electricity north west

Bringing energy to your door

Network Development Report 2022

Strategic Planning, DSO Directorate

April 2022

Contents

1 Overview of information in the NDR

As explained in the methodology document of our Network Development Plan (NDP), an extensive optioneering process is carried out to optimise decisions around our load related investment programme. The optioneering process considers among others: a) all forecasting scenarios from our DFES, b) both conventional and flexibility service options and c) strategic interventions that avoid cost impacts from a piecemeal network expansion.

In this Network Development Report (NDR) we provide a list of high-level plans for required network interventions for the following 10-year period (2022 – 2031 inclusive). Each capacity constraint highlighted in the Network Headroom Report (NHR) tables when considering the Best View scenario, is presented in the NDR as an intervention requirement. For both demand and generation requirements we consider trigger points for intervention dependent network asset operating margins. For each capacity requirement we have presented the following:

Information Provided	Further explanation
Location of capacity requirement	X,Y co-ordinates are provided for the substation where intervention is required.
Details of the constraint	Details either fault duty or thermal exceedance and when this first presents.
New infrastructure scope	Details the asset solution, including high level specification and start and end dates for works.

<table>
<tr><th>Information Provided</th><th>Further explanation</th></tr>
<tr><td>Flexibility services requirements</td><td>Identifies the type of flexibility service that would be required.

<table><tr><td>Sustain</td><td>  </td></tr><tr><td>Dynamic</td><td>  </td></tr><tr><td>Restore</td><td>  </td></tr><tr><td>Secure</td><td>  </td></tr></table>
Further explanation of the type of response services: https://www.enwl.co.uk/globalassets/go-net-zero/flexible-services/understanding-flexibility/library/flexible-service-products-and-response-times_.pdf

The level of peak response required up to 2051 is detailed to highlight the potential long-term requirements, for a high, best view and low scenario. NDR tables should be considered in conjunction for short term requirements.

The possible location of flexible services is based on typical HV or 33kV network feeding areas for primary and BSP substations respectively. Location is provided in terms of km distance from substation.</td></tr>
<tr><td>Project lifecycle stage</td><td>Network analysis</td><td>  </td><td>Requirements identified, and further network analysis required to develop options. Timing and solution efficiencies being considered.</td></tr>
</table>

Information Provided	Further explanation		
	Sign posting		Flexibility services or whole system solution assessment being undertaken. For flexibility services this will include tender process.
	Approved plan		Technical and commercial approval of preferred network solution completed.
	Delivery		Preferred network solution being developed through detailed design, procurement and where required construction.

The NDR is structured by presenting capacity requirements and associated development options by each Electricity North West Grid Supply Point (GSP). The 16 GSPs are shown in section 2. For accessibility and consistency all nomenclature used to describe development plans will align with LTDS data tables and schematics.

1.1 Timing of Capacity Requirements

Our presentation of capacity requirements in the NDR is based on Electricity North West's DFES Best View scenario. Best View is the region's highest certainty scenario and focuses on high certainty trends in the next 1 to 10 years. As the region's highest certainty scenario when compared to three key criteria, Best View can help stakeholders understand local demand and generation trends over the short-term. As a result, the Best View scenario can provide the highest certainty basis for assessing network impact and the need for interventions in the next 10 years.

Even though the use of the Best View scenario in this NDR improves stakeholder utility showing the highest certainty trends and removes the complexity of multiple scenarios, the full range of our scenarios is used to understand risks for additional capacity. The identified conventional reinforcement and flexibility service options described in this work form the basis of the extensive optioneering and decision making that considers:

- all scenarios in cost assessments using the Common Evaluation Methodology (CEM) cost-benefit analysis (CBA) tool;
- all scenarios to understand how any interventions relate with longer term (beyond 10 years horizon) uncertainties and they do not foreclose cost efficient and risk averse transition to Net Zero (see our NDP workbook for forecasts of capacity headroom up to 2050 for all scenarios);
- strategic interventions that prevent expensive piecemeal network expansion and facilitate the transition to Net Zero.

We are certain using the Best View scenario of the baseline requirements presented in the NDR and the likely supporting asset and flexibility developments however we need to keep in mind that the

timing of requirements may change due to several factors. The timing of capacity intervention may vary depending on rate of change in stakeholder and customer requirements. For example, our three main County Councils in the North West have decarbonisation ambitions in advance of 2040 so if regional and national policy supported this acceleration we may see capacity requirements in specific areas being advanced by several years. These requirements may align more closely in timing and magnitude to a more progressive scenario such as, Leading the Way. A slower uptake of low carbon technologies driven by a more relaxed policy could alter the timing of an intervention, which might be postponed for several years, or may not be triggered at all if uptakes are low, as predicted in the Steady Progression scenario.

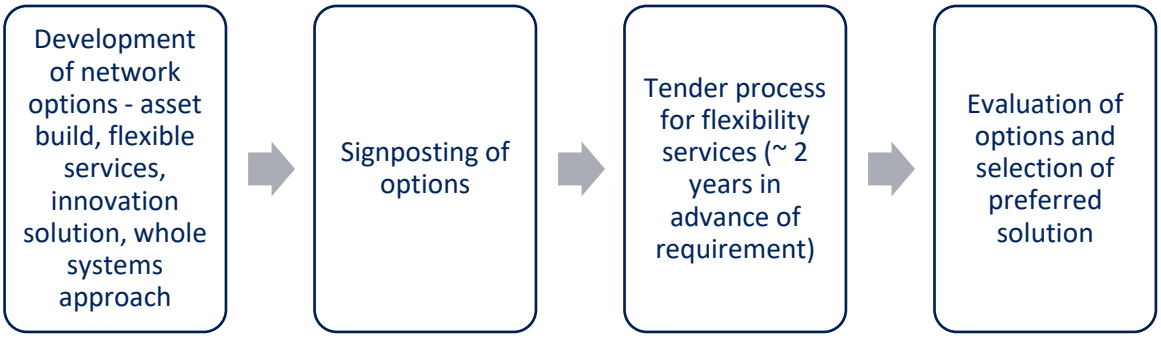
1.2 Sign posting future flexibility requirements in the NDR

Electricity North West has a flexibility first approach, in that it promotes flexibility as an efficient solution for network capacity provision and seeks to deploy at all opportunities where it is robust and economic to do so. Within the NDR we have presented flexibility as an option for meeting demand capacity requirements where there is an underlying network thermal constraint that Distributed Energy Resources (DERs) and potentially in combination with energy efficiency measures could meet. Flexibility is not seen as a technically viable alternative to generation capacity requirements as these are driven by network fault level constraints and therefore only asset-based developments are presented.

For every demand capacity requirement that is currently at the 'network analysis' or 'sign posting' stage we have outlined the flexible services option alongside the asset solution. This is to ensure there is clear visibility of all future requirements for flexibility services providers and it demonstrates our approach of not foreclosing a flexibility services opportunity before the market has been fully tested for a response. We have also identified the interventions within the NDR where we anticipate a full or partial flexible services response is likely to be technically and economically advantageous when compared to an asset solution.

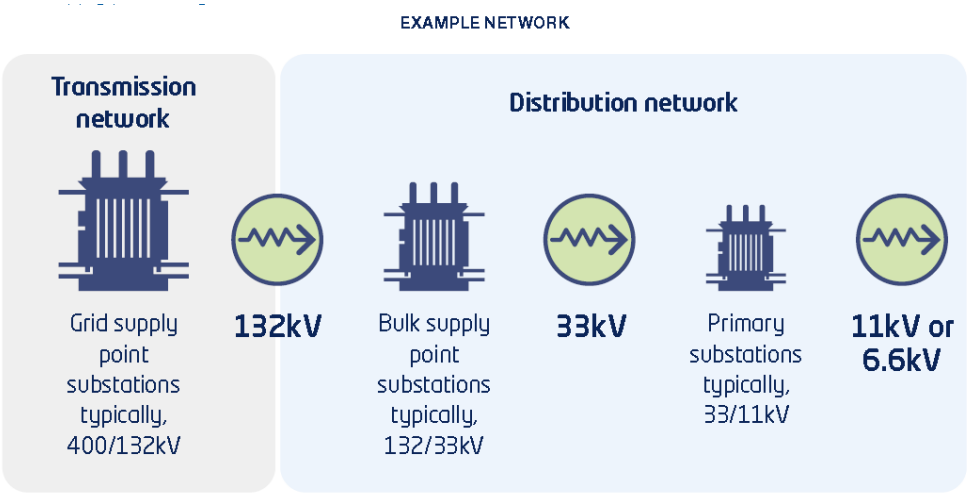
Within the NDR we have quantified the minimum level of flexibility required using the Best View scenario to meet the 2050 level. We have also presented what levels of flexibility may be required by 2050 under Consumer Transformation and System Transformation scenarios to highlight the range of future uncertainty. Detailed flexibility requirements, such a half hourly capacity per day/month/season are developed at the tender stage, as we have greater certainty at this stage of the forecast requirements. The intention therefore of the NDR is to provide that future view of flexible requirements in terms of location and baseline quantities but future tender information will substantiate the volumes and service categorisation

We publish flexible service requirements on a bi-annual basis (March and October) for all forecasted EHV capacity requirements two years in advance. This approach allows us to test the market response as close in time as possible to the capacity requirement materialising. In most cases this still allows sufficient time to implement an asset solution if required, once the results of the flexibility tender are evaluated.



2 Guide to using Network Development Report

Our Network Development Plans are presented in groups corresponding to the 14 Grid Supply Point(GSP)/groups where our distribution network interfaces with the transmission network. We have also included two further areas where supply reaches our network via the SP Manweb area. Splitting down the network in this way provides understanding on a local level. It allows the combined capability to be considered by grouping substations with capacities that may be shared most easily by creating interconnections or making transfers. Development plans in following section are presented per GSP for bulk supply points, primary substations and associated networks as illustrated in the example network below:



Grid Supply Point List:

			National Grid BO7 Demand Compliance Status	
Grid supply point	**Voltage**	**Electricity North West network area**	**Year 1**	**Year 7**
Bredbury	132kV	South Peak	Compliant	Compliant
Carrington	132kV	Manchester	Compliant	Compliant
Harker & Hutton	132kV	Cumbria	Compliant	Compliant - SGT Upgrade planned for 2026
Heysham	132kV	Cumbria / Lancashire	Compliant	Compliant
Kearsley	132kV	Manchester/Lancashire	Compliant	Compliant
Kearsley Local	275kV	Manchester/Lancashire	Compliant	Compliant
Macclesfield	275kV	South Peak	Compliant	Compliant
Padiham	132kV	Lancashire	Compliant	Compliant
Penwortham East & Rochdale	132kV	Lancashire	Compliant	Compliant
Penwortham West & Stanah	132kV	Lancashire	Compliant	Compliant
Rochdale	132kV	Lancashire / North Peak	Compliant	Compliant
South Manchester	132kV	Manchester	Compliant	Compliant
Stalybridge	132kV	Manchester/South Peak	Compliant	Compliant
Washway Farm & Kirkby	132kV	Lancashire	Compliant	Compliant
Whitegate	132kV	Manchester	Compliant	Compliant
Bold (BSP)*	33kV	Lancashire/Manchester	N/A	N/A
Risley (Primary)*	11kV	Lancashire	N/A	N/A

**Supplied from the SP Manweb network*

As can be seen in the table above based on an annual BO7 Demand compliance assessment report, transmission capacity in the 7-year window appears sufficient for current 2020 DFES forecast data. It should be noted that this is subject to annual reassessment and therefore subject to change. However, liaison with the System Operator for additional large demand connections will be required as part of the Connection assessment undertaken by ENWL, and further works may be identified as a requirement at this point.

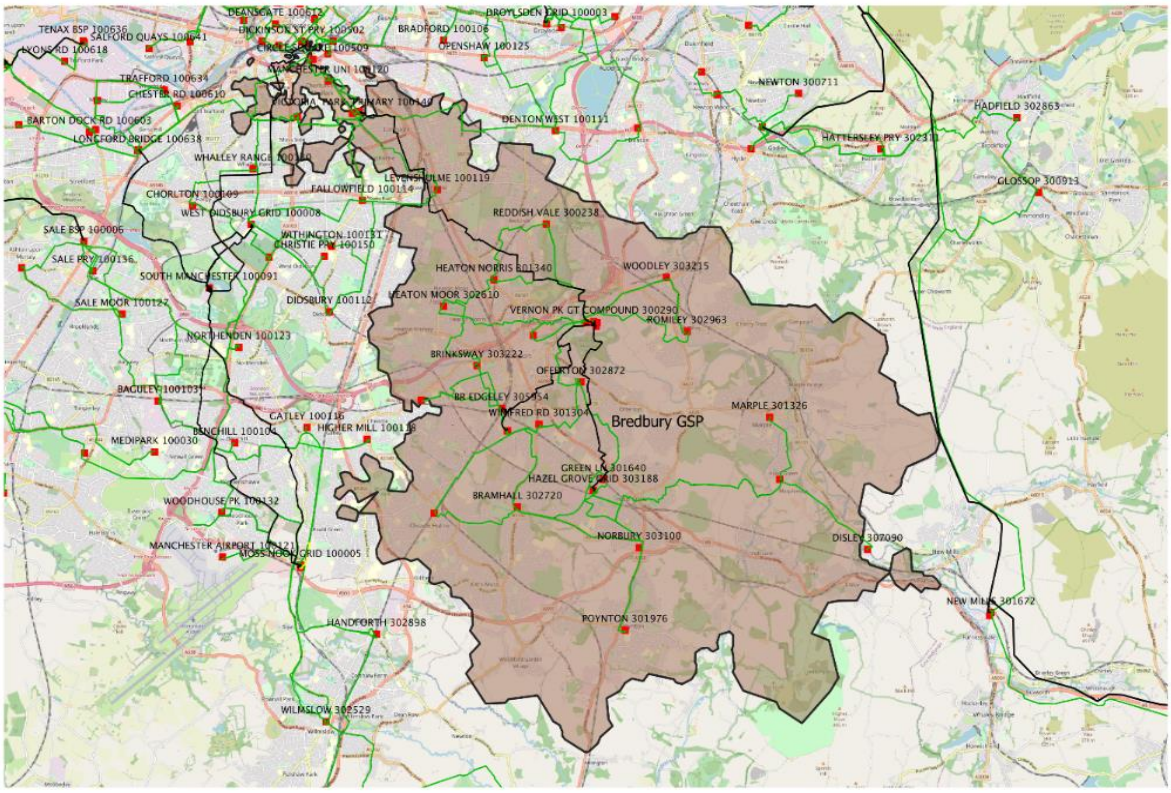
All distributed generators greater than 1MW are subject to transmission impact assessment, this carried out on a monthly basis and latest headroom can be found here.

Although the NDR provides a view of the future in terms of our investments and potential network constraints; we would encourage any party using this information in their decision-making process to engage with us ahead of lodging an application to connect or offer flexible services.

Based on all of the above, it is possible that additional factors might limit the available demand headroom at each substation, which would be identified as part of a formal connection assessment carried out by ENWL.

The map below shows all GSP and our 132kV network, which extends from Harker at Carlisle in the north to Bredbury in Stockport in the south.

3 Bredbury GSP



GSP Summary: **23 Primaries** **4 BSPs**

Bredbury GSP is a 275/132kV substation which supplies approximately 178,000 customers across the Peak South and South Manchester region. The substation comprises three 240MVA transformers supplied from National Grid's 275kV network. The peak demand on the GSP is currently 273MVA, supplied via four BSPs and 23 primary substations

Capacity Requirements Overview

	Demand Driven	Generation Driven
0-2 years		
3-5 years	Moss Side Portwood Victoria Park	
5-10 years	Romiley Heaton Norris	

Intervention Detail

<table>
<tr><th>Site Name (& location co-ordinate)</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Option</th></tr>
<tr>
<td>Moss Side (Longsight)

X- 384007

Y- 395893</td>
<td>FC first exceeded in FY25</td>
<td>Strategic solution developed in RIIO-ED2 to install new 23MVA Southern Gateway primary.

