 11kV group network is normally operated split from the adjacent primary group network.

Constraint	THERMAL Network studies indicated that with the additional demand and Low Carbon Technologies (LCTs) uptake across the network thermal loading on the 33/11kV 7.5MVA transformer at Middlewich will exceed the Firm Capacity by 2026/27, along with thermal overloads on 33kV circuits between Knutsford and Elworth.
Decision	Reinforce, supported by flexibility Install a new 10MVA 33/11kV transformer at Middlewich to provide more capacity, and transfer neighbouring Morrisons primary out of the Elworth/Knutsford grid group into a neighbouring grid group (Hartford/Lostock/Winsford) to relieve circuit constraints. Contract flexibility services to support the network during the project delivery.
Justification for decision	Insufficient flexibility had been procured to manage the risk of overload and so works are being progressed. Work had commenced before cancellation of HS2 was announced. Nevertheless, demand and LCTs growth is still forecast to exceed the 7.5MVA capacity of Middlewich T1 by 2029/2030 and so the works futureproof the area.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Year round
Guide price	Utilisation fee from £100/MWh
Reinforcement timescale	2026/27



100%

Flexibility procured to date

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	0.0	8.5	1271	1285	1403
Peak flexibility required (MW)	0.0	0.3	0.16	0.5	0.8
Flexibility procured (MW)	0.9	0.1	0.12	-	-
Flexible MW capacity met (%)	>100%	33%	78%	-	-

Flexibility Tendering

Open

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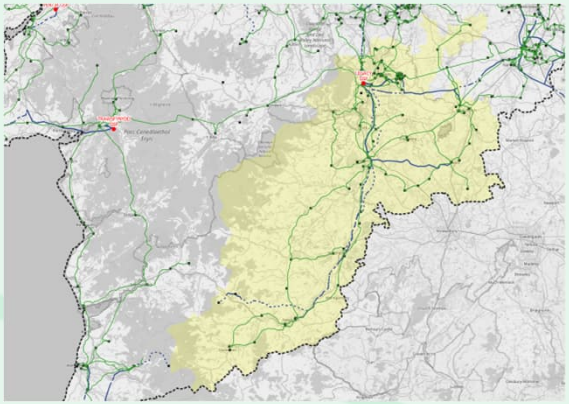
Last updated: 30/04/26

Legacy 132kV Reinforcement

Reinforce



Legacy 400/132kV GSP is a key site in the SP Manweb (SPMW) Distribution network supporting a major part of North Wales and feeding into Mid Wales and North Shropshire, supplying to ca. 145,000 customers in total. Legacy Grid Supply Point (GSP) is fed by 4 x 400/132kV supergrid transformers (SGTs) from National Grid Electricity Transmission, all rated at 240MVA.

Constraint	SECURITY OF SUPPLY This 132kV network group has experienced high levels of generation connections activity and has significant penetration of embedded generation with ca. 400MW of connected generation and up to an additional 220MW expected to connect within the RIIO-ED2 price control period. Given the importance of the group, it must be secured against second circuit outage in accordance with EREC P2/8. In the current configuration, loss of two SGTs on the same side of the busbar carry an inherent risk that the corresponding 132kV busbars will lose the supply completely.
Decision	Reinforce Swap SGT2 and SGT4 tails across the 132kV busbars to provide additional security to the group in the event of outages on the Transmission network and add a new bus-section circuit breaker to enable improved coupling with the adjacent Connah's Quay GSP, increasing operational flexibility.
Justification for decision	Failing to intervene would perpetuate the risk of losing the whole in the event of a busbar fault.
Flexibility product	N/A
Constraint season(s)	Year round
Guide price	N/A
Reinforcement timescale	2027/28

Flexibility not required

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)					
Peak flexibility required (MW)					
Flexibility procured (MW)					
Flexible MW capacity met (%)					

Flexibility Tendering

Closed

Provision of flexibility services would not remove risk of loss of supply.

Technical Appraisal

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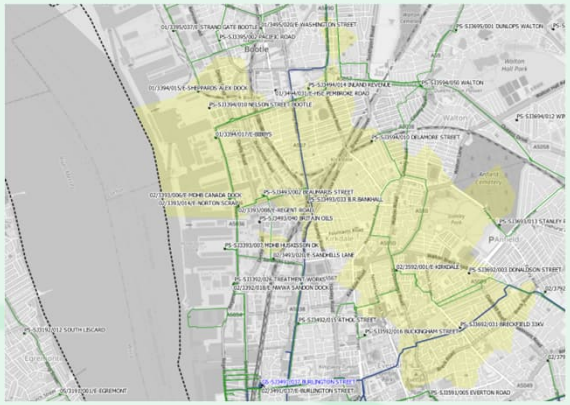
Last updated: 30/04/26

Bootle Canal Quarter Reinforcement

Reinforce



SP Manweb (SPM) network supplies to the areas under the areas of Liverpool and surrounding areas in Merseyside. The Liverpool City Region Combined Authority (LCRCA) together with Sefton Council have committed development plans in the Bootle Canal Quarter. The proposed development areas are predominately supplied from two separate primary groups – Bibbys/Regent Road/Inland Revenue Offices and Delamore Street/Kirkdale/Walton.

Constraint	THERMAL AND FAULT LEVEL The two primary groups are currently operating at a non-standard voltage of 6.3kV, and as a result are fast approaching both thermal and fault level limits. Fault level exceedances are already being operationally managed. The phased regeneration project involves widespread redevelopment into new commercial and residential areas, expected by 2030, resulting in significant demand growth, LCT uptake and public EV charging stations. This would push the two primary demand groups beyond their thermal and fault level capacities.
Decision	Reinforce Uprating the two 6.3kV operated groups to 11kV will facilitate additional thermal and fault level headroom uplift, network operating efficiencies and significant reduction in network losses.
Justification for decision	Flexibility Services option is dismissed as insufficient to meet expected demand growth. Fault Level management is also dismissed as it cannot address the existing fault level issues and does not provide any operational benefits.
Flexibility product	N/A
Constraint season(s)	Year round
Guide price	N/A
Reinforcement timescale	2027/28

Flexibility not required

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)					
Peak flexibility required (MW)					
Flexibility procured (MW)					
Flexible MW capacity met (%)					

Flexibility Tendering

Closed

We are not tendering for flexibility services at this location.

Technical Appraisal

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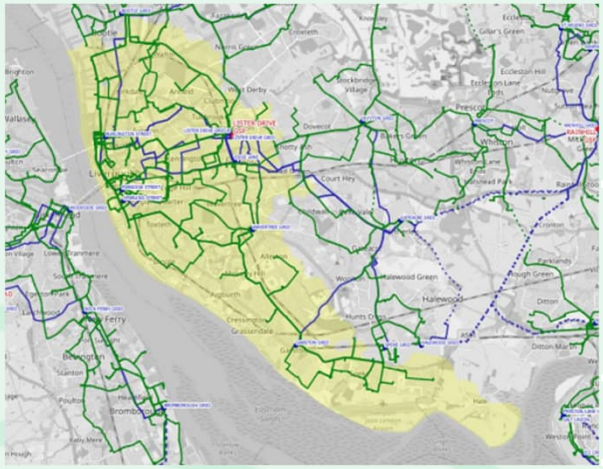
Last updated: 30/04/26

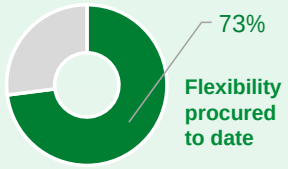
Lister Drive 132kV Reinforcement

Manage with flexibility & automation



The Lister Drive 132kV network group provides supplies to ca. 165,000 customers including Liverpool city centre as well as the shipping docks and industries along the Mersey river. The 132kV network group is supplied from National Grid Electricity Transmission at Lister Drive by 4 x 275/132kV 240MVA Super Grid Transformers (SGTs).

Constraint	THERMAL Flows on the Lister Drive–Burlington St 132kV circuit within the Lister Drive group are at risk of exceeding equipment summer thermal ratings. This strategic circuit supplies two 33kV groups in the Liverpool City Centre. Furthermore, demand and Low Carbon Technologies (LCTs) growth within the group is likely to exceed the firm capacity of the demand group within the RIIO-ED2 period.
Decision	Manage with flexibility & automation Install real time thermal monitoring equipment on the 132kV circuit to Burlington Street. Employ Constraint Management Zone (CMZ) based automation scheme to trip the Burlington Street–Bootle circuit and close either line or bus section beaker to supply it from Bootle. Flexibility will be used to reduce dependence on automation scheme, and to manage the utilisation of the whole group throughout the RIIO-ED2 period.
Justification for decision	Deferral of significant, conventional reinforcement works via flexibility and automation presents a better value for money solution.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Year round
Guide price	Utilisation fee from £100/MWh
Reinforcement timescale	Thermal monitoring: 1-year CMZ automation: 2-years



Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	-	344	114	114	114
Peak flexibility required (MW)	-	3.1	28.1	28.1	28.1
Flexibility procured (MW)	-	12.4	10.5	-	-
Flexible MW capacity met (%)	-	>100%	37%	-	-

Flexibility Tendering

Open

We are planning to tender for flexibility services at this location this year through our month-ahead model.

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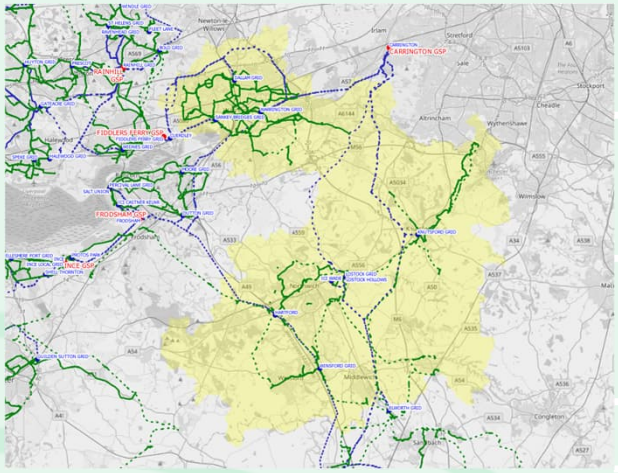
Carrington / Fiddler's Ferry 132kV Reinforcement

Manage with flexibility & automation



The Carrington / Fiddlers Ferry 132kV network group is in the Mid Cheshire and Crewe areas of the SP Manweb network. It supplies four 33kV groups, over 153,000 customers including ten major industrial customers and two motorway services.

Constraint	THERMAL The demand growth in this group during the RIIO0ED2 period is expected to exceed capacity of the 132kV circuits between Sankey Bridges and Hartford, Cuerdley to Warrington, and Cuerdley-Sankey Bridges.
Decision	Reinforce, supported by flexibility Dedicated local monitoring and automation scheme at Cuerdley 132kV substation to manage constraints on the Cuerdley-Sankey Bridges 132kV circuit. Contract flexibility services to manage the 132kV circuit constraints and defer reinforcement of 132kV Sankey Bridges- Hartford circuit.
Justification for decision	There is no longer a requirement for a new grid substation at Hulseheath (due to HS2 cancellation). Sufficient flexibility has been procured manage the extant 132kV circuit constraints when combined with automation, so works are being deferred. This provides the highest Net Present Value (NPV) option.
Flexibility product	Operational Utilisation + Variable Availability
Constraint season(s)	Winter
Guide price	Utilisation fee from £100 / MWh
Reinforcement timescale	Monitoring and automation Circuit reinforcement works deferred to RIIO-ED3.