8MVA minimum of demand to be transferred off Moss Side (Longsight) via HV network onto Southern Gateway to alleviate issues in the next 3-10 years.

Start date: FY24

Completion: FY26</td>
<td>Sustain response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>9.5</td></tr>
<tr><td>Consumer Transformation</td><td>19.7</td></tr>
<tr><td>Steady Progression</td><td>6.6</td></tr>
</table>

Within 2km of X and Y coordinates</td>
</tr>
<tr>
<td>Portwood

X- 389826

Y- 390619</td>
<td>FC first exceeded in FY28

1.9MVA exceedance of FC by FY31</td>
<td>Demand transfers available to Offerton and Winifred Rd primaries via existing HV feeders.

In FY31, there is 6.7MVA spare on Offerton and 2.2MVA spare on Winifred Rd.

Estimated start and completion in FY27</td>
<td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td>
</tr>
<tr>
<td>Victoria Park

X- 385373

Y- 395948</td>
<td>FC first exceeded in FY30

0.8MVA exceedance of FC by FY31</td>
<td>Strategic solution developed in RIIO-ED2 to install new 23MVA Southern Gateway primary.

8MVA of demand to be transferred off Victoria Park and onto Southern Gateway to alleviate</td>
<td>Sustain response required</td>
</tr>
</table>

<table>
<tr><th>Site Name (& location co-ordinate)</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Option</th></tr>
<tr><td></td><td></td><td>issues in the next 3-10 years.

Start date: FY24

Completion: FY26</td><td><table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>2.4</td></tr><tr><td>Leading Way</td><td>2.6</td></tr><tr><td>Steady Progression</td><td>0.7</td></tr></table>
Within 2km of X and Y coordinates</td></tr>
<tr><td>Romiley

X- 393626

Y- 390716</td><td>FC first exceeded in FY30

0.8MVA exceedance of FC by FY31</td><td>Limited available headroom on existing adjacent HV feeders. Install a HV interconnector to Woodley primary to transfer demand off Romiley, cable route ~2km.

7.3MVA spare capacity on Woodley in FY31.

Start date: FY28

Completion: FY29</td><td> 

Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>9.5</td></tr><tr><td>Consumer Transformation</td><td>21.3</td></tr><tr><td>Steady Progression</td><td>3.4</td></tr></table>
Within 3km of X and Y coordinates</td></tr>
<tr><td>Heaton Norris

X- 388860

Y- 391967</td><td>FC first exceeded in FY30

3.0MVA exceedance of FC by FY31</td><td>Limited available headroom on existing adjacent HV feeders.

Install a HV interconnector to Reddish vale to transfer demand off Heaton Norris, cable route ~2.5km.</td><td> 

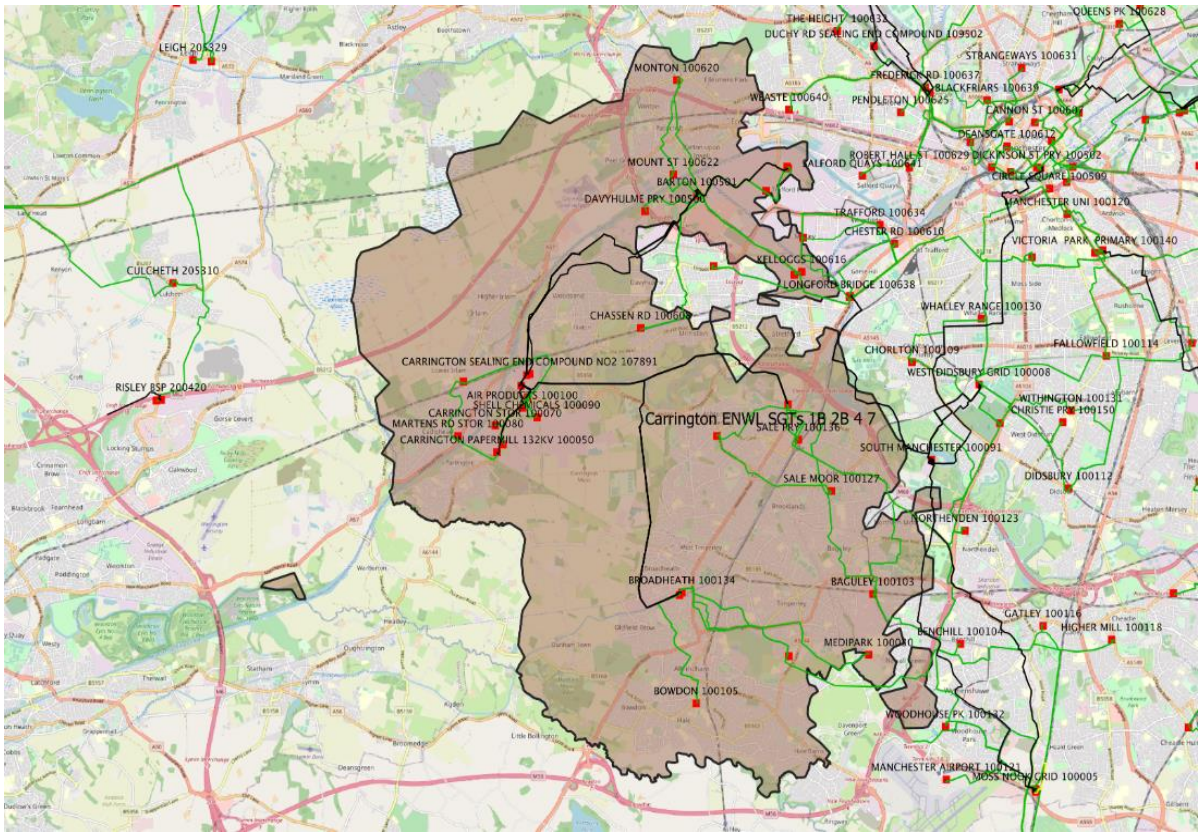
Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>9.3</td></tr><tr><td>Consumer Transformation</td><td>18.9</td></tr><tr><td>Steady Progression</td><td>3.0</td></tr></table></td></tr>
</table>

Site Name (& location co-ordinate)	Need	Asset Solution	Flexible Services Option
		4.3MVA spare capacity on Reddish Vale in FY31 Start date: FY28 Completion: FY29	Within 2km of X and Y coordinates

4 Carrington GSP

GSP Summary: **4 BSPs** **17 Primaries**



Carrington GSP is a 400/275/132kV substation shared with SP Manweb. The substation comprises a total of five SGTs, with SGTs 2B, 4 & 7 supplying ENWL network and SGTs 1B & 2A operating split, supplying SP Manweb. The ENWL section supplies approximately 110,000 customers across the West and South Manchester region and comprises of two 180MVA transformers supplied from National Grid's 275kV network and one 240MVA SGT supplied from the 400kV network. The peak demand is currently 234MVA, supplied via fours BSPs and 17 primary substations.

Capacity Requirements Overview

	Demand Driven	Generation Driven
0-2 years		
3-5 years	Baguley	
5-10 years	Chassen Road	Barton

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Solution</th></tr>
<tr>
<td>Baguley
 
X- 380562

Y- 389035</td>
<td>FC exceeded in FY28</td>
<td>Load transfers onto adjacent primaries in conjunction with HV circuits upgrades. Requires 1.3km HV cable.

Start date: FY27

Completion date: FY28</td>
<td> 
Dynamic Response Required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>3.7</td></tr>
<tr><td>Consumer Transformation</td><td>16.6</td></tr>
<tr><td>Steady Progression</td><td>2.5</td></tr>
</table>

Within 3km of X and Y coordinates</td>
</tr>
<tr>
<td>Chassen Rd
 
X- 375542

Y- 394453</td>
<td>FC first exceeded in FY28

1.5MVA exceedance of FC by FY31</td>
<td>HV demand transfers available to Urmston and NWGB Partington primaries via existing feeders.

In FY31, there is 8.5MVA spare on Urmston and 8.2MVA spare on NWGB Partington.

Start date: FY28

Completion date: FY28</td>
<td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td>
</tr>
<tr>
<td>Barton
 
X- 376758

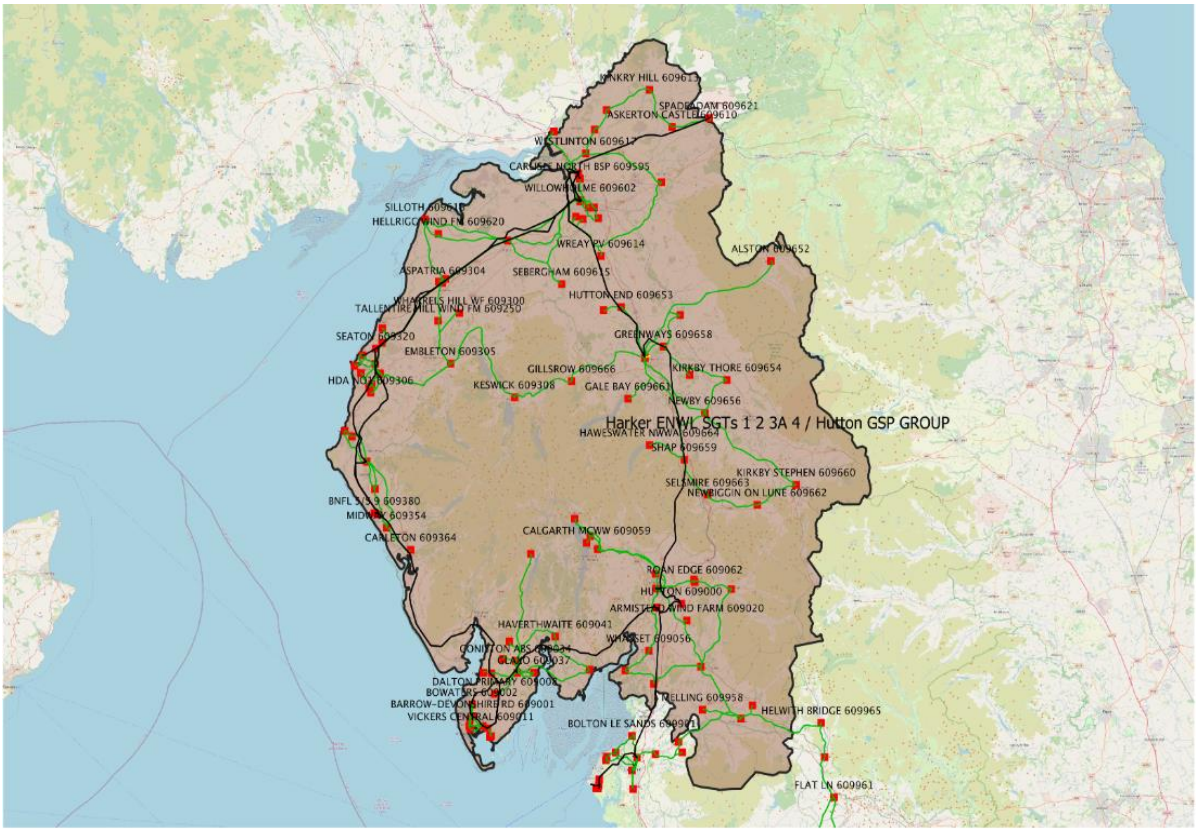
Y- 397174</td>
<td>Make fault level exceedance in FY30.</td>
<td>Detailed needs assessment and solution optioneering to be continued.

Current preferred solution is to install 4th 132/33kV 60MVA transformer at</td>
<td>Not suitable solution for fault level exceedances.</td>
</tr>
</table>

Site Name	Need	Asset Solution	Flexible Services Solution
		Barton BSP with associated 33kV circuit breakers. Future substation operational arrangement to be confirmed. Start date: FY28 Completion date: FY30	

5 Harker ENWL SGTs 1 2 3A 4 / Hutton Group

GSP Summary: **10 BSPs** **93 Primaries**



Harker ENWL SGTs 1 2 3A 4 / Hutton Group supplies approximately 235,000 customers across the North and South Lakes region of the network. The supply is taken from Harker GSP and Hutton GSP. Harker GSP takes its supply from National Grid via 1 x 240MVA 275kV SGT and 4 x 120MVA 275kV SGTs. Hutton GSP takes is supply from National Grid via 2 x 240MVA 400kV SGTs. Together the GSPs supply the Cumbria ring consisting of 2 x 132kV switching stations, 10 x BSP and 93 x Primary Substations. There is significant generation on the network including several large windfarms and CHP sites. The Peak Demand is currently 551MVA.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years	Embleton	Bowaters HDA 1 & 2 Leyland National Kendal BSP

	Demand Driven	Generation Driven
3-5 years	Askam & Dalton Coniston Morton Park & Pirelli Whasset Wigton	Morton Park & Pirelli Carlisle BSP
5-10 years	Alston Askam & Dalton Coniston Easton Egremont Gillsrow Mintsfeet Morton Park & Pirelli Sebergham Whasset Wigton Yealand Carlisle BSP Kendal BSP	Stainburn BSP Siddick BSP

Intervention Detail

Site Name	Need	Asset Solution	Flexible Services Solution
Alston  X- 372125	FC first exceeded in FY23, however it is managed post fault operationally using strategic generation deployment.	Single transformer site and our initial approach to meet the firm capacity need is to tender for flexible services in the area.	Sustain response required 

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Solution</th></tr>
<tr>
<td>Y- 546499</td>
<td>Increase in demand exceedance of 0.7MVA by FY31 requires consideration of non-operational solution.

Whole systems solution to be considered with Northern Power Grid adjacent network. Development planning in progress.</td>
<td>A viability and economic assessment will then be carried out against the technical solution detailed below to determine the preferred option.

Closest primary is 18km away which makes any new HV interconnector between primaries of technically challenging and expensive.

Second 3MVA transformer required at Alston to accommodate excess demand. This would require ~21km of 33kV cable between Aston and Little Salkeld T11 to supply the new primary transformer.

Start date: FY27

Completion date: FY30</td>
<td>
<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>1.9</td></tr>
<tr><td>Consumer Transformation</td><td>3.3</td></tr>
<tr><td>Steady Progression</td><td>2.3</td></tr>
</table>

Within 7km of X and Y coordinates
</td>
</tr>
<tr>
<td>Askam & Dalton

(single transformer primaries run in parallel at HV)

Askam</td>
<td>FC first exceeded in FY27

2.8MVA exceedance of FC by FY31</td>
<td>Uprate existing 33kV cable to Dalton to increase FC

Estimated completion in FY26</td>
<td>Dynamic Response Required

 
<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>6.9</td></tr>
<tr><td>Consumer Transformation</td><td>20.2</td></tr>
</table>
</td>
</tr>
</table>

Site Name	Need	Asset Solution	Flexible Services Solution
X- 321558 Y- 477806 Dalton X- 323582 Y- 474255			Steady Progression: 6.0 Within 10km of X and Y coordinates
Coniston  X- 329874 Y- 497641	FC first exceeded in FY21, however it is managed post fault operationally using strategic generation deployment. Increase in demand exceedance to 1.6MVA by FY31 requires consideration of non-operational solution.	Single transformer site and our initial approach to meet the firm capacity need is to tender for flexible services in the area. A viability and economic assessment will then be carried out against the technical solution detailed below to determine the preferred option. Closest primary is 10km away which makes any new HV interconnector between primaries technically challenging and expensive. Second 4MVA transformer required at Coniston to accommodate excess demand. ~20km of 33kV cable between Coniston and Ulverston primary to supply the new transformer.	Sustain response required  **Max Flex Required at 2051 - Winter Peak** / **MVA** Best View: 2.3 Consumer Transformation: 3.6 Steady Progression: 2.3 Within 10km of X and Y coordinates

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Solution</th></tr>
<tr><td></td><td></td><td>Start date: FY27

Completion date: FY30</td><td></td></tr>
<tr><td>Easton

X- 343201

Y- 571738</td><td>FC first exceeded in FY21, however it is managed post fault operationally using strategic generation deployment.

Increase in demand exceedance to 0.6MVA by FY31 requires consideration of non-operational solution.</td><td>Single transformer site and our initial approach to meet the firm capacity need is to tender for flexible services in the area.