Flexibility yet to be procured

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	-	-	-	2	59
Peak flexibility required (MW)	-	-	-	5	31
Flexibility procured (MW)	-	-	-	-	-
Flexible MW capacity met (%)	-	-	-	-	-

Flexibility Tendering

Pending

We are planning to tender for flexibility services at this location in future years through our month-ahead model.

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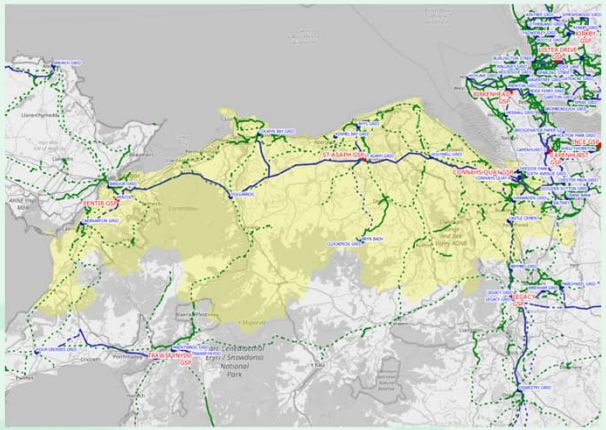
Connah's Quay 132kV Reinforcement

Reinforce, supported with flexibility



The Connahs Quay / St Asaph / Pentir Grid Supply Point (GSP) group supplies the Flintshire, Deeside, Deeside industrial area, Connahs Quay, Prestatyn, Rhyl, Bangor, Caernarfon and St Asaph area in the SP Manweb network. The group supplies ca. 200,000 customers.

Constraint	THERMAL and SECURITY OF SUPPLY The demand growth in this group is expected to exceed network capacity during the RIIO-ED2 period. Additionally, fault level headroom will be created by the proposed scheme.
Decision	Reinforce, supported by flexibility Install new 132/33kV 60MVA grid transformer at Deeside Park and new 132kV bus-section circuit breaker at Connah's Quay to enable reconfiguration of Connah's Quay Grid Supply Point (GSP) to 2+2 supergrid transformer operational arrangement. Swap the Sixth-Avenue grid transformer with RAF Sealand circuit, and set bus-section reactor at Hawarden to normally open. Flexible Services will be procured to manage the network risk during the delivery of the proposed scheme.
Justification for decision	Insufficient flexibility to defer reinforcement so works are being progressed. Flexibility will support management of the constraint in the interim. Other reinforcement options were ruled out due to relatively high cost / low Net Present Value (NPV) and for not creating additional fault level headroom.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Guide price	Utilisation fee from £100/MWh
Reinforcement timescale	2027/28

Flexibility yet to be procured

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	-	-	-	26	61
Peak flexibility required (MW)	-	-	-	31.5	38.6
Flexibility procured (MW)	-	-	-	-	-
Flexible MW capacity met (%)	-	-	-	-	-

Flexibility Tendering

Pending

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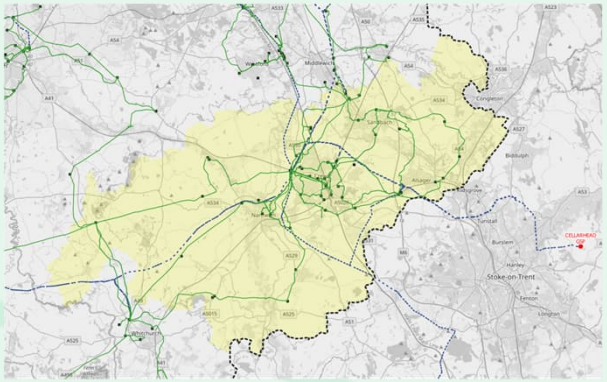
Radway Green 33kV Reinforcement

Reinforce, supported with flexibility



The SP Manweb (SPM) network in the Crewe, Weston, Alsager, Sandbach, Radway Green, Nantwich and Coppenhall areas of Mid Cheshire is supplied from Cellarhead Grid Supply Point (GSP). The 33kV network group (Crewe/Coppenhall/Whitchurch/Radway Green) supplies over 80,000 customers which includes eight major industrial customers and a motorway services area.

Constraint	SECURITY OF SUPPLY The demand growth in this group is expected to cause the cyclic rating of the 132/33kV 45MVA grid transformer 1 at Radway Green to be exceeded during an outage of 60MVA grid transformer 2.
Decision	Reinforce, supported by flexibility Replace existing 45MVA 132/33kV Radway Green grid transformer 1 with 60MVA (synthetic ester) unit along with replacement of 45MVA grid transformer 1 transformer tails, existing auxiliary transformer, and neutral earthing resistor. Flexible Services will be procured for 2026/27 year to manage the network risk during the delivery of the proposed scheme.
Justification for decision	Other reinforcement options were ruled out due to relatively high cost / low Net Present Value (NPV) or for not meeting the design requirements.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Year round
Guide price	Utilisation fee from £100/MWh
Reinforcement timescale	2027/28

Flexibility yet to be procured

Flexibility position at March 2025	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	-	-	-	44	624
Peak flexibility required (MW)	-	-	-	0.6	1.6
Flexibility procured (MW)	-	-	-	-	-
Flexible MW capacity met (%)	-	-	-	-	-

Flexibility Tendering

Pending

We are planning to tender for flexibility services at this location in future years through our month-ahead model.

More information is available on our Open Data Portal

Technical Appraisal

More detailed technical information on the nature of the constraint, network impacts, solutions considered and selected intervention are available in this scheme's

Engineering Justification Paper

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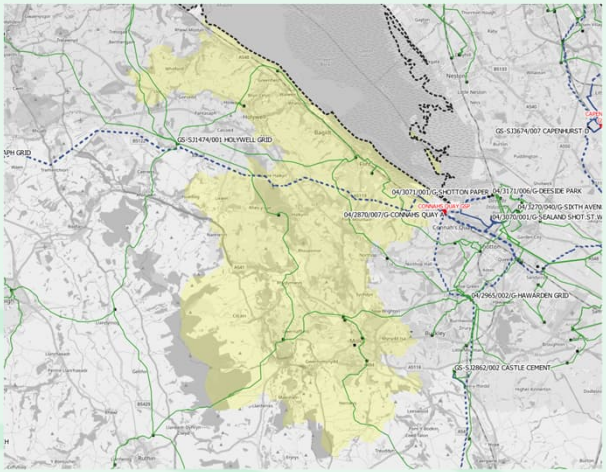
Last updated: 30/04/26

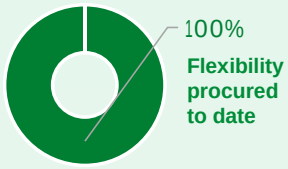
Brymbo / Hawarden / Holywell 33kV Reinforcement

Manage with flexibility



The Brymbo-Hawarden-Holywell 33kV network group supplies the area in North Wales around Brymbo, Flint, Hawarden and Holywell. It is fed from the Connah's Quay-Pentir- St. Asaph 132kV group from long overhead line circuits. The group supplies ca. 27,000 customers, including two major industrial sites.

Constraint	VOLTAGE The group is presently at voltage limits and suffers from marginal low voltages excursions outside of statutory limits. It is presently operationally managed. The voltage issues need to be mitigated to be able to accommodate additional demand associated with demand growth and Low Carbon Technologies (LCTs) uptake in the RIIO-ED2 period.
Decision	Mitigate with flexibility Procure up to 6.3MW of flexibility services from the market to maintain the 33kV steady state voltage within ± 6% and to maintain voltage step within ± 10%.
Justification for decision	Half-hourly time-profile studies have been undertaken to quantify the hours at risk and to define the flexibility services that would be required to manage the constraint. Sufficient flexibility has been procured to defer reinforcement.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Guide price	Utilisation fee from £100 / MWh
Reinforcement timescale	Deferred until RIIO-ED3 using flexibility



Flexibility position at March 2026	2023 / 24	2024 / 25	2025 / 26	2026 / 27	2027 / 28
Risk duration (hours)	2	23	-	139	159.5
Peak flexibility required (MW)	4.8	4.8	-	5.9	6.3
Flexibility procured (MW)	5.0	5.0	-	-	-
Flexible MW capacity met (%)	>100%	>100%	-	-	-

Flexibility Tendering

Open

We are planning to tender for flexibility services at this location this year through our month-ahead model.

More information is available on our Open Data Portal

Technical Appraisal

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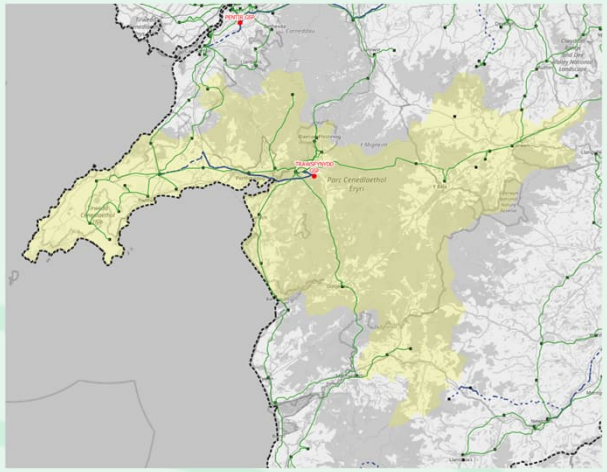
Last updated: 30 / 04 / 26

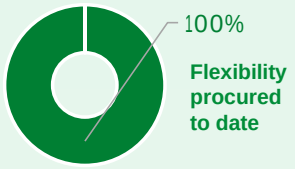
Maentwrog – Porthmadog 33kV Reinforcement

Reinforce, supported with flexibility



The SP Manweb (SPM) network in North Wales around Maentwrog, Porthmadog, Pwllheli, Criccieth, Blaenau Ffestiniog, Harlech and Morfa Nefyn is supplied from Trawsfynydd Grid Supply Point (GSP). The 132kV network group secures Maentwrog / Four Crosses 33kV group supplying ca. 42,000 customers which includes several recreational / tourist destinations spread across the network.

Constraint	THERMAL and SECURITY OF SUPPLY The demand growth in this group is expected to load the circuit between Maentwrog –Llanfrothen – Porthmadog beyond the cyclic ratings and would risk cascade tripping of the group and loss of supplies to over 18,000 customers during outage on the 132 / 33kV 45MVA grid transformer at Four Crosses grid substation.
Decision	Reinforce with new 33kV circuit Reinforce with new 11km, 33kV circuit between Maentwrog and Porthmadog and extend the 33kV switchboards at Maentwrog grid and Porthmadog substations. Contract flexibility services to support the network during the project delivery.
Justification for decision	Considering the increased risk duration, capacity requirements and cost of flexibility services through RIIO-ED2, deferral beyond three years is not commercially viable. All viable reinforcement options were considered and the highest Net Present Value (NPV) option was selected.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Guide price	Competition closed
Reinforcement timescale	2027 / 28



Flexibility procured to date

Flexibility position at March 2026	2023 / 24	2024 / 25	2025 / 26	2026 / 27	2027 / 28
Risk duration (hours)	47	78	-		
Peak flexibility required (MW)	3.8	4.6	-		
Flexibility procured (MW)	4.0	4.8	-		
Flexible MW capacity met (%)	>100%	>100%	-		

Flexibility Tendering

Closed

We are not tendering for flexibility services at this location.