A viability and economic assessment will then be carried out against the technical solution detailed below to determine the preferred option.

Considering the small increase from MD21 to MD31 there are still available demand transfers from Easton available utilising existing feeders</td><td>Sustain response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>1.2</td></tr><tr><td>Leading Way</td><td>1.4</td></tr><tr><td>Steady Progression</td><td>0.9</td></tr></table>
Within 8km of X and Y coordinates</td></tr>
<tr><td>Egremont

X- 301070

Y- 513074</td><td>FC first exceeded in FY29

1.5MVA exceedance of FC by FY31</td><td>Install a HV interconnector to Hensingham primary to transfer demand off Egremont, cable route ~5km

11.1MVA spare capacity on Hensingham in FY31

Start date: FY27

Completion date: FY28</td><td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>4.8</td></tr><tr><td>Consumer Transformation</td><td>15.9</td></tr><tr><td>Steady Progression</td><td>2.8</td></tr></table>
Within 8km of X and Y coordinates</td></tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Solution</th></tr>
<tr>
<td>Gillsrow
 
X- 337117

Y- 526444</td>
<td>FC first exceeded in FY27, however it is managed post fault operationally using strategic generation deployment.

Increase in demand exceedance to 0.7MVA by FY31 requires consideration of non-operational solution.</td>
<td>Single transformer site and our initial approach to meet the firm capacity need is to tender for flexible services in the area.

A viability and economic assessment will then be carried out against the technical solution detailed below to determine the preferred option.

Closest primary is >10km away which makes any new HV interconnector between primaries technically challenging and expensive.

Second 7.5/15MVA transformer required at Gillsrow to accommodate excess demand

~17km of 33kV cable between Gillsrow and Penrith primary to supply the new transformer

Start date: FY27

Completion date: FY30</td>
<td>Sustain response required
 
<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>2.1</td></tr><tr><td>Consumer Transformation</td><td>2.4</td></tr><tr><td>Steady Progression</td><td>1.7</td></tr></table>
Within 10km of X and Y coordinates</td>
</tr>
<tr>
<td>Mintsfeet
  </td>
<td>FC first exceeded in FY28

1.7MVA exceedance of FC by FY31</td>
<td>Install third transformer at Mintsfeet to accommodate the excess demand</td>
<td>Dynamic response required
  </td>
</tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Solution</th></tr>
<tr>
<td>X- 351827

Y- 494315</td>
<td></td>
<td>~3km 33kV cable from Mintsfeet to Kendal and additional 33/11kV transformer and switchboard.

Start date: FY27

Completion date: FY30</td>
<td>
<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>12.9</td></tr>
<tr><td>Consumer Transformation</td><td>24.3</td></tr>
<tr><td>Steady Progression</td><td>5.6</td></tr>
</table>

Within 10km of X and Y coordinates
</td>
</tr>
<tr>
<td>Morton Park & Pirelli

Morton Park

X- 337826

Y- 553939

Pirelli

X- 339059

Y- 553548</td>
<td>FC first exceeded in FY30

3.4MVA exceedance of FC by FY31</td>
<td>Uprate existing transformer at Pirelli to 11.5/23MVA

Start date: FY28

Completion date: FY29</td>
<td>Dynamic response required

 
<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>11.4</td></tr>
<tr><td>Consumer Transformation</td><td>26.8</td></tr>
<tr><td>Steady Progression</td><td>7.2</td></tr>
</table>

Within 9km of X and Y coordinates
</td>
</tr>
<tr>
<td>Sebergham

X- 335344

Y- 542653</td>
<td>FC first exceeded in FY26, however it is managed post fault operationally using strategic generation deployment.

Increase in demand exceedance to 0.5MVA by FY31 requires consideration of non-operational solution.</td>
<td>Single transformer site and our initial approach to meet the firm capacity need is to tender for flexible services in the area.

A viability and economic assessment will then be carried out against the technical solution detailed below to determine the preferred option.</td>
<td>Sustain response required

 
<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>1.5</td></tr>
<tr><td>Consumer Transformation</td><td>2.9</td></tr>
<tr><td>Steady Progression</td><td>1.3</td></tr>
</table>

Within 10km of X and Y coordinates
</td>
</tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Solution</th></tr>
<tr><td></td><td></td><td>Closest primary is >9km away which makes any new HV interconnector between primaries technically challenging and expensive.

Second 4/8MVA transformer required at Sebergham to accommodate excess demand

Install 5 panel 33kV board and 6km 33kV to loop in to Carlisle/Wigton circuit to supply the new transformer

Start date: FY29

Completion date: FY31</td><td></td></tr>
<tr><td>Whasset

X- 350648

Y- 481468</td><td>FC first exceeded in FY28

4.1MVA exceedance of FC by FY31</td><td>Limited available headroom on existing adjacent standby feeders

Install a HV interconnector to Arnside primary to transfer demand off Whasset, cable route ~5km

9.3MVA spare capacity on Arnside in FY31

Start date: FY29

Completion date: FY31</td><td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>5.8</td></tr><tr><td>Consumer Transformation</td><td>10.3</td></tr><tr><td>Steady Progression</td><td>2.3</td></tr></table>
Within 10km of X and Y coordinates</td></tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Solution</th></tr>
<tr>
<td>Wigton

X- 325814

Y- 549933</td>
<td>FC first exceeded in FY21

7.5MVA exceedance of FC by FY31</td>
<td>Demand driven by single large customer in the area. Non-firm connection agreements in place and issue currently managed operationally

Proposal to increase FC is to extend existing switchboard at Wigton and install third transformer.

Customer in the area may drive this ahead of ED3.

Start date: FY28

Completion date: FY30</td>
<td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>12.6</td></tr><tr><td>Consumer Transformation</td><td>15.7</td></tr><tr><td>Steady Progression</td><td>10.0</td></tr></table>
Within 10km of X and Y coordinates</td>
</tr>
<tr>
<td>Yealand

X- 351537

Y- 475934</td>
<td>FC first exceeded in FY27, however it is managed post fault operationally using strategic generation deployment.

Increase in demand exceedance to 0.6MVA by FY31 requires consideration of non-operational solution.</td>
<td>Single transformer site and our initial approach to meet the firm capacity need is to tender for flexible services in the area.

A viability and economic assessment will then be carried out against the technical solution detailed below to determine the preferred option.

Install a HV interconnector from Arnside primary to transfer demand off Yealand

Cable route ~6km</td>
<td>Sustain response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>1.5</td></tr><tr><td>Consumer Transformation</td><td>3.0</td></tr><tr><td>Steady Progression</td><td>1.3</td></tr></table>
Within 5km of X and Y coordinates</td>
</tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flexible Services Solution</th></tr>
<tr><td></td><td></td><td>Start date: FY29

Completion date: FY31</td><td></td></tr>
<tr><td>Carlisle BSP

X- 338655

Y- 556583</td><td>FC first exceeded in FY29

16MVA exceedance of FC by FY31</td><td>Currently three GTs at Carlisle. 2 x 60MVA and 1 x 90MVA rated.

Replace the 2 x 60MVA units with 90MVA units to increase the firm capacity from 150MVA to 207MVA.

Start date: FY29

Completion date: FY31</td><td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>51</td></tr><tr><td>Consumer Transformation</td><td>118</td></tr><tr><td>Steady Progression</td><td>28</td></tr></table>
Within 10km of X and Y coordinates</td></tr>
<tr><td>Kendal BSP

X- 351915

Y- 491858</td><td>FC first exceeded in FY30

5.8MVA exceedance of FC by FY31</td><td>Two options have been considered to increase capacity at Kendal.

A third 90MVA GT located at Kendal BSP fed from Hutton.

An alternative option is to utilise the site at the BR Natland, install a 90MVA GT here and reorganise the 33kV network.

Further Optioneering to be carried out in ED2 to determine most cost effective option.

Start date: FY30

Completion date: FY33</td><td>Dynamic response required

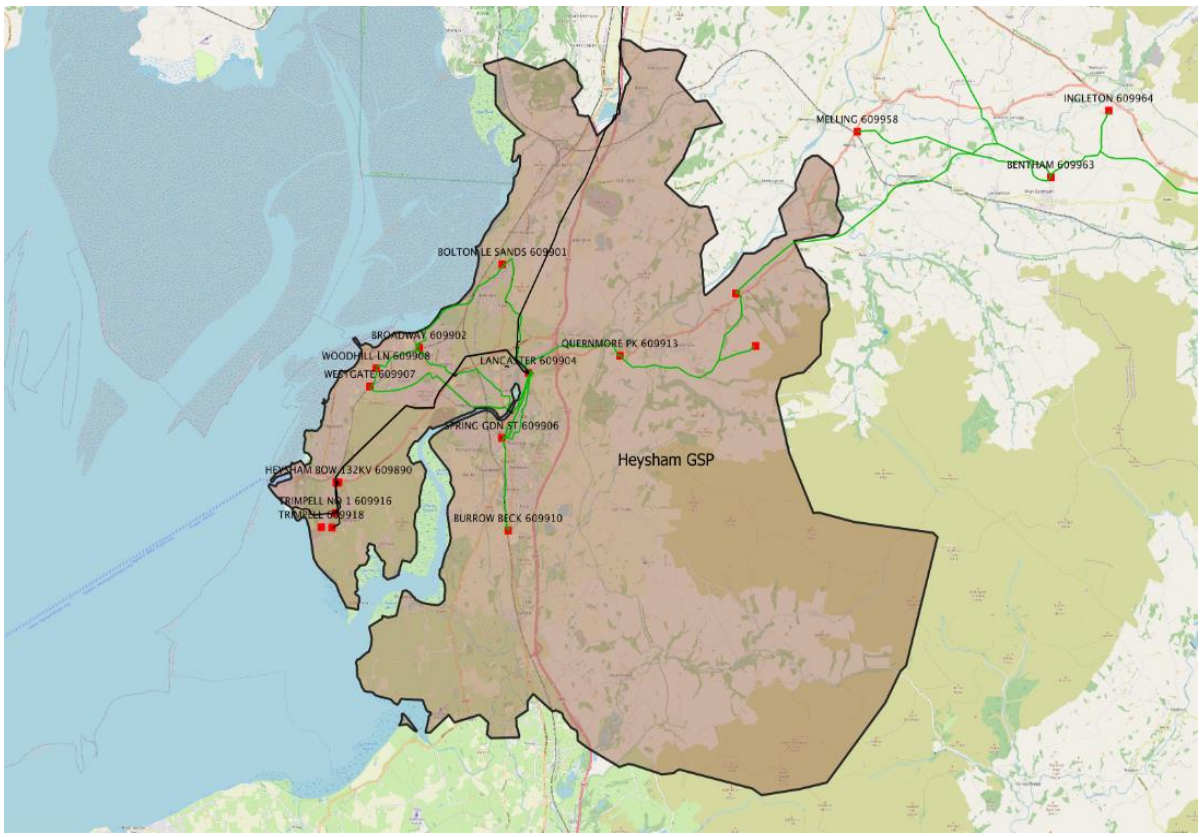
 

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>37</td></tr><tr><td>Consumer Transformation</td><td>89</td></tr><tr><td>Steady Progression</td><td>27</td></tr></table>
Within 10km of X and Y coordinates</td></tr>
</table>

Site Name	Need	Asset Solution	Flexible Services Solution
Stainburn & Siddick BSP X- 302535 Y- 529330	Make fault level exceedance in FY30.	Due to three GTs running in parallel already a significantly high make fault level identified at this location. Current preferred solution is to install 2nd GT at Siddick 132/33kV and associated 33kV circuit breakers. Future substation operational arrangement to be confirmed. Start date: FY28 Completion date: FY30	Not suitable solution for fault level exceedances.

6 Heysham GSP

GSP Summary **2 BSPs** **9 Primaries**



Heysham GSP is a 400/132kV substation which supplies approximately 50,000 customers across the North Lancashire and South Lakes region. The substation comprises three 240MVA transformers supplied from National Grid's 400kV network. The peak demand on the GSP is currently only 113MVA supplied via two BSPs and nine primary substations. However, there are several large offshore windfarms connected at Heysham and therefore export is a greater constraint than import.

Due to the significant levels of generation in this area transmission capacity has already been exceeded with an additional SGT being recognised as required. National Grid ESO have reviewed this requirement and in conjunction with ENW have developed a Regional Development Plan (RDP) to secure additional transmission capacity via existing assets, rather than commence with the asset build of an additional SGT. This option aims to connect generation into the existing active network management system already in place at Heysham, and then constrain export from generators for the loss of an SGT on the transmission network.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years		
3-5 years	Burrow Beck Claughton	

	Demand Driven	Generation Driven
5-10 years	Lancaster Lancaster BSP	

Intervention Detail

Site Name	Need	Asset Solution	Flex Plan Location
Burrow Beck  X- 347903 Y- 458401	FC first exceeded in FY27 2.5MVA exceedance of FC by FY31	HV demand transfers available onto existing standby feeders on Spring Garden St 11kV primary In FY 31 there is 12.5MVA of spare capacity available on Spring Garden St 11kV. Start date: FY28 Completion Date: FY28	Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution. Therefore, flexibility services not required before 2031.
Claughton  X- 355872 Y- 466268	FC first exceeded in FY27, however it is managed post fault operationally using strategic generation deployment. Increase in demand exceedance to 0.9MVA by FY31 requires consideration of non-operational solution.	Single transformer site and our initial approach to meet the firm capacity need is to tender for flexible services in the area. A viability and economic assessment will then be carried out against the technical solution detailed below to determine the preferred option. Closest primary is >7km away which gives limited transfer capability if a new HV interconnector was installed	Sustain response required  **Max Flex Required at 2051 - Winter Peak** / **MVA** Best View: 2.1 Consumer Transformation: 3.5 Steady Progression: 1.9 Within 10km of X and Y coordinates

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td></td><td></td><td>Second 7.5MVA transformer required at Claughton to accommodate excess demand

~7.7km of 33kV cable between Claughton and Lancaster BSP to supply the new transformer

Start date: FY28

Completion Date: FY30</td><td></td></tr>
<tr><td>Lancaster

X- 348644

Y- 463628</td><td>FC first exceeded in FY28

2.1MVA exceedance of FC by FY31</td><td>Adjacent primaries are >7km away thus limited impact from a new HV interconnector due to voltage step issues

Install third transformer at Lancaster to accommodate additional demand

Start date: FY28

Completion Date: FY30</td><td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>6.5</td></tr><tr><td>Consumer Transformation</td><td>14.9</td></tr><tr><td>Steady Progression</td><td>4.5</td></tr></table>
Within 9km of X and Y coordinates</td></tr>
<tr><td>Lancaster BSP

X- 348644

Y- 463628</td><td>FC first exceeded in FY31

5.7MVA exceedance of FC by FY31</td><td>Currently there is a third GT at Lancaster which is on open standby fed from the Harker & Hutton Network – initial proposal to be analysed in RIIO ED2 is to utilise this network asset to support demand