Technical Appraisal

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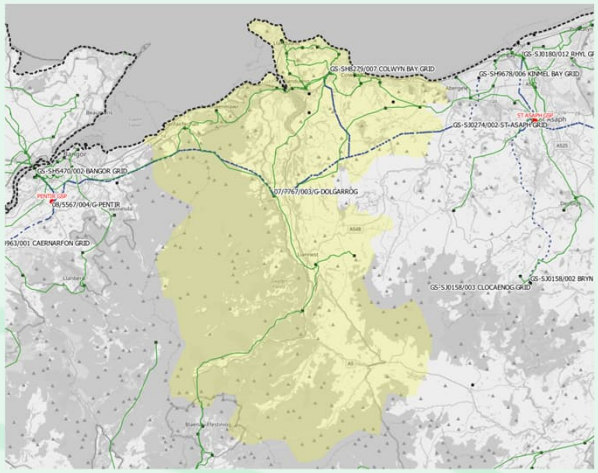
Last updated: 30 / 04 / 26

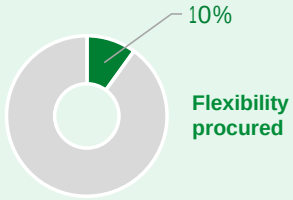
Colwyn Bay-Dolgarrog 33kV Reinforcement

Reinforce, supported with flexibility



The SP Manweb (SPMW) network in North Wales around the Colwyn Bay, Llandudno, Dolgarrog, and Conway is supplied from Connahs Quay / St Asaph's / Pentir Grid Supply Point (GSP) group. The GSP group supplies the Colwyn Bay / Dolgarrog 33kV group, which in turn supplies over 50,100 customers, including across several recreational / tourist destinations in the area.

Constraint	THERMAL and SECURITY OF SUPPLY Demand and generation are not uniformly distributed across the group, leading to increased loading on the direct interconnector. Demand growth in this group is expected to load the circuit between Colwyn Bay and Dolgarrog beyond its cyclic ratings and risk cascade tripping of the group and loss of supplies to over 40,000 customers during 132kV N-1-1 outage situations.
Decision	Reinforce, supported by flexibility Install 25MVA X=5% reactor at Colwyn Bay 33kV grid substation in series with the circuit between Colwyn Bay – Dolgarrog. Contract with flexibility services providers in the group to manage the extant network constraints.
Justification for decision	This option was chosen over circuit reinforcement options as it had the highest Net Present Value (NPV).
Flexibility product	Operational Utilisation + Variable Availability
Constraint season(s)	Summer
Flexibility guide price	Utilisation fee from £100 / MWh
Reinforcement timescale	2027 / 28



Flexibility position at March 2026	2023 / 24	2024 / 25	2025 / 26	2026 / 27	2027 / 28
Risk duration (hours)	118.0	147.5	60	61	61
Peak flexibility required (MW)	2.2	2.3	10.2	10.2	10.2
Flexibility procured (MW)	0.3	0.3	0.8	-	-
Flexible MW capacity met (%)	14%	14%	8%	-	-

Flexibility Tendering

Open

We are planning to tender for flexibility services at this location this year through our month-ahead model.

More information is available on our Open Data Portal

Technical Appraisal

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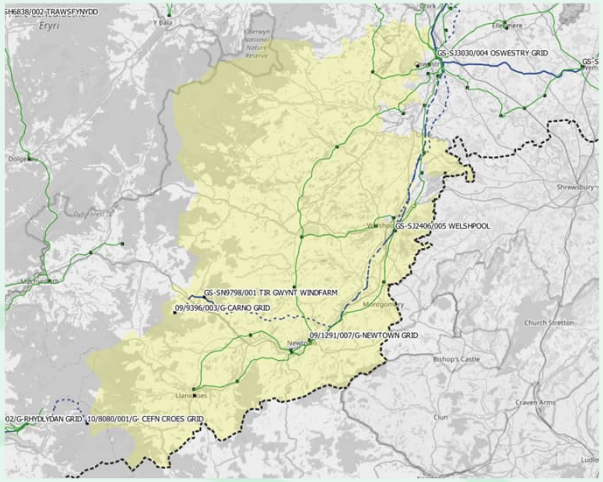
Last updated: 30 / 04 / 26

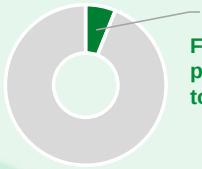
Newtown-Morda 33kV Reinforcement

Reinforce, supported with flexibility



The Newtown and Morda areas of the SP Manweb network lie within the Legacy/Newtown/Oswestry/Welshpool 33kV group, which supplies over 69,000 customers via 27 primary transformers, predominantly fed from long overhead line circuits. The group operates interconnected with the neighbouring Oswestry / Whitchurch 33kV group – which Morda primary is closest to.

Constraint	VOLTAGE The group is presently at voltage limits and at risk of marginal voltage excursions outside of statutory limits. It is presently being operationally managed. The voltage issues need to be mitigated to be able to accommodate additional demand associated with demand growth and Low Carbon Technologies (LCTs) uptake in the RIIO-ED2 period.
Decision	Reinforce, supported by flexibility Install ±10MVAr STATCOM at Newtown Grid substation, a 33/11kV step up transformer and dedicated outdoor CB. Install 33kV, 5MVAr mechanically switched capacitor bank at Morda and a dedicated outdoor circuit breaker. Contract flexibility services to support the network during the project delivery.
Justification for decision	Flexibility services are not suitable to mitigate the voltage step issues as the response time needs to be fast acting in real-time. Therefore, reinforcement is being progressed. This innovative solution has significantly higher Net Present Value (NPV) to conventional reinforcement options considered, which include new grid infeed and new circuits.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Flexibility guide price	Utilisation fee from £100/MWh
Reinforcement timescale	2028/29



6%
Flexibility procured to date

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	173.0	254.5	-	499.5	837.0
Peak flexibility required (MW)	5.9	5.9	-	6.3	7.9
Flexibility procured (MW)	0.1	0.6	-	-	-
Flexible MW capacity met (%)	1%	1%	-	-	-

Flexibility Tendering

Open

We are planning to tender for flexibility services at this location this year through our month-ahead model.

More information is available on our Open Data Portal

Technical Appraisal

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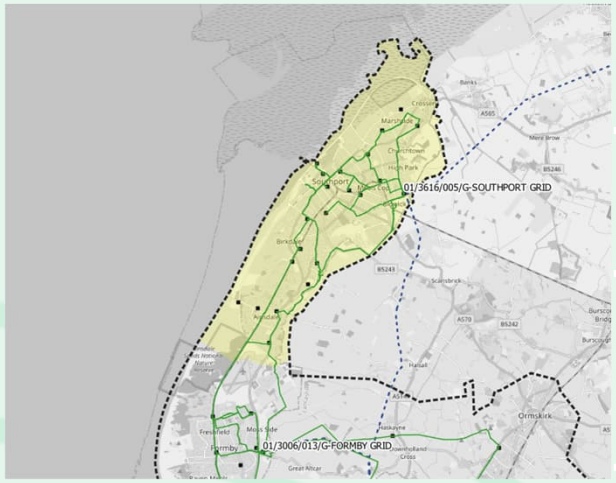
Last updated: 30/04/26

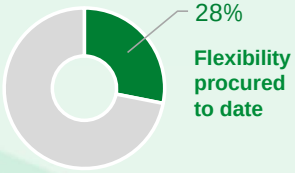
Formby-Southport 33kV Reinforcement

Reinforce, supported with flexibility



Formby - Southport 33kV grid group is located within the Kirkby 132kV Grid Supply Point (GSP) group and provides supplies to 44,750 customers across the Sefton coastal regions of Ainsdale, Birkdale, Formby and Southport.

Constraint	THERMAL Demand growth in this group is expected to exceed network capacity during the RIIO-ED2 period. Detailed network studies have identified a thermal constraint on the two outgoing circuits from Formby Grid substation due to thermally limiting overhead line sections.
Decision	Reinforce, supported by flexibility Install conventional build solution involving a new 33kV interconnector circuit between Formby and Southport grid substations. Requires board extension at Formby grid substation; refurb and use the existing spare circuit breaker at Southport grid substation.
Justification for decision	Insufficient flexibility to defer reinforcement so works are being progressed. Flexibility will support management of the constraint in the interim. All viable reinforcement options were considered, and the highest Net Present Value (NPV) option was selected. Flexibility tenders will continue to be run to explore the market to meet the required level of flexibility in this group to mitigate the thermal issues of the group and defer the reinforcement need.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Flexibility guide price	Utilisation fee from £100/MWh
Reinforcement timescale	2026/27



Flexibility procured to date

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)	1.0	1.5	45	237	640
Peak flexibility required (MW)	1.4	2.2	0.4	14.1	18.1
Flexibility procured (MW)	0.1	0.6	0.4	-	-
Flexible MW capacity met (%)	4%	27%	100%	-	-

Flexibility Tendering

Open

We are planning to tender for flexibility services at this location this year through our month-ahead model.

More information is available on our Open Data Portal

Technical Appraisal

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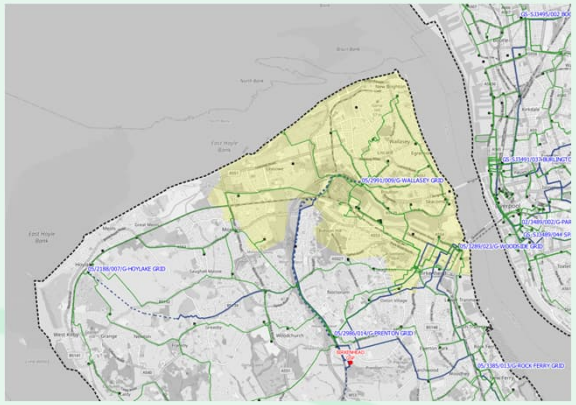
Last updated: 30/04/26

Woodside Grid 33kV Fault Level Mitigation

Reinforce without flexibility



The Wallasey-Woodside 33kV grid group is located within the Birkenhead 132kV grid supply point (GSP) group and supplies the north-eastern corner of the Wirral Peninsula including areas of Birkenhead, Wallasey, and Woodside. This group supplies ca. 43,000 customers. Woodside operates with a split point with the Prenton–Rock Ferry 33kV group, run normally open to reduce the fault levels.

Constraint	FAULT LEVEL At Woodside Grid substation the make duty fault level is in excess of the rating, and break duty is at 100% of the rating of the existing legacy switchgear on the 33kV side that is interconnected to Wallasey. The site is operationally managed requiring switching actions to temporarily reduce the fault levels prior to certain switching actions on the Woodside switchgear. The high fault levels at this site present a barrier to low-cost timely connection of generation.
Decision	Reinforce without flexibility Replace existing 9-panel 33kV switchboard with higher rated switchgear and carry out associated remote end protection modifications.
Justification for decision	Due to the predicted increase in fault levels, operational management is not an enduring solution. Procurement of flexibility would not reduce fault level.
Flexibility product	N/A
Constraint season(s)	Year round
Flexibility guide price	N/A
Reinforcement timescale	2026/27

Flexibility not required

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)					
Peak flexibility required (MW)					
Flexibility procured (MW)					
Flexible MW capacity met (%)					

Flexibility Tendering

Closed

We are not currently tendering for flexibility services at this location as this would not resolve fault level constraints.