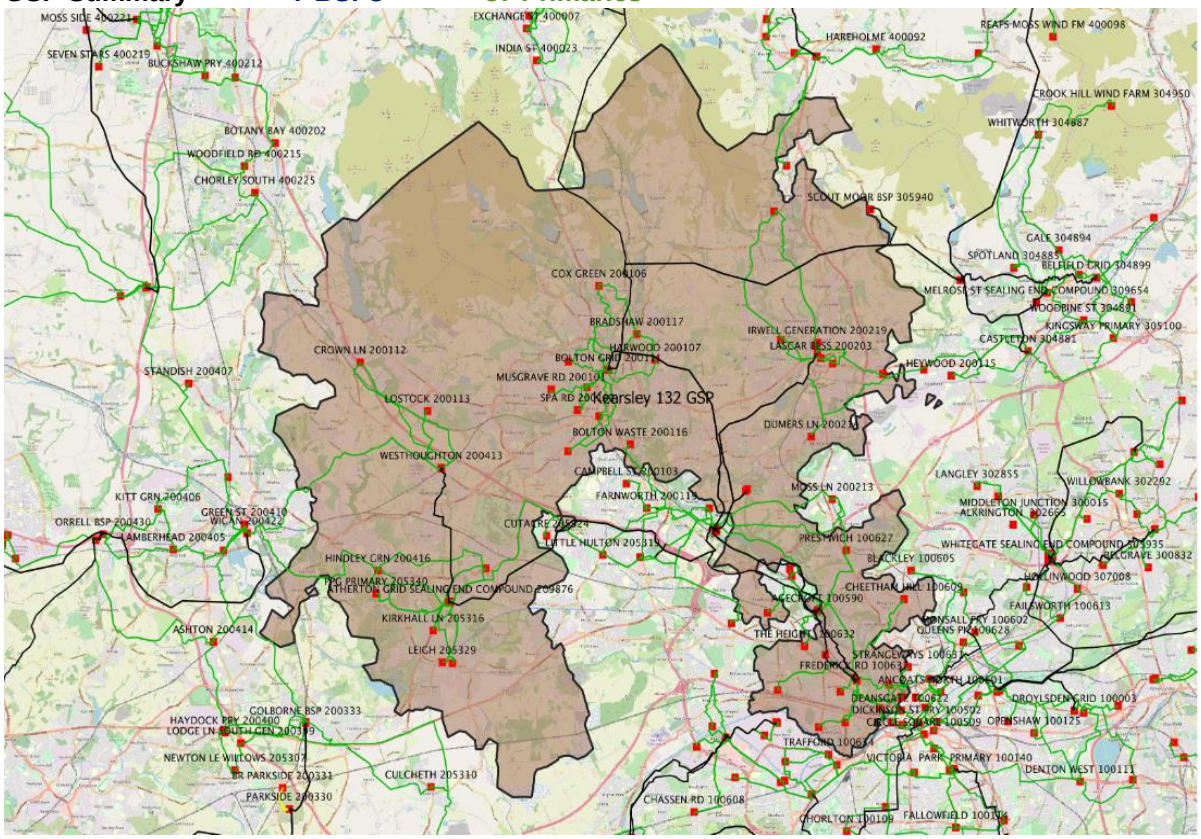
Start date: FY28</td><td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>66</td></tr><tr><td>Consumer Transformation</td><td>136</td></tr></table></td></tr>
</table>

Site Name	Need	Asset Solution	Flex Plan Location
		Completion Date: FY30	Steady Progression: 27 Within 10km of X and Y coordinates

4.1 Kearsley GSP

GSP Summary **7 BSPs** **37 Primaries**



Kearsley GSP is a 275/132kV substation which supplies approximately 322,000 customers across the South Lancashire and North Manchester region. The substation comprises four 240MVA transformers supplied from National Grid's 275kV network. The peak demand on the GSP is currently 490MVA, supplied via seven BSPs and 37 primary substations.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years	Frederick Road BSP	Trinity Bolton BSP Bury BSP

	Demand Driven	Generation Driven
3-5 years	Blackfriars	Westhoughton Westhoughton BSP
5-10 years	Atherton Town Centre Blackfriars Crown Lane Harwood Holt St Westhoughton Atherton BSP	

Intervention Detail

Site Name	Need	Asset Solution	Flex Plan Location
Atherton Town Centre X- 367546 Y- 403338	FC first exceeded in FY29 4.7MVA exceedance of FC by FY31	Overlay ~2.2km of 33kV cable to increase firm capacity to 38MVA Start date: FY28 Completion Date: FY30	Dynamic response required **Max Flex Required at 2051 - Winter Peak** / **MVA** Best View: 8.3 Consumer Transformation: 32.5 Steady Progression: 5.1 Within 6km of X and Y coordinates
Blackfriars	FC first exceeded in FY23 Existing RIIO-ED2 scheme in place to address.	33kV circuit being replaced in RIIO-ED2 to increase FC to 20MVA. Completion in FY25	Dynamic response required

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr>
<td>X- 383030

Y- 399104</td>
<td>FC again exceeded in FY28

0.8MVA exceedance of FC by FY31</td>
<td>Demand transfers available onto existing standby feeders on Trinity and Chapel Wharf primaries

21.8MVA of spare capacity available on Trinity in FY31 and 13.4MVA of spare capacity available on Chapel Wharf

Start date: FY28

Completion Date: FY28</td>
<td>
<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>3.1</td></tr>
<tr><td>Consumer Transformation</td><td>6.2</td></tr>
<tr><td>Steady Progression</td><td>2.7</td></tr>
</table>

Within 2km of X and Y coordinates
</td>
</tr>
<tr>
<td>Crown Lane

X- 362706

Y- 410859</td>
<td>FC first exceeded in FY28

2.4MVA exceedance of FC by FY31</td>
<td>Install an HV interconnector to Lostock primary to transfer demand off Crown Lane, cable route ~3km

5.2MVA spare capacity on Lostock in FY31

Start date: FY28

Completion Date: FY29</td>
<td>Dynamic response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>9.6</td></tr>
<tr><td>Consumer Transformation</td><td>23.2</td></tr>
<tr><td>Steady Progression</td><td>5.9</td></tr>
</table>

Within 6km of X and Y coordinates
</td>
</tr>
<tr>
<td>Harwood

X- 374043

Y- 410941</td>
<td>FC first exceeded in FY28

2.1MVA exceedance of FC by FY31</td>
<td>Install an HV interconnector to Union Rd primary to transfer demand off Harwood, cable route ~2km

3.3MVA spare capacity on Union Rd in FY31</td>
<td>Dynamic response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>5.3</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td></td><td></td><td>Start date: FY28

Completion Date: FY29</td><td><table><tr><td>Consumer Transformation</td><td>19.0</td></tr><tr><td>Steady Progression</td><td>4.6</td></tr></table>
Within 6km of X and Y coordinates</td></tr>
<tr><td>Holt St

X- 378620

Y- 416362</td><td>FC first exceeded in FY30

1.2MVA exceedance of FC by FY31</td><td>Transfer HV demand onto Stubbins primary via existing HV feeders

8.2MVA of spare capacity on Stubbins in FY31

Estimated completion in FY30</td><td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td></tr>
<tr><td>Westhoughton

X- 365831

Y- 407025</td><td>FC first exceeded in FY31

0.8MVA exceedance of FC by FY31</td><td>Transfer demand onto Lostock primary via existing HV feeders

5.2MVA of spare capacity on Lostock in FY31

Estimated completion in FY30</td><td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td></tr>
<tr><td>Atherton BSP

X- 366150

Y- 402088</td><td>FC first exceeded in FY28

14.8MVA exceedance of FC by FY31</td><td>Install 3rd 90MVA GT fed from Kearsley GSP.</td><td>Dynamic response required

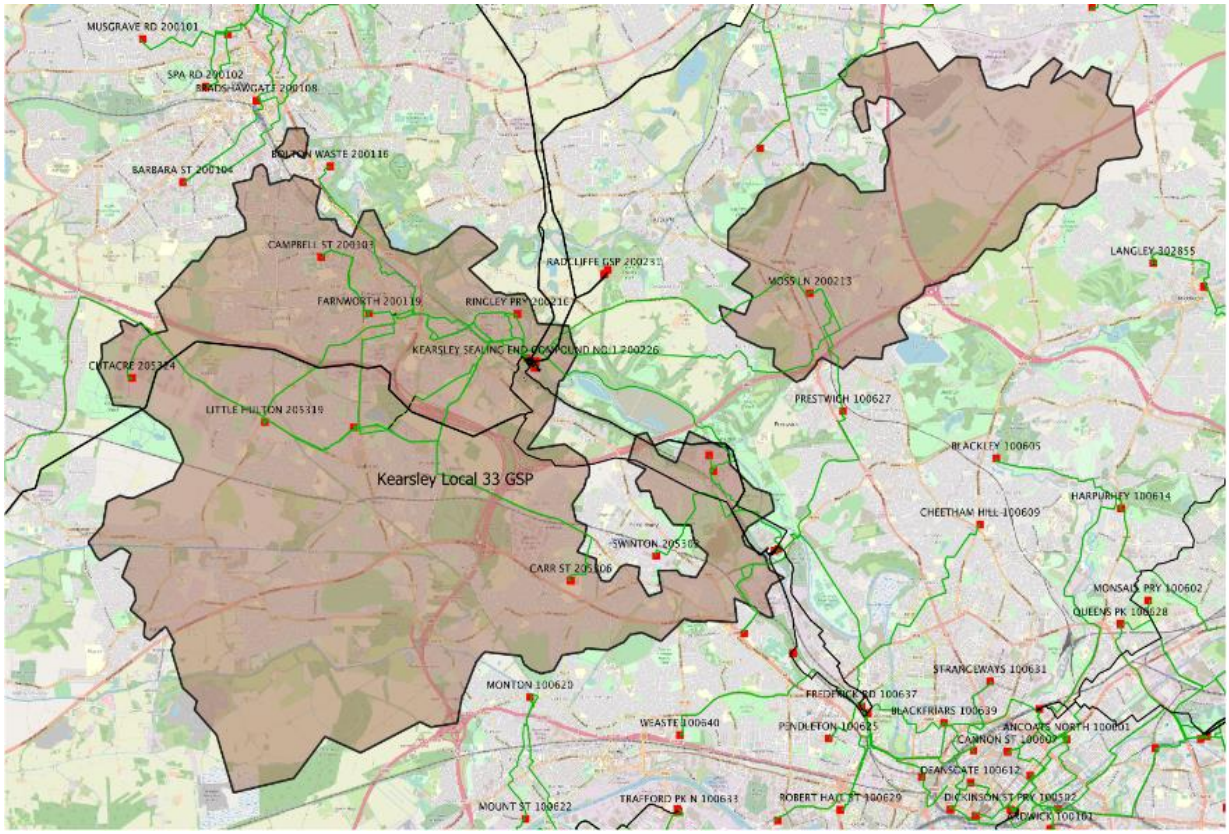
<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>37</td></tr><tr><td>Consumer Transformation</td><td>107</td></tr><tr><td>Steady Progression</td><td>18.5</td></tr></table>
Within 10km of X and Y coordinates</td></tr>
</table>

Site Name	Need	Asset Solution	Flex Plan Location
Trinity  X- 382649 Y- 398230	Make fault level exceedance in FY22 currently managed operationally.	Site identified for intervention in RIIO - ED2. Possible substation operational arrangement change could be implemented to resolve Make FL issue. Start date: FY26 Completion Date: FY28	Not suitable solution for fault level exceedances.
Bolton BSP  X- 372255 Y- 410566	Make fault level exceedance in FY22 currently managed operationally.	Site identified for intervention in RIIO - ED2. Replace section A and B as the lower rated switchgear. Start date: FY26 Completion Date: FY28	Not suitable solution for fault level exceedances.
Bury BSP  X- 380272 Y- 411184	Make fault level exceedance in FY22 currently managed operationally.	Site identified for intervention in RIIO - ED2. Replace sections A and B. Start date: FY26 Completion Date: FY28	Not suitable solution for fault level exceedances.
Westhoughton  X- 365831 Y- 407025	Make fault level exceedance in FY27.	Monitor the FL and replace switchgear with higher rated plant in RIIO ED3. Start date: FY28 Completion Date: FY30	Not suitable solution for fault level exceedances.
Westhoughton BSP	Make fault level exceedance in FY27.	Site identified for intervention in RIIO -	Not suitable solution for fault level exceedances.

Site Name	Need	Asset Solution	Flex Plan Location
 X- 365831 Y- 407025		ED2. Replace sections A and B. Start date: FY26 Completion Date: FY28	

7 Kearsley Local GSP

GSP Summary **11 Primaries**



Kearsley Local GSP is a 275/33kV substation which supplies approximately 50,000 customers across the South Lancashire region. The substation comprises two 120MVA transformers supplied from National Grid's 275kV network. The peak demand on the GSP is currently 103MVA, supplied via eleven primary substations.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years		
3-5 years	Little Hulton Moss Lane	
5-10 years	Hill Top T11&T12	

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td>Hill Top T11 & T12

X- 373466

Y- 403748</td><td>FC first exceeded in FY30

1.2MVA exceedance of FC by FY31</td><td>HV demand transfers are available onto Farnworth and Carr St primaries via existing standby HV feeders

4.8MVA of spare capacity on Farnworth and 3.6MVA of spare capacity on Carr St

Start date: FY29

Completion Date: FY29</td><td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td></tr>
<tr><td>Little Hulton

X- 372024

Y- 403826</td><td>FC first exceeded in FY26</td><td>Scheme identified as part of RIIO ED2 program. 33kV incoming circuit and transformers to be uprated.

Start date: FY25

Completion Date: FY28</td><td>Sustain response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>5.4</td></tr><tr><td>Consumer Transformation</td><td>18.6</td></tr><tr><td>Steady Progression</td><td>1.3</td></tr></table>
Within 3km of X and Y coordinates</td></tr>
<tr><td>Moss Lane

X- 380858

Y- 408856</td><td>FC first exceeded in FY30

1.2MVA exceedance of FC by FY31</td><td>Strategic solution developed in RIIO-ED2 to install new 23MVA Northern Gateway primary.

2MVA minimum of demand to be transferred off Moss</td><td>Sustain response required</td></tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td></td><td></td><td>Lane via HV network onto Northern Gateway to alleviate issues in the next 3-10 years.

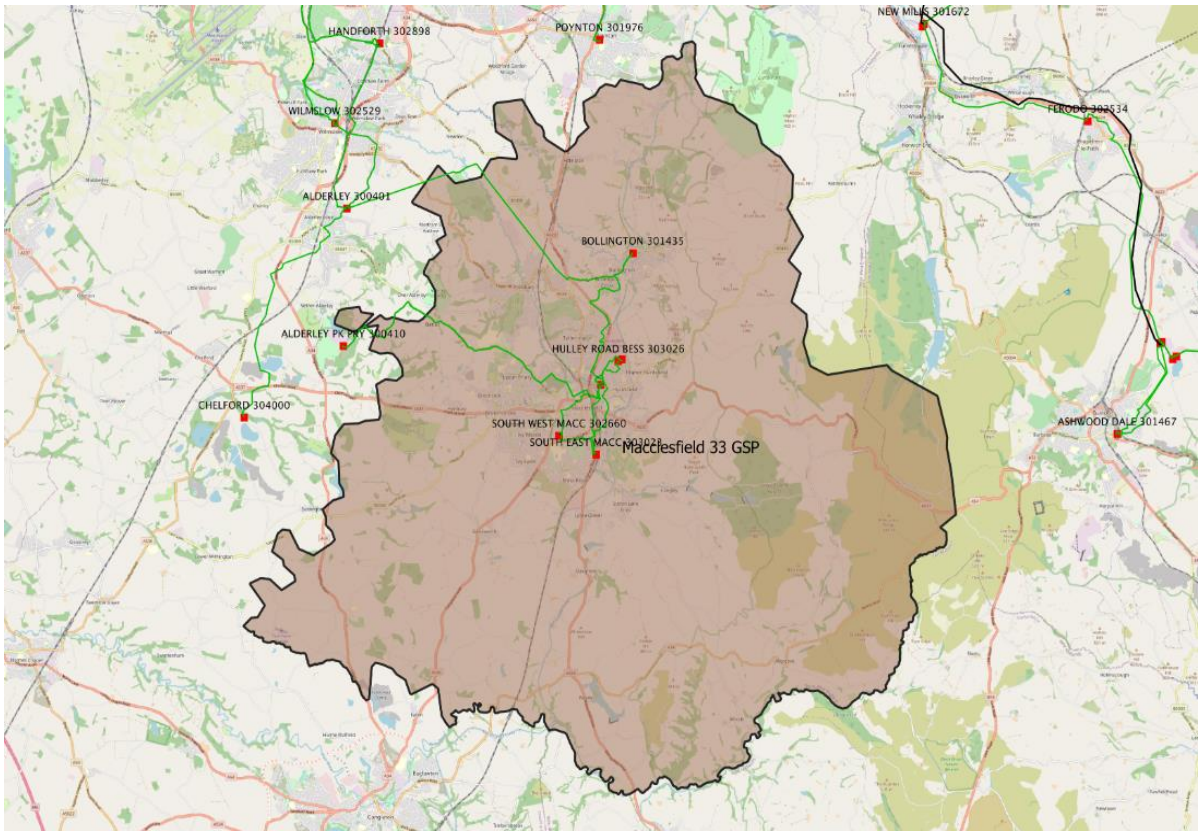
Start date: FY25

Completion Date: FY28</td><td>
<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>5.4</td></tr>
<tr><td>Consumer Transformation</td><td>20.2</td></tr>
<tr><td>Steady Progression</td><td>5</td></tr>
</table>