Technical Appraisal

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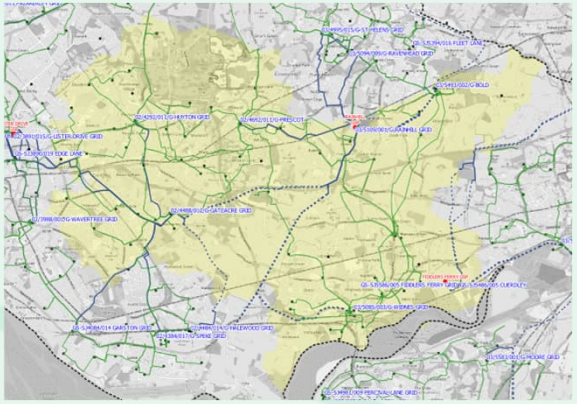
Last updated: 30/04/26

Prescot Grid Fault Level Mitigation

Reinforce without flexibility



Prescot 132/33kV grid substation is supplied from within the Rainhill 132kV GSP group via 2 x 60MVA Grid Transformers (GTs) and is operated split with the 33kV bus section run as a normal open point. The 'A' board supplies the Bold/Prescot/Widnes 33kV grid group, which supplies ca. 47,000 customers. The 'B' board supplies the Gateacre/Huyton/Kirkby/Prescot 33kV grid group, which supplies ca. 68,000 customers.

Constraint	FAULT LEVEL The 'B' board currently experiences fault level exceedances under both normal and abnormal running arrangements of the upstream Rainhill 132kV substation, both make and break duties are in exceedance of the legacy switchgear ratings under abnormal running arrangements. The fault duty exceedances are operationally managed. This fault level constraint presents a barrier to low-cost timely connection of additional generation in the grid group in the RIIO-ED2 price control period and beyond.
Decision	Reinforce without flexibility The proposed solution is to connect a new 60MVA, 6% impedance series reactor into the Prescot GT1A 33kV cable tails feeding the 'B' board; this will reduce the fault both the make and break fault level duties to within the switchgear rating, under normal and abnormal running arrangements of Rainhill 132kV substation.
Justification for decision	Due to the predicted increase in fault levels, operational management is not an enduring solution. Procurement of flexibility would not reduce fault level.
Flexibility product	N/A
Constraint season(s)	Year round
Flexibility guide price	N/A
Reinforcement timescale	2026/27

Flexibility not required

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hours)					
Peak flexibility required (MW)					
Flexibility procured (MW)					
Flexible MW capacity met (%)					

Flexibility Tendering

Closed

We are not currently tendering for flexibility services at this location as this would not resolve fault level constraints.

Technical Appraisal

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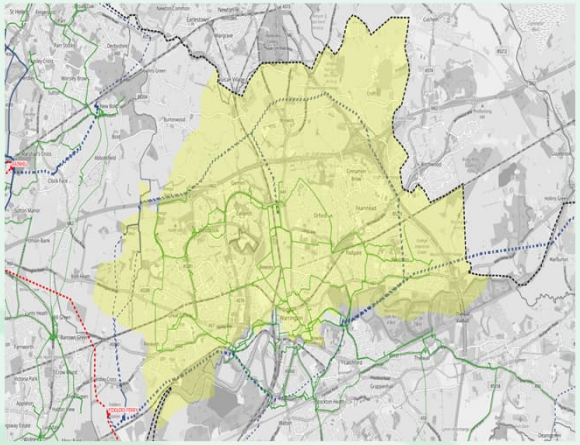
Last updated: 30/04/26

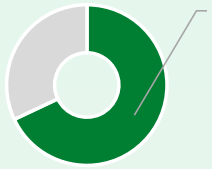
Dallam / Sankey Bridges / Warrington Reinforcement

Manage with flexibility



The Dallam / Sankey Bridges / Warrington group is in the Mid Cheshire District of the SP Manweb licence area. It provides supply to ca. 53,600 customers. The group is fed from the Carrington-Fiddlers Ferry 132kV group.

Constraint	THERMAL With forecast uptake of Low Carbon Technologies (LCTs), the group demand at Dallam / Sankey Bridges / Warrington is forecast to exceed its Firm Capacity by the end of the RIIO-ED2 period, with risk of thermal overloading on the 132 / 33kV transformers, and non-compliance with EREC P2 / 8.
Decision	MANAGE WITH FLEXIBILITY The proposed solution is to procure flexible services for this group for the RIIO-ED2 period. This solution addresses the prospective network constraints due to the forecast loading and defers the need for conventional network reinforcements until at least the RIIO-ED3 period.
Justification for decision	Due to the uncertainty associated with how the system will evolve in the future, flexibility solutions can efficiently, economically and with shorter timescales manage the network needs. This can help manage and address the capacity shortfalls at lower costs until the need for conventional reinforcement is established.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Guide price	Utilisation fee from £100 / MWh
Reinforcement timescale	Post RIIO-ED2



Flexibility position at March 2026	2023 / 24	2024 / 25	2025 / 26	2026 / 27	2027 / 28
Risk duration (hrs)	-	-	88	88	88
Flexibility required (MW)	-	-	8.6	8.6	8.6
Flexibility procured (MW)	-	-	5.8	-	-
Flexible MW capacity met (%)	-	-	68%	-	-

Flexibility Tendering

Open

We are planning to tender for flexibility services at this location this year through our month-ahead model.