Within 4km of X and Y coordinates
</td></tr>
</table>

8 Macclesfield GSP

GSP Summary **6 Primaries**



Macclesfield GSP is a 275/33kV substation which supplies approximately 36,000 customers across the Peak South region. The substation comprises two 100MVA transformers supplied from National Grid's 275kV network. The peak demand on the GSP is currently 81MVA, supplied via six primary substations.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years		Macclesfield GSP
3-5 years		
5-10 years	Bollington S.W. Macclesfield	

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td>Bollington

X- 393042

Y- 377873</td><td>FC first exceeded in FY29

1.1MVA exceedance of FC by FY31</td><td>Install an HV interconnector to Withyfold Drive primary from Bollington to transfer e demand, cable length ~4km

10.9MVA of spare capacity at Withyfold Drive in FY31

Start date: FY29

Completion Date: FY30</td><td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>4.3</td></tr><tr><td>Consumer Transformation</td><td>9.2</td></tr><tr><td>Steady Progression</td><td>3.7</td></tr></table>
Within 5km of X and Y coordinates</td></tr>
<tr><td>S.W. Macclesfield

X- 390968

Y- 373004</td><td>FC first exceeded in FY29

2.2MVA exceedance of FC by FY31</td><td>HV demand transfers onto South East Macclesfield via existing standby feeders

5.7MVA of spare capacity at South East Macclesfield in FY31

Estimated completion in FY28</td><td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td></tr>
<tr><td>Macclesfield BSP

X- 392047

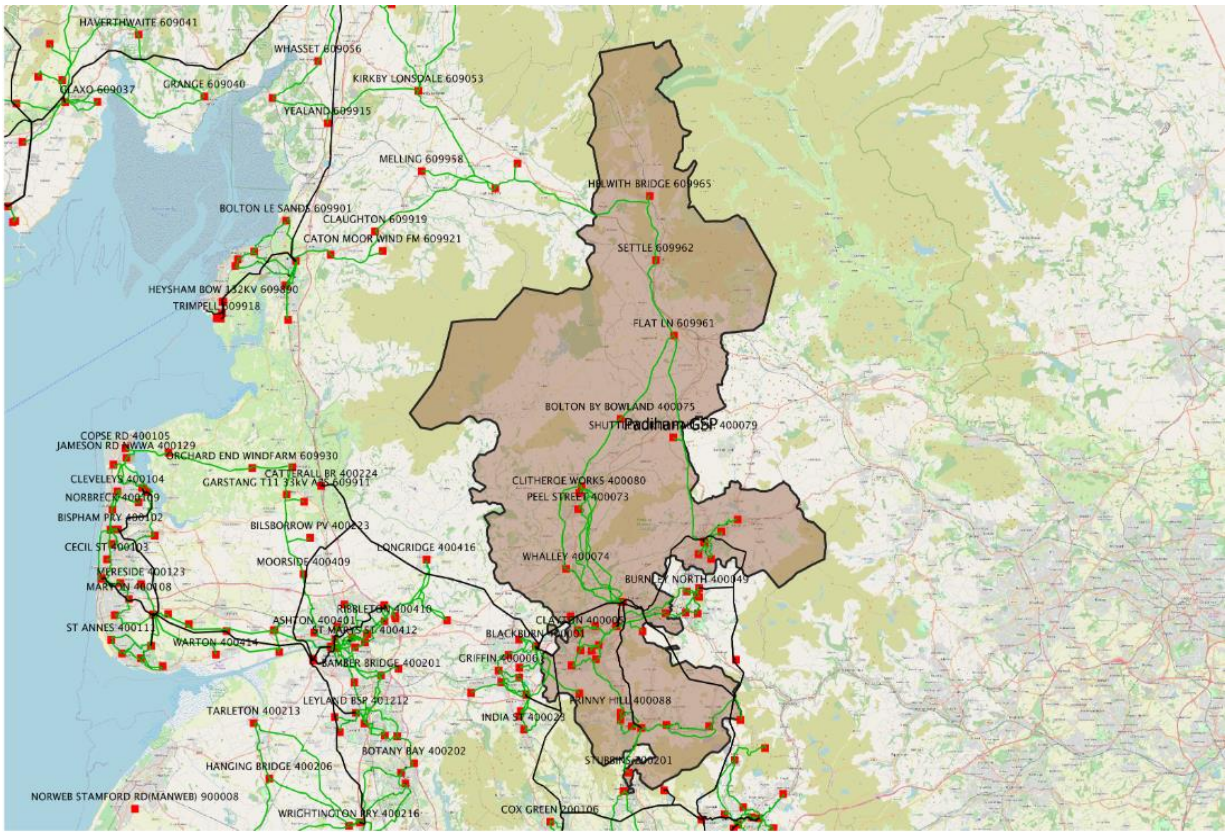
Y- 374564</td><td>Make fault level exceedance in FY22.</td><td>Site identified for intervention in RIIO - ED2. Possible substation operational arrangement change could be implemented to resolve Make FL issue.

Start date: FY26

Completion Date: FY28</td><td>Not suitable solution for fault level exceedances.</td></tr>
</table>

9 Padiham GSP

GSP Summary **4 BSPs** **28 Primaries**



Padiham GSP is a 400/132kV substation which supplies approximately 130,000 customers across the East Lancashire region. The substation comprises two 240MVA transformers supplied from National Grid's 400kV network. The peak demand on the GSP is currently 245MVA, supplied via four BSPs and twenty-eight primary substations.

The existing 132kV switchgear is currently an outdoor double busbar arrangement with main and reserve bars, and 10 feeder bays. Based on age and condition, the switchgear is being asset replaced with an indoor GIS solution which is due to be completed by March 2025.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years		Spring Cottage
3-5 years	Bolton By Bowland Flat Lane Peel St	
5-10 years	Ribblesdale T13 & T14	

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr>
<td>Bolton By Bowland

X- 378320

Y- 449559</td>
<td>FC first exceeded in FY21, however it is managed post fault operationally using strategic generation deployment.

Increase in demand exceedance to 1.4MVA by FY31 requires consideration of non-operational solution.</td>
<td>Single transformer site and our initial approach to meet the firm capacity need is to tender for flexible services in the area.

A viability and economic assessment will then be carried out against the technical solution detailed below to determine the preferred option.

Closest primary is >7km away which gives limited transfer capability if a new HV interconnector was installed

Second 7.5MVA transformer required at Bolton By Bowland to accommodate excess demand

~7km of 33kV cable between Ribblesdale primary and Bolton By Bowland to supply the new transformer

Start date: FY28

Completion Date: FY30</td>
<td>Sustain response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>2.2</td></tr>
<tr><td>Consumer Transformation</td><td>2.7</td></tr>
<tr><td>Steady Progression</td><td>2.1</td></tr>
</table>

Within 11km of X and Y coordinates</td>
</tr>
<tr>
<td>Flat Lane</td>
<td>FC first exceeded in FY22, however it is managed post fault</td>
<td>Single transformer site and our initial approach to meet</td>
<td>Sustain response required</td>
</tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr>
<td> 

X- 383248

Y- 456995</td>
<td>operationally using strategic generation deployment.

Increase in demand exceedance to 1.6MVA by FY31 requires consideration of non-operational solution.</td>
<td>the firm capacity need is to tender for flexible services in the area.

A viability and economic assessment will then be carried out against the technical solution detailed below to determine the preferred option.

Limited capacity on surrounding primaries

Install a second transformer at Flat Ln to accommodate the excess demand

Start date: FY28

Completion Date: FY30</td>
<td> 

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>2.8</td></tr><tr><td>Consumer Transformation</td><td>4.7</td></tr><tr><td>Steady Progression</td><td>2.5</td></tr></table>
Within 11km of X and Y coordinates</td>
</tr>
<tr>
<td>Peel St

X- 374463

Y- 441514</td>
<td>FC first exceeded in FY26

3.3MVA exceedance of FC by FY31</td>
<td>Install an HV interconnector to Peel St from Whalley primary to transfer excess demand, cable length ~6km

4.1MVA of spare capacity at Whalley in FY31

Start date: FY28

Completion Date: FY30</td>
<td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>10.3</td></tr><tr><td>Consumer Transformation</td><td>15.7</td></tr><tr><td>Steady Progression</td><td>4.8</td></tr></table>
Within 11km of X and Y coordinates</td>
</tr>
<tr>
<td>Ribblesdale T13 & T14</td>
<td>FC first exceeded in FY30</td>
<td>Uprate existing 10/12.5MVA</td>
<td>Dynamic response required</td>
</tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr>
<td>X- 374759

Y- 443587</td>
<td>2.6MVA exceedance of FC by FY31</td>
<td>transformer to 11.5/23MVA

Start date: FY28

Completion Date: FY30</td>
<td>
<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>12.1</td></tr>
<tr><td>Consumer Transformation</td><td>19.0</td></tr>
<tr><td>Steady Progression</td><td>4.7</td></tr>
</table>

Within 12km of X and Y coordinates
</td>
</tr>
<tr>
<td>Spring Cottage

X- 385446

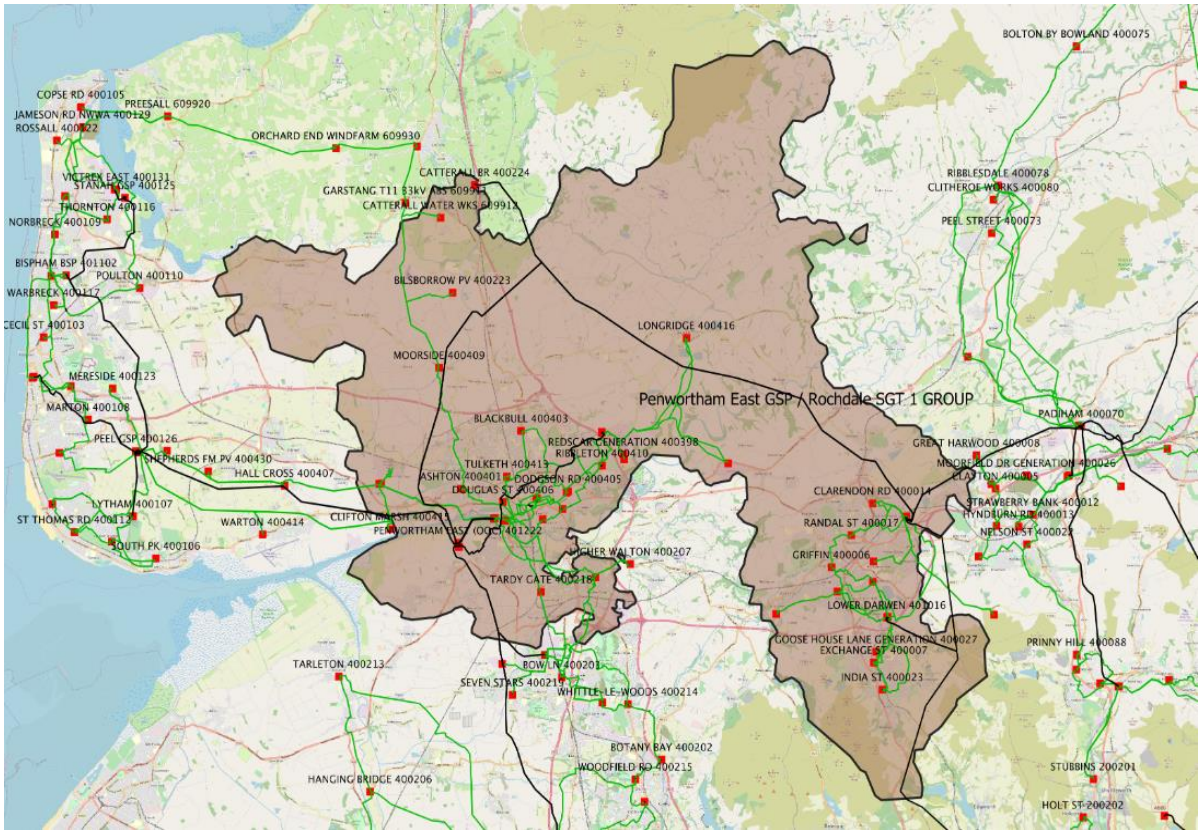
Y- 437481</td>
<td>Make fault level exceedance in FY22.</td>
<td>Site identified for intervention in RIIO - ED2. Replace section A and B required.

Start date: FY26

Completion Date: FY28</td>
<td>Not suitable solution for fault level exceedances.</td>
</tr>
</table>

10 Penwortham East GSP – Rochdale SGT 1

GSP Summary **4 BSPs** **31 Primaries**



Penwortham East GSP is a 400/132kV substation comprising of three SGTs. The GSP operates in parallel with a single SGT at Rochdale GSP forming the Penwortham East / Rochdale group. The GSP group supplies approximately 167,000 customers across the West and East Lancashire region and comprises three 240MVA transformers at Penwortham East and a single 120MVA transformer at Rochdale. The peak demand is currently 384MVA, supplied via four BSPs and 31 primary substations.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years	Catterall Waterworks	
3-5 years		Lower Darwen BSP
5-10 years		

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr>
<td>Catterall Waterworks

X- 349381

Y- 442178</td>
<td>FC first exceeded in FY22. Site currently has a managed connection to deal with FC exceedance.

4.0MVA exceedance of FC by FY31</td>
<td>Second 7.5/15MVA transformer required at Catterall to accommodate excess demand

~13km of 33kV cable between Moorside primary and Catterall to supply the new transformer

Start date: FY28

Completion Date: FY30</td>
<td>Sustain response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>4.9</td></tr>
<tr><td>Consumer Transformation</td><td>6.4</td></tr>
<tr><td>Steady Progression</td><td>4.6</td></tr>
</table>

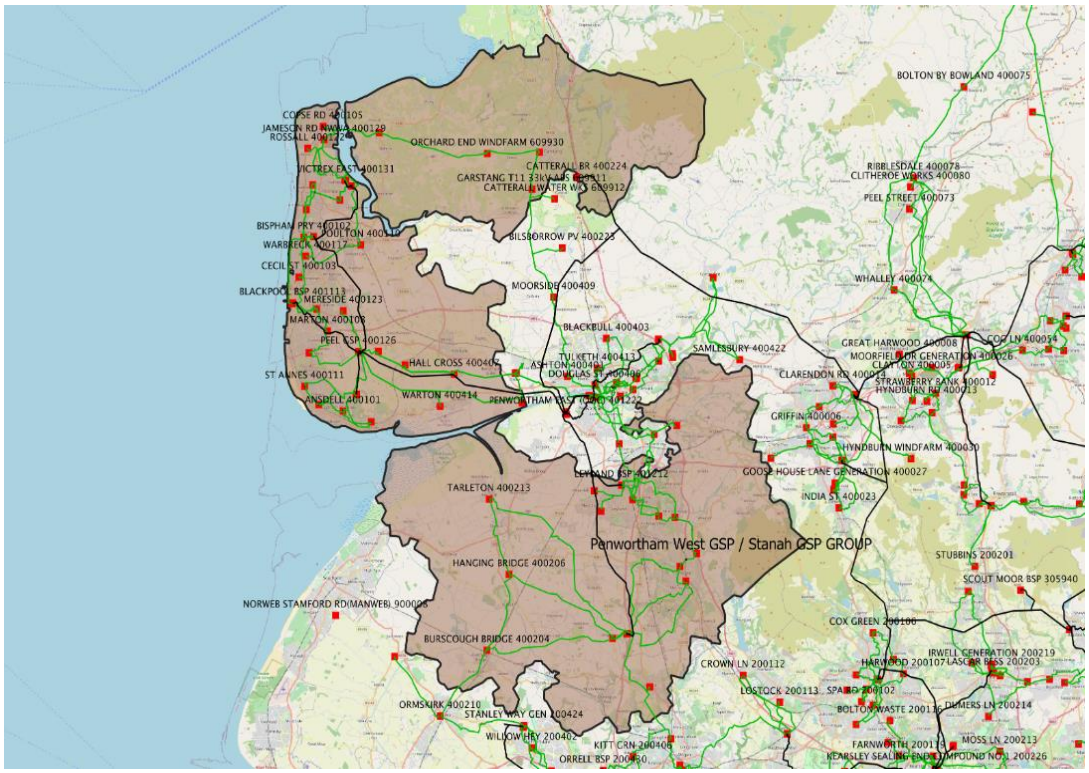
Within 3km of X and Y coordinates</td>
</tr>
<tr>
<td>Lower Darwen

X- 369695

Y- 424981</td>
<td>Make fault level exceedance in FY27</td>
<td>Site identified for intervention in RIIO - ED2. Replace 13.1kA rated 33kV switchboard with new 25/62.5kA rated switchgear in line with policy.</td>
<td>Not suitable solution for fault level exceedances.</td>
</tr>
</table>

11 Penwortham West GSP – Stanah GSP Group

GSP Summary **7 BSPs** **45 Primaries**



Penwortham West GSP is 400/275/132kV substation comprising of three 240MVA transformers located near Preston. Stanah GSP is a 400/132kV substation comprising of two 240MVA transformers, located on the Fylde peninsula. The two GSPs operate in parallel to form the Penwortham West / Stanah group. The group supplies approximately 240,000 customers across the West Lancashire region, including a large offshore wind farm, the Isle of Man and a feed to SP Manweb. The peak demand is currently 447MVA, supplied via 7 BSPs and 45 primary substations.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years		
3-5 years	Rossall	Bispham BSP
5-10 years	Botany Bay Bow Lane Hall Cross Hanging Bridge	Wrightington BSP

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr>
<td>Botany Bay

X- 359442

Y- 418850</td>
<td>FC first exceeded in FY28

1.9MVA exceedance of FC by FY31</td>
<td>Install a second transformer at Botany Bay to accommodate the excess demand

~8km 33kV cable required from Botany Bay to Wrightington along with 33/11kV transformer.

Start date: FY28

Completion Date: FY30</td>
<td>Sustain response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>5.8</td></tr>
<tr><td>Consumer Transformation</td><td>11.5</td></tr>
<tr><td>Steady Progression</td><td>4.8</td></tr>
</table>

Within 5km of X and Y coordinates</td>
</tr>
<tr>
<td>Bow Lane

X- 354895

Y- 422392</td>
<td>FC first exceeded in FY31

0.7MVA exceedance of FC by FY31</td>
<td>HV Demand transfers available to Tardy Gate and Whittle Le Woods primaries via existing feeders

In FY31, there is 7.0MVA spare on Tardy Gate and 2.5MVA spare on Whittle Le Woods

Start date: FY30

Completion Date: FY30</td>
<td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td>
</tr>
<tr>
<td>Hall Cross

X- 342288

Y- 430650</td>
<td>FC first exceeded in FY28

2.5MVA exceedance of FC by FY31</td>
<td>6.6MVA of spare capacity on Warton primary

Existing 400XLPE interconnector between Hall Cross and Warton can be utilised to transfer</td>
<td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td>
</tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td></td><td></td><td>demand off Hall Cross.

Start date: FY28

Completion Date: FY28</td><td></td></tr>
<tr><td>Hanging Bridge

X- 346186

Y- 417486</td><td>FC first exceeded in FY30

0.6MVA exceedance of FC by FY31</td><td>Install second transformer at Hanging Bridge

~9.5km 33kV lay from Hanging Bridge to Wrightington

Start date: FY28

Completion Date: FY30</td><td>Sustain response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>3.9</td></tr><tr><td>Consumer Transformation</td><td>6.0</td></tr><tr><td>Steady Progression</td><td>2.8</td></tr></table>
Within 7km of X and Y coordinates</td></tr>
<tr><td>Moss Side (Leyland) & Seven Stars

Moss Side (Leyland)

X- 352170

Y- 422970

Seven Stars

X- 352653

Y- 421636</td><td>FC first exceeded in FY31

0.6MVA exceedance of FC by FY31</td><td>Replace ~2.7km of 33kV cable between Leyland BSP and Moss Side to increase FC to 23MVA

Estimated completion in FY30</td><td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>5.9</td></tr><tr><td>Consumer Transformation</td><td>15.6</td></tr><tr><td>Steady Progression</td><td>4.4</td></tr></table>
Within 2km of X and Y coordinates</td></tr>
<tr><td>Rossall</td><td>FC first exceeded in FY21, however it is managed post fault operationally using</td><td>HV demand transfers onto Copse Rd primary via existing feeders available or</td><td>Utilisation of network capacity on adjacent substations – implemented through HV</td></tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td> 

X- 331916

Y- 445505</td><td>strategic generation deployment.

Increase in demand exceedance to 1.1MVA by FY31 requires consideration of non-operational solution.</td><td>installation of a second transformer. Detailed design to be carried out in RIIO-ED2</td><td>switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td></tr>
<tr><td>Wrightington BSP
 

X- 354460

Y- 413610</td><td>FC first exceeded in FY30

9.1MVA exceedance of FC by FY31</td><td>Options to be investigated in RIIO ED2, with initial view that the transfer of Woodfield Rd on to Leyland BSP at 33kV providing additional headroom.</td><td>Sustain response required
 
<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>45</td></tr><tr><td>Consumer Transformation</td><td>95</td></tr><tr><td>Steady Progression</td><td>33</td></tr></table>
Within 10km of X and Y coordinates</td></tr>
<tr><td>Bispham BSP
 

X- 332328

Y- 439711</td><td>Make fault level exceedance in FY24</td><td>Manage FL through RIIO-ED2 and replace 17.5kA rated 33kV switchboard with new 25/62.5kA rated switchgear in line with policy as required.

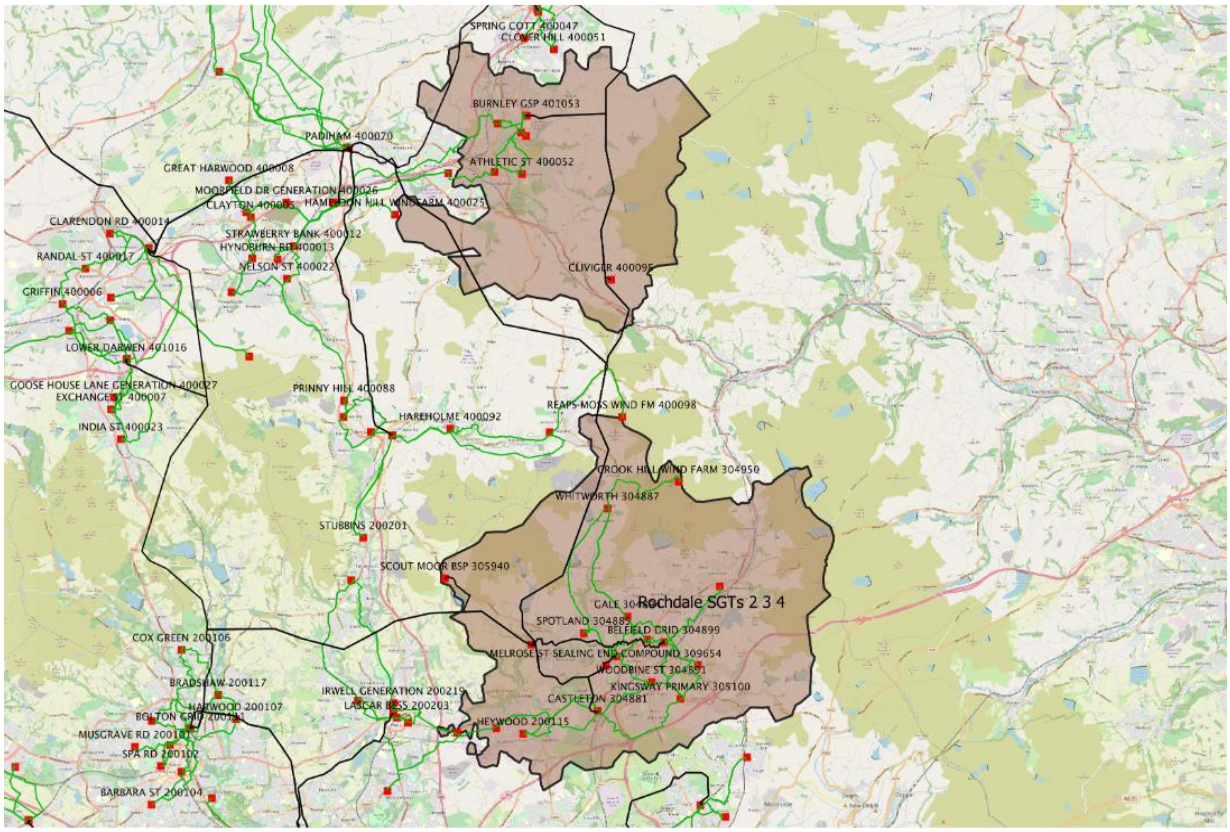
Start date: FY28

Completion Date: FY30</td><td>Not suitable solution for fault level exceedances.</td></tr>
<tr><td>Wrightington BSP</td><td>Make fault level exceedance in FY30</td><td>Manage FL through RIIO-ED2 and replace 17.5kA rated 33kV switchboard with</td><td>Not suitable solution for fault level exceedances.</td></tr>
</table>

Site Name	Need	Asset Solution	Flex Plan Location
 X- 354460 Y- 413610		new 25/62.5kA rated switchgear in line with policy as required. Start date: FY30 Completion Date: FY32	

12 Rochdale SGTs 2 3 4

GSP Summary **4 BSPs** **17 Primaries**



Rochdale GSP is a 275/132kV substation comprising of four SGTs. The GSP operates split with SGTs 2, 3 & 4 forming the main Rochdale GSP, and SGT1 operating in parallel with Penwortham East GSP. The main GSP supplies approximately 155,000 customers across the East Lancashire and Peak North region and comprises three 240MVA SGTs supplied from National Grid's 275kV network. The peak demand is currently 185MVA, supplied via four BSPs and 17 primary substations.

Intervention Overview

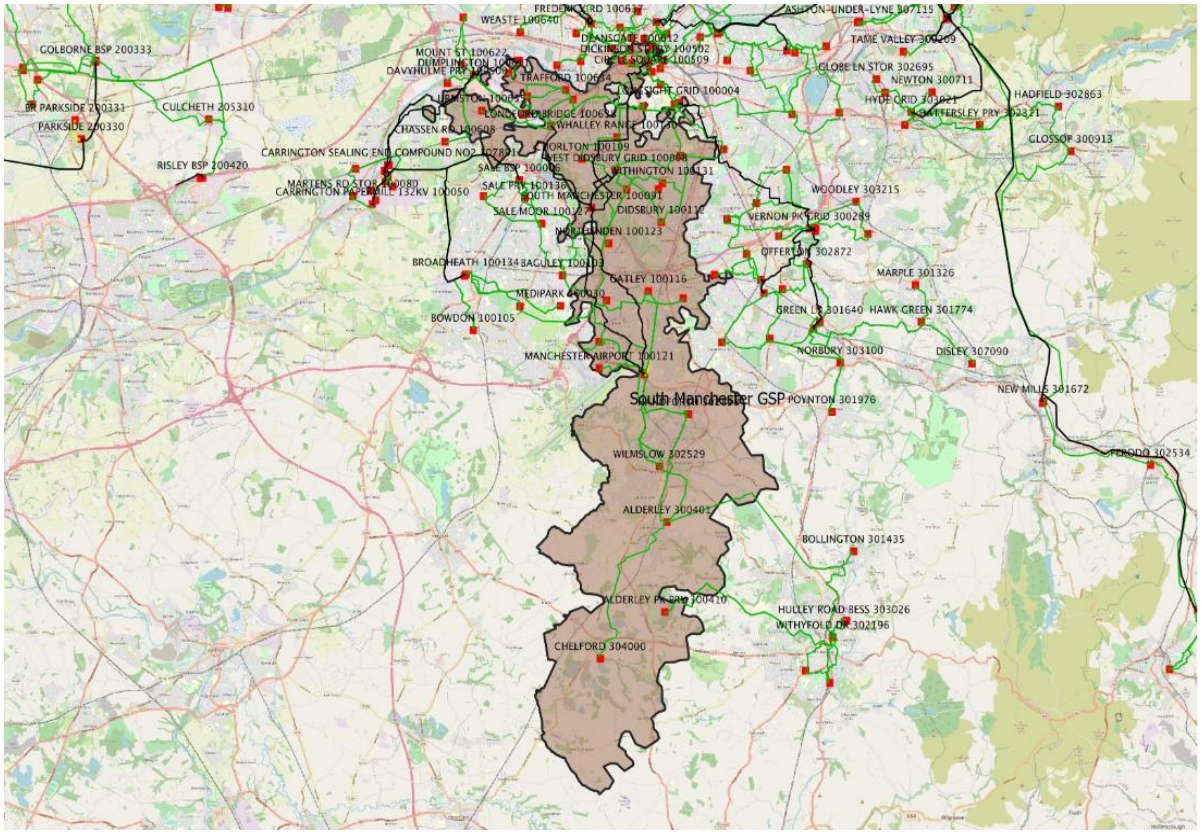
	Demand Driven	Generation Driven
0-2 years		Heasandford
3-5 years		Heywood
5-10 years		

Intervention Detail

Site Name	Need	Asset Solution	Flex Plan Location
Heasandford X- 385349 Y- 433821	Make fault level exceedance in FY22	Scheme in flight to replace 6.6kV Switchgear Complete FY23	Not suitable solution for fault level exceedances.
Heywood X- 385429 Y- 410369	Make fault level exceedance in FY27	Replace 13.1kA rated 6.6kV switchboard with new 25/62.5kA rated switchgear in line with policy. Start date: FY30 Completion Date: FY32	Not suitable solution for fault level exceedances.

13 South Manchester GSP

GSP Summary **4 BSPs** **27 Primaries**



South Manchester GSP is a 400/132kV substation which supplies approximately 156,000 customers across the South Manchester region. The substation comprises four 240MVA transformers supplied from National Grid's 275kV network. The peak demand on the GSP is currently 318MVA, supplied via four BSPs and 27 primary substations.

The existing 132kV switchgear is an outdoor double busbar arrangement with main and reserve bars, and 9 feeder bays. Based on age and condition, the switchgear is being asset replaced and it is likely this will be an indoor GIS solution which is due to be completed by 2026.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years	Knott Mill	West Didsbury BSP Moss Nook BSP Cannon Street
3-5 years		

	Demand Driven	Generation Driven
5-10 years	Trafford Whalley Range Withington West Didsbury BSP	

Intervention Detail

Site Name	Need	Asset Solution	Flex Plan Location
Knott Mill X- 383136 Y- 397725	FC exceeded in FY22	Scheme in flight to transfer 6.7MVA of demand off Knott Mill and onto St John's primary Estimated completion in FY23	Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution. Therefore, flexibility services not required before 2031.
Trafford X- 380714 Y- 396551	FC first exceeded in FY28 0.6MVA exceedance of FC by FY31	Demand transfers available to Trafford Park North and Mosley Rd via existing feeders In FY31, there is 1.7MVA spare on Trafford Park North and 7.1MVA spare on Mosley Rd Start date: FY29 Completion Date: FY29	Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution. Therefore, flexibility services not required before 2031.

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td>Whalley Range
 
X- 382923

Y- 394645</td><td>FC first exceeded in FY27

3.2MVA exceedance of FC by FY31</td><td>Strategic solution developed in RIIO-ED2 to install new 23MVA Southern Gateway primary.

3.5MVA minimum of demand to be transferred off Whalley Range via HV network onto Southern Gateway to alleviate issues in the next 5-10 years.