More information is available on our Open Data Portal

Technical Appraisal

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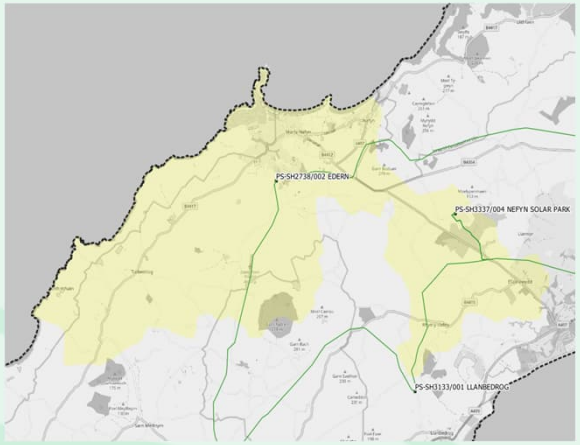
Last updated: 30 / 04 / 26

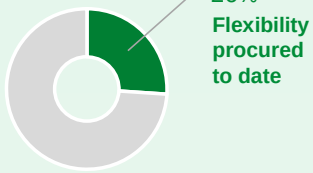
Edern Primary Reinforcement

Manage with flexibility



Edern 33/11kV Primary substation is in North Wales District of the SP Manweb licence area. It provides supply to ca. 2,400 customers. This network is rural, with long OHL. The site is fed from the Four Crosses / Maentwrog 33kV group from Trawsfyndd GSP.

Constraint	THERMAL With forecast uptake of Low Carbon Technologies (LCTs), the group demand at Edern Primary is forecast to exceed its Firm Capacity by the end of the RIIO-ED2 price control period, with risk of thermal overloading on the 33/11kV transformers, and non-compliance with EREC P2/8.
Decision	MANAGE WITH FLEXIBILITY The proposed solution is to procure flexible services for Edern Primary for the RIIO-ED2 period. This solution addresses the prospective network constraints due to the forecast loading and defers the need for conventional network reinforcements until at least the RIIO-ED3 period.
Justification for decision	Due to the uncertainty associated with how the system will evolve in the future, flexibility solutions can efficiently, economically and with shorter timescales manage the network needs. This can help manage and address the capacity shortfalls at lower costs until the need for conventional reinforcement is established.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Guide price	Utilisation fee from £100/MWh
Reinforcement timescale	Post RIIO-ED2



Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hrs)	57.5	63.5	202	758	1565
Flexibility required (MW)	2.3	2.4	1.0	1.5	1.7
Flexibility procured (MW)	0	1.2	0.04	-	-
Flexible MW capacity met (%)	0%	50%	4%	-	-

Flexibility Tendering

Open

We are planning to tender for flexibility services at this location this year through our month-ahead model.

More information is available on our Open Data Portal

Technical Appraisal

More detailed technical information on the nature of the constraint, network impacts, solutions considered and selected intervention are available in this scheme's

Engineering Justification Paper

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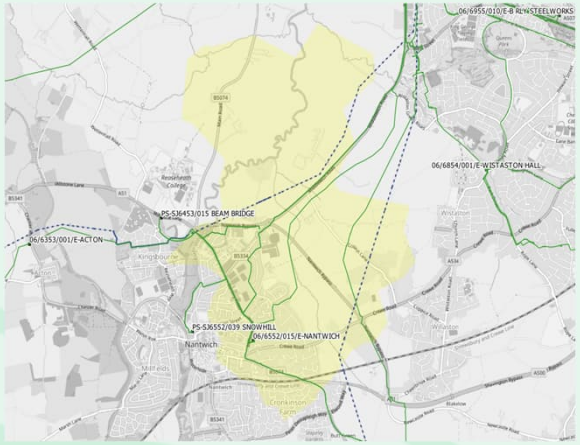
Last updated: 30/04/26

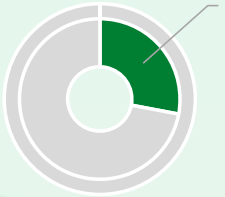
Nantwich Primary Reinforcement

Manage with flexibility



Nantwich 33/11kV Primary substation is in the Mid Cheshire District of the SP Manweb licence area. It provides supply to ca. 11,200 customers. This network is urban, mainly serving the town of Nantwich. The site is fed from the "Crewe Outer Ring" 33kV group, fed from the Cellarhead 132kV network.

Constraint	THERMAL With forecast uptake of Low Carbon Technologies (LCTs), the group demand at Nantwich Primary is forecast to exceed its Firm capacity by the end of the RIIO-ED2 price control period, with risk of thermal overloading on the 33/11kV transformers, and non-compliance with EREC P2/8.
Decision	MANAGE WITH FLEXIBILITY The proposed solution is to procure flexible services for Nantwich Primary for the RIIO-ED2 period. This solution addresses the prospective network constraints due to the forecast loading and defers the need for conventional network reinforcements until at least the RIIO-ED3 period.
Justification for decision	Due to the uncertainty associated with how the system will evolve in the future, flexibility solutions can efficiently, economically and with shorter timescales manage the network needs. This can help manage and address the capacity shortfalls at lower costs until the need for conventional reinforcement is established.
Flexibility product	Scheduled Utilisation
Constraint season(s)	Winter
Guide price	Utilisation fee from £100/MWh
Reinforcement timescale	Post RIIO-ED2



Flexibility procured to date

Flexibility position at March 2026	2023/24	2024/25	2025/26	2026/27	2027/28
Risk duration (hrs)	-	-	48	193	1108
Flexibility required (MW)	-	-	0.5	0.9	1.5
Flexibility procured (MW)	-	-	0.14	-	-
Flexible MW capacity met (%)	-	-	28%	-	-

Flexibility Tendering

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