Start date: FY24

Completion: FY26</td><td>Sustain response required
 
<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>6.7</td></tr><tr><td>Consumer Transformation</td><td>19.0</td></tr><tr><td>Steady Progression</td><td>6.0</td></tr></table>
Within 3km of X and Y coordinates</td></tr>
<tr><td>Withington
 
X- 384841

Y- 392774</td><td>FC first exceeded in FY28

1.7MVA exceedance of FC by FY31</td><td>Demand transfers available to Didsbury and Fallowfield primaries via existing feeders

In FY31, there is 3.7MVA spare on Didsbury and 3.4MVA spare on Fallowfield

Estimated completion in FY29</td><td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td></tr>
<tr><td>West Didsbury
 
X- 382900

Y- 393269</td><td>FC first exceeded in FY30

5.5MVA exceedance of FC by FY31</td><td>Initial proposal to reduce demand is based on offloading Northenden to Sale BSP.

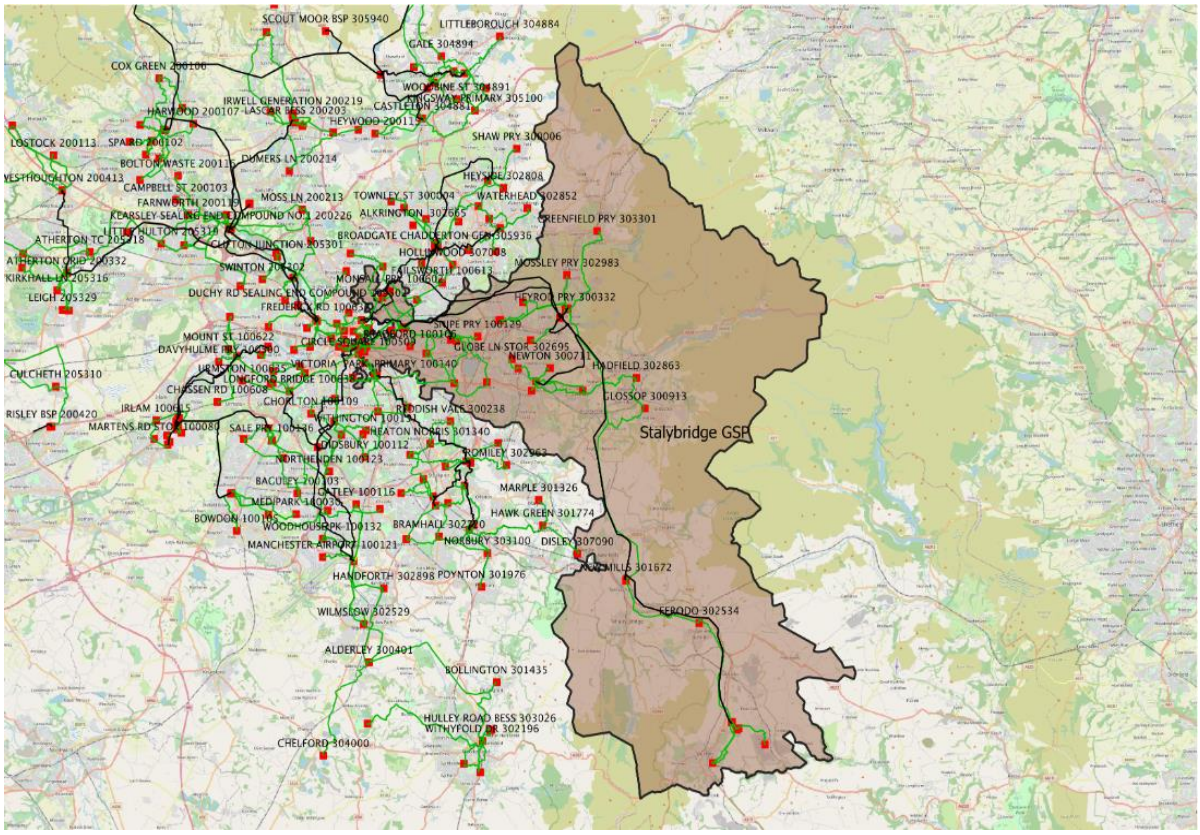
Alternatively the three 60MVA GTs could be replaced with three 90MVA GTs.

Plan to be developed in RIIO -ED2 to address.</td><td>Sustain response required
 
<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>29</td></tr><tr><td>Consumer Transformation</td><td>98</td></tr><tr><td>Steady Progression</td><td>24</td></tr></table></td></tr>
</table>

Site Name	Need	Asset Solution	Flex Plan Location
			Within 10km of X and Y coordinates
West Didsbury  X- 382900 Y- 393269	Make fault level exceedance in FY22, currently managed operationally.	Site identified for intervention in RIIO - ED2. Replace section A and B as the lower rated switchgear. Start date: FY26 Completion Date: FY28	Not suitable solution for fault level exceedances.
Cannon St  X- 384064 Y- 398635	Make fault level exceedance in FY22, currently managed operationally.	Cannon St switchgear uprating project planned for RIIO-ED2. This coupled with operational network re-configuration will increase available capacity for generation connections. Start date: FY25 Completion: FY28	Not suitable solution for fault level exceedances.
Moss Nook  X- 384073 Y- 385068	Make fault level exceedance in FY22, currently managed operationally.	Site identified for intervention in RIIO - ED2. Replace section A and B as the lower rated switchgear. Start date: FY26 Completion Date: FY28	Not suitable solution for fault level exceedances.

14 Stalybridge GSP

GSP Summary **6 BSPs** **28 Primaries**



Stalybridge GSP is a 275/132kV substation which supplies approximately 216,000 customers across the Peak and East Manchester region. The substation comprises two 240MVA transformers and two 180MVA transformers supplied from National Grid's 275kV network. The peak demand on the GSP is currently 355MVA, supplied via 6 BSPs and 28 primary substations.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years		
3-5 years	Ardwick Central Manchester Eastlands Hattersley Queen Park	Bradford Queen Park Buxton BSP Droylsden BSP Heyrod BSP
5-10 years	Gowhole Openshaw	

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr>
<td>Ardwick

X- 384753

Y- 397415</td>
<td>FC exceeded in FY24 - RIIO-ED2 scheme in place to address

1.3MVA exceedance of FC by FY31</td>
<td>Strategic solution developed in RIIO-ED2 to install new 32MVA Mayfield primary.

HV Demand to be transferred off Ardwick and onto Mayfield to alleviate issues in the next 3-5 years

Start date: FY25

Completion: FY28</td>
<td>Sustain response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>3.7</td></tr>
<tr><td>Consumer Transformation</td><td>7.4</td></tr>
<tr><td>Steady Progression</td><td>3.2</td></tr>
</table>

Within 2km of X and Y coordinates</td>
</tr>
<tr>
<td>Central Manchester

X- 384852

Y- 397718</td>
<td>FC exceeded in FY26 - RIIO-ED2 scheme in place to address

2.9MVA exceedance of FC by FY31</td>
<td>Strategic solution developed in RIIO-ED2 to install new 32MVA Mayfield primary.

HV Demand to be transferred off Central Manchester and onto Mayfield to alleviate issues in the next 3-5 years

Start date: FY25

Completion: FY28</td>
<td>Sustain response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>3.4</td></tr>
<tr><td>Consumer Transformation</td><td>5.0</td></tr>
<tr><td>Steady Progression</td><td>3.0</td></tr>
</table>

Within 1km of X and Y coordinates</td>
</tr>
<tr>
<td>Eastlands

X- 386458</td>
<td>FC exceeded in FY26</td>
<td>Strategic solution developed in RIIO-ED2 to install third transformer at Eastlands Primary</td>
<td>Spare capacity available on Eastlands up to 2050 according to all forecast scenarios Therefore, flexibility services not required before 2031.</td>
</tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td>Y- 398693</td><td></td><td>FC increasing to 42.0MVA

Start date: FY23

Completion: FY25</td><td></td></tr>
<tr><td>Gowhole

X- 401104

Y- 383846</td><td>FC first exceeded in FY30

1.8MVA exceedance of FC by FY31</td><td>Ferrodo primary ~6km away. 3.2MVA spare in FY31.

Proposal is based on installing a new HV interconnector to transfer demand from Gowhole

Start date: FY29

Completion: FY31</td><td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>7.2</td></tr><tr><td>Consumer Transformation</td><td>18.4</td></tr><tr><td>Steady Progression</td><td>5.6</td></tr></table>
Within 8km of X and Y coordinates</td></tr>
<tr><td>Hattersley

X- 398419

Y- 395120</td><td>FC exceeded in FY26</td><td>Proposed RIIO-ED2 scheme to uprate the existing transformers to 11.5/23MVA

Start date: FY25

Completion: FY28</td><td>Sustain response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>1.1</td></tr><tr><td>Consumer Transformation</td><td>8.8</td></tr><tr><td>Steady Progression</td><td>0.7</td></tr></table>
Within 4km of X and Y coordinates</td></tr>
<tr><td>Openshaw</td><td>FC first exceeded in FY29</td><td>5.6MVA spare capacity on Denton</td><td>Utilisation of network capacity on adjacent substations – implemented through HV</td></tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td> 

X- 388606

Y- 397346</td><td>1.4MVA exceedance of FC by FY31</td><td>West primary in FY31.

6.2MVA spare capacity on Bradford in FY31.

Proposal is to transfer HV demand via existing standby feeders

Start date: FY29

Completion: FY29</td><td>switching will be a low-cost solution.

Therefore, flexibility services not required before 2031</td></tr>
<tr><td>Queens Park

X- 385893

Y- 400645</td><td>FC exceeded in FY24</td><td>Strategic solution developed in RIIO-ED2 to install third transformer at Queens Park

Start date: FY24

Completion: FY26</td><td>Sustain response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>5.2</td></tr><tr><td>Consumer Transformation</td><td>14.8</td></tr><tr><td>Steady Progression</td><td>2.7</td></tr></table>
Within 2km of X and Y coordinates</td></tr>
<tr><td>Bradford

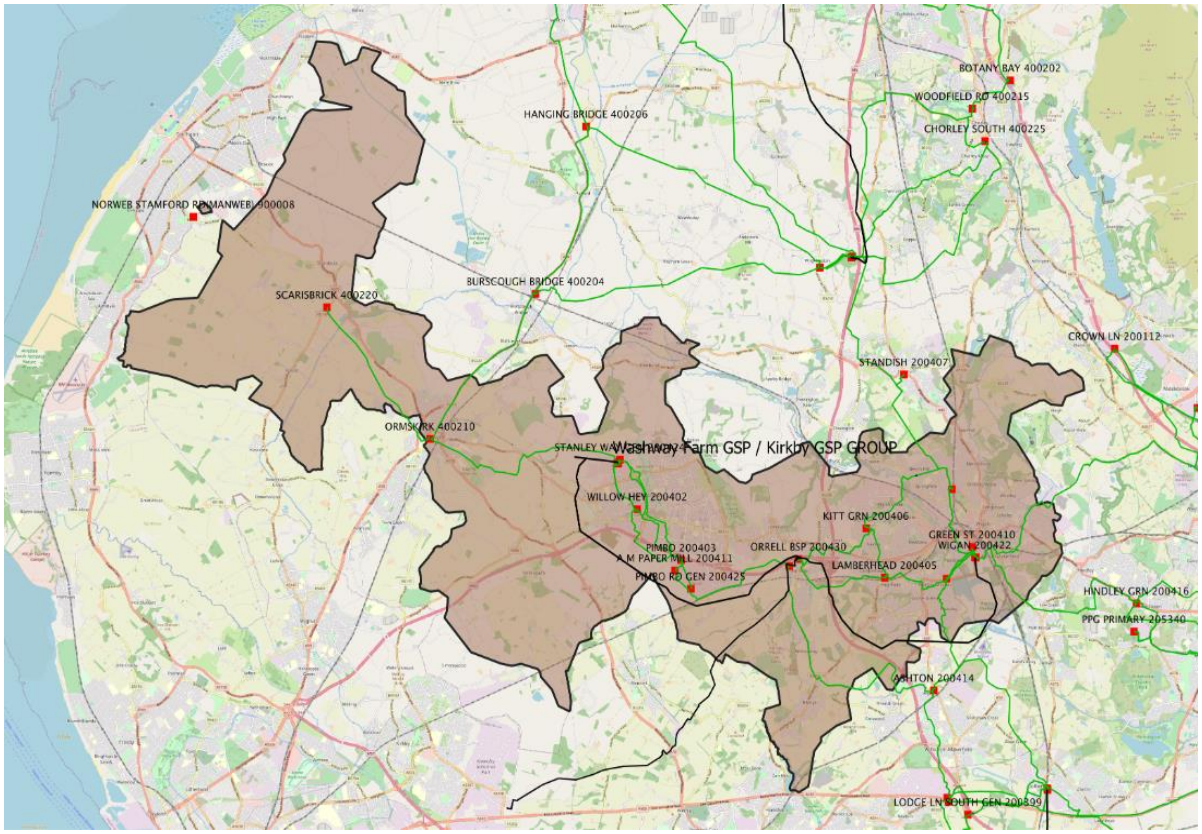
X- 387613

Y- 397710</td><td>Make fault level exceedance in FY28</td><td>Make fault level exceedance – monitor and review in RIIO-ED2 and action intervention as required in ED3. Operational intervention may resolve.</td><td>Not suitable solution for fault level exceedances.</td></tr>
</table>

Site Name	Need	Asset Solution	Flex Plan Location
Queens Park X- 385893 Y- 400645	Make fault level exceedance in FY27.	Make fault level exceedance – monitor and review in RIIO-ED2 and action intervention as required in ED3. Operational intervention may resolve.	Not suitable solution for fault level exceedances.
Buxton BSP X- 407769 Y- 375476	Make fault level exceedance in FY25.	Site identified for intervention in RIIO - ED2. Replace section A and B. Start date: FY26 Completion Date: FY28	Not suitable solution for fault level exceedances.
Droylsden BSP X- 390140 Y- 398146	Make fault level exceedance in FY26.	Site identified for intervention in RIIO - ED2. Replace section A and B. Start date: FY26 Completion Date: FY28	Not suitable solution for fault level exceedances.
Heyrod BSP X- 397322 Y- 399942	Make fault level exceedance in FY28.	Switchgear already 25/62.5kA. Plan is to monitor and review running arrangement in RIIO-ED2 with a view to changing as required.	Not suitable solution for fault level exceedances.

15 Washway Farm / Kirkby GSP

GSP Summary **3 BSPs** **12 Primaries**



Washway Farm GSP / Kirkby GSP Group supplies approximately 74,000 customers across the South Lancashire region of the network. Washway Farm GSP takes its supply from National Grids 275kV network via 2 x 180MVA SGTs. Kirkby GSP which is a SPManweb site affords supply to ENW via 1 x 240MVA SGT. The GSP group feeds into three BSPs and 12 Primary Substations. The Peak Demand is currently 154MVA.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years		Skelmersdale Primary Skelmersdale BSP
3-5 years		
5-10 years	Ashton (Golborne) Green St T11 Upholland Wigan BSP	

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td>Ashton (Golborne)

X- 357056

Y- 400663</td><td>FC first exceeded in FY29

1.9MVA exceedance of FC by FY31</td><td>Replace ~2km of 33kV Overhead Line to increase capacity.

Start date: FY29

Completion: FY30</td><td>Dynamic response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>9.0</td></tr><tr><td>Consumer Transformation</td><td>24.1</td></tr><tr><td>Steady Progression</td><td>6.1</td></tr></table>
Within 3km of X and Y coordinates</td></tr>
<tr><td>Green St T11

X- 358235

Y- 404898</td><td>FC first exceeded in FY28

0.75MVA exceedance of FC by FY31</td><td>HV Demand transfers available to Gidlow, Kitt Green and Worsley Mesnes primaries via existing standby feeders

In FY31 1.7MVA spare on Gidlow, 2.6MVA spare on Kitt Green and 1.1MVA spare on Worsley Mesnes

Start date: FY28

Completion: FY28</td><td>Utilisation of network capacity on adjacent substations – implemented through HV switching will be a low-cost solution.

Therefore, flexibility services not required before 2031.</td></tr>
<tr><td>Upholland

X- 352531</td><td>FC first exceeded in FY29

1.6MVA exceedance of FC by FY31</td><td>7.4MVA spare capacity on Pimbo primary

Lay new HV Interconnector from Upholland to Pimbo</td><td>Dynamic response required

<table><tr><th>Max Flex Required at</th><th>MVA</th></tr></table></td></tr>
</table>

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr><td>Y- 404369</td><td></td><td>~4km 300 Al XLPE cable to transfer demand

Start date: FY28

Completion: FY29</td><td><table><tr><th>2051 - Winter Peak</th><th></th></tr><tr><td>Best View</td><td>5.2</td></tr><tr><td>Consumer Transformation</td><td>16.0</td></tr><tr><td>Steady Progression</td><td>4.2</td></tr></table>
Within 5km of X and Y coordinates</td></tr>
<tr><td>Wigan BSP

X- 358343

Y- 404626</td><td>FC first exceeded in FY27

5MVA exceedance of FC by FY31</td><td>Exceedance originally addressed in RIIO-ED2 with the installation of a new matched impedance GT. Voltage Step issue continues to cause issues later in ED3.

Option available to transfer Green ST T11 to Westhoughton

Start date: FY26

Completion: FY28</td><td>Sustain response required

<table><tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr><tr><td>Best View</td><td>20.0</td></tr><tr><td>Consumer Transformation</td><td>68.3</td></tr><tr><td>Steady Progression</td><td>11.9</td></tr></table>
Within 10km of X and Y coordinates</td></tr>
<tr><td>Skelmersdale

X- 347198

Y- 407434</td><td>Make fault level exceedance in FY23, currently managed operationally.</td><td>Site identified for intervention in RIIO - ED2. Replace section A and B.

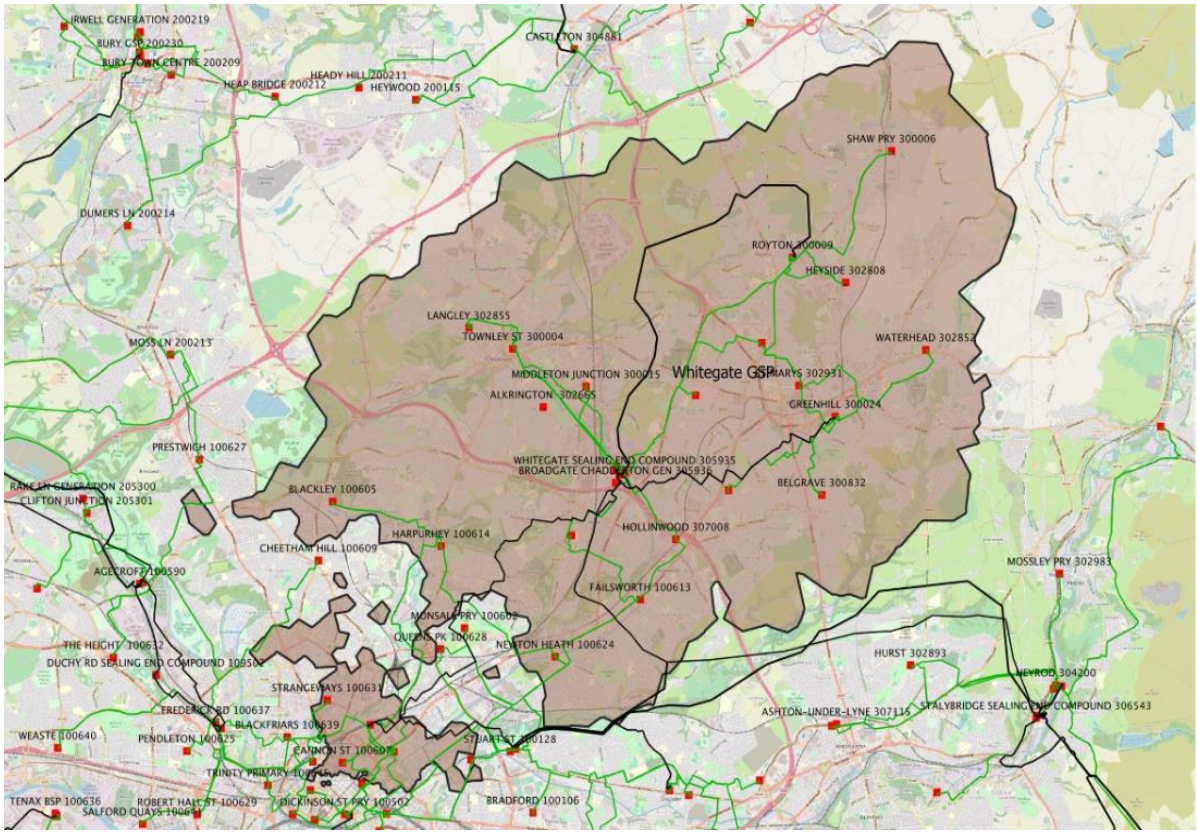
Start date: FY26

Completion Date: FY28</td><td>Not suitable solution for fault level exceedances.</td></tr>
<tr><td>Skelmersdale BSP</td><td>Make fault level exceedance in FY22,</td><td>Site identified for intervention in RIIO -</td><td>Not suitable solution for fault level exceedances.</td></tr>
</table>

Site Name	Need	Asset Solution	Flex Plan Location
 X- 347172 Y- 407455	currently managed operationally.	ED2. Replace section A and B. Start date: FY26 Completion Date: FY28	

16 Whitegate GSP

GSP Summary **4 BSPs** **23 Primaries**



Whitegate GSP is a 275/132kV substation which supplies approximately 179,000 customers across the Peak North and North Manchester region. The substation comprises three 240MVA transformers supplied from National Grid's 275kV network. The peak demand on the GSP is currently 262MVA, supplied via four BSPs and 23 primary substations.

Intervention Overview

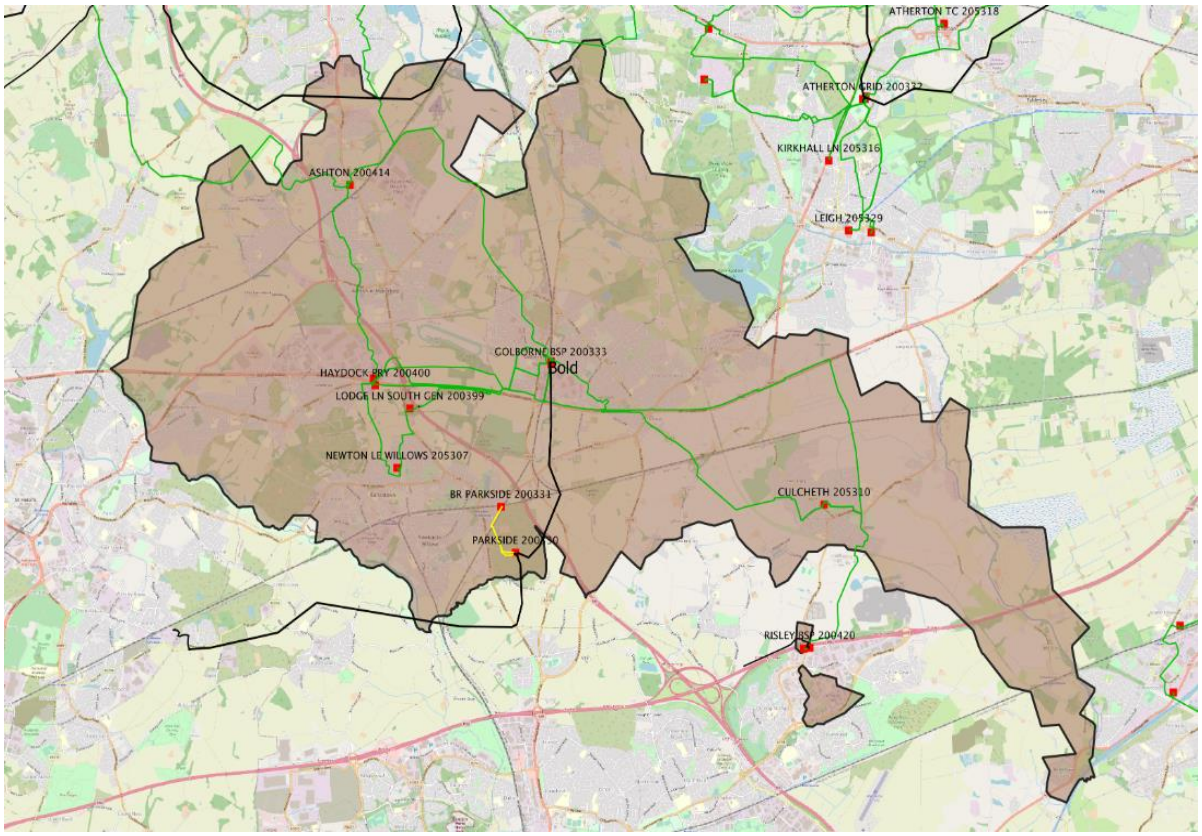
	Demand Driven	Generation Driven
0-2 years		Royton BSP
3-5 years		Greenhill
5-10 years		Hollinwood

Intervention Detail

Site Name	Need	Asset Solution	Flex Plan Location
Royton BSP  X- 392426 Y- 407533	Make fault level exceedance in FY22 currently managed operationally.	Site identified for intervention in RIIO - ED2. Replace section A and B. Start date: FY26 Completion Date: FY28	Not suitable solution for fault level exceedances.
Greenhill  X- 393262 Y- 404755	Make fault level exceedance in FY24	Three transformer primary. Scheme in flight to change running arrangement and install an Auto Close. This will be enabled when FL exceeds Switchgear Rating	Not suitable solution for fault level exceedances.
Hollinwood  X- 390287 Y- 402592	Make fault level exceedance in FY27	Make fault level exceedance – monitor and review in RIIO-ED2 and action intervention as required in RIIO-ED3. Operational intervention may resolve.	Not suitable solution for fault level exceedances.

17 Bold (Golborne BSP)

BSP Summary **5 Primaries**



Bold is a 132kV Switching Station that takes its supply from Rainhill GSP on SP Manweb network. There is an agreement in place between ENWL and SP Manweb to share the 4 x 240MVA SGTs at Rainhill. This gives ENWL 114MVA of capacity to be supplied from Bold to feed Golborne BSP and British Rail Parkside. The supply onto Golborne BSP feeds approximately 34,000 customers across the South Lancashire region of the network. The Peak Demand is currently 81.9MVA supplied via five primaries.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years		
3-5 years	Golborne	
5-10 years		

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr>
<td>Golborne

X- 360621

Y- 397766</td>
<td>FC exceeded in FY26</td>
<td>Existing RIIO-ED1 scheme in place to increase Firm Capacity.

New transformer being installed which will increase the FC to 36.5MVA

Completion in FY23

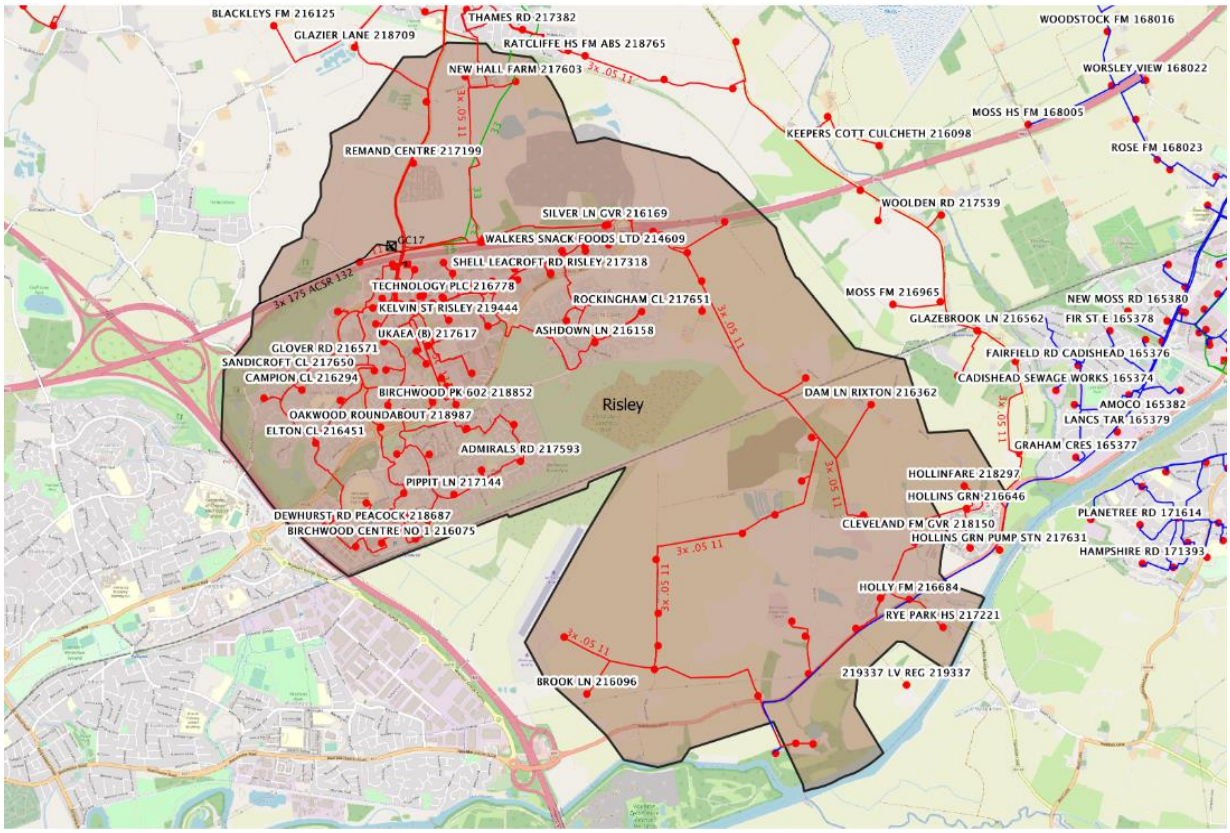
Excess demand accommodated by third transformer</td>
<td>Sustain response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>10.4</td></tr>
<tr><td>Consumer Transformation</td><td>25.6</td></tr>
<tr><td>Steady Progression</td><td>5.5</td></tr>
</table>

Within 5km of X and Y coordinates</td>
</tr>
</table>

18 Risley

Primary Summary **1 Primary**



Risley is a 132/11kV Primary supplied from the SP Manweb network via a single 15/30MVA grid transformer. For security the primary can fed via a 33/11kV transformer fed from Golborne BSP. The primary feeds approximately 5000 customers across the South Lancashire region of the network. The Peak Demand is currently 15MVA.

Intervention Overview

	Demand Driven	Generation Driven
0-2 years		Risley
3-5 years		
5-10 years	Risley	

Intervention Detail

<table>
<tr><th>Site Name</th><th>Need</th><th>Asset Solution</th><th>Flex Plan Location</th></tr>
<tr>
<td>Risley

X- 365181

Y- 392989</td>
<td>FC first exceeded in FY29

1.2MVA exceedance of FC by FY31</td>
<td>Replace ~1.3km of 33kV cable between Golborne BSP and Risley to increase FC to 23MVA

Start date: FY28

Completion: FY29</td>
<td>Dynamic response required

<table>
<tr><th>Max Flex Required at 2051 - Winter Peak</th><th>MVA</th></tr>
<tr><td>Best View</td><td>6.0</td></tr>
<tr><td>Consumer Transformation</td><td>16.4</td></tr>
<tr><td>Steady Progression</td><td>3.0</td></tr>
</table>

Within 4km of X and Y coordinates</td>
</tr>
<tr>
<td>Risley

X- 365181

Y- 392989</td>
<td>Make fault level exceedance in FY23</td>
<td>Site identified for intervention in RIIO - ED2. Replace section A and B.

Start date: FY26

Completion Date: FY28</td>
<td>Not suitable solution for fault level exceedances.</td>
</tr>
</table>