SP Energy Networks | DSO

Network Development Plan

SP Distribution

Parts 1 & 2 – Development & Capacity Report

April 2024

Contents

1 Document context and purpose

1.1 Who we are

We are SP Energy Networks. We own and operate the electricity distribution network in Central and Southern Scotland (our SP Distribution network), and in North Wales, Merseyside, Cheshire, and North Shropshire (our SP Manweb network). It is through these two networks of underground cables, overhead lines, and substations that we provide our 3.5 million customers with a safe, reliable, and efficient supply of electricity.

1.2 Document context and purpose

Sharing data is key to the efficiency of the energy system as we decarbonise to Net Zero. It enables customers and stakeholders to assess market opportunities and participate in flexibility markets, in turn promoting the efficiency and competitiveness of these markets. It enables network companies and key stakeholders to work together to promote efficient whole system planning and operation. And it helps spur innovation and new solutions. Customers benefit from all of these.

In this context, Standard Licence Condition 25B came into force on 31 December 2020. It introduced a requirement for each DNO to publish a Network Development Plan (NDP), and set out a high-level scope of what was to be included. DNOs then worked together via the Energy Networks Association (ENA) to define the detailed scope and content of NDPs; the resulting proposed Form of Statement was published in December 2021.

The primary objective of the NDP is to provide information on available network capacity to accommodate demand and generation growth, and interventions the DNO plans which will increase network capacity (such as flexibility use and reinforcement). The NDP is a medium-term outlook, and is designed to sit between short-term Long Term Development Statements (LTDS) and long-term Distribution Future Energy Scenarios (DFES) forecasts.

Each DNO's NDP must cover three main components:

1. **Part 1: Development report** – detailed information on the interventions we plan that will increase capacity. This includes non-load interventions which are not done to provide capacity but will increase capacity nonetheless (e.g. asset management interventions such as replacing an end-of-life transformer with a larger equivalent).
2. **Part 2: Network scenario headroom report** – the indicative demand and generation capacity available at each primary substation (down to and including the HV busbar). Forecasts are produced for every year for the first 10 years, and then for every five years after that out to 2050. These capacity forecasts must take account of known planned interventions which will increase capacity (i.e. those listed in Part 1).
3. **Part 3: Methodology statement** – a document explaining how we have produced Parts 1 and 2.

Parts 1 and 2 need to be produced for each DNO licence area, down to primary substation group (i.e. the NDP does not include network interventions and capacity headroom for the LV and HV networks). We have two licence areas: SP Distribution and SP Manweb. Therefore to meet our NDP licence obligation we are publishing four NDP documents[1]:

1. A summary document to introduce our NDP, summarise the contents, and set out our consultation questions.
2. A pdf report and supporting excel datasheet for SP Distribution, covering Parts 1 and 2. That is this document and supporting excel datasheet.
3. A pdf report and supporting excel datasheet for SP Manweb, covering Parts 1 and 2.
4. A single document for Part 3, covering SP Manweb and SP Distribution together as the methodology is the same for each. This includes the consultation feedback we received.

Our NDP will be updated annually. Figure 1 shows the document map for these four documents.

[1] www.spenergynetworks.co.uk/NDP

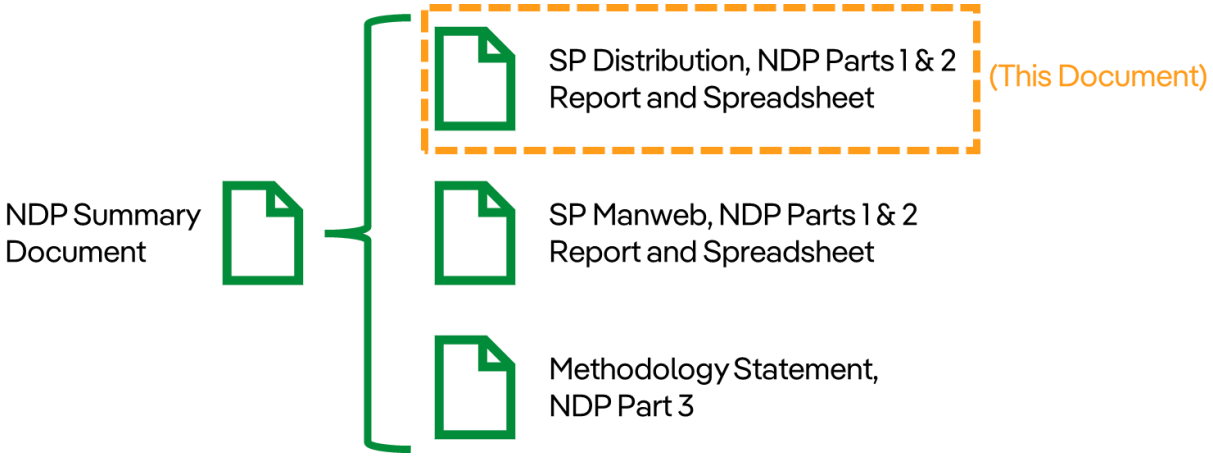


Figure 1: SP Energy Networks' NDP document map

2 SPD – Strategic Context

Electricity networks are at the heart of the Net Zero transition. The scale of decarbonisation means that by 2050 the **peak demand on our distribution networks is forecast to double**, and we could likely see a **five-fold increase in connected generation and storage**. Over recent years we have seen a steady increase in connection rates of domestic low carbon technologies. These trends are expected to accelerate, and we forecast that our customers are likely to connect up to **eight million electric vehicles and heat-pumps by 2050**. The following are some examples of the key issues and trends presently faced across our SP Distribution region.

2.1 Growth in connections activities

A key challenge faced across GB at present is the time being quoted to connect renewable generation to the network due to rapid expansion of the GB connections queue. At the end of 2023, about 500GW of generation was contracted to connect across GB transmission and distribution networks. For comparison, this is over eight times the GB electricity peak demand Notably, there has been a particularly rapid growth in battery storage applications. We are rising to Britain's Net Zero Challenge by working collectively with industry, government and Ofgem to improve grid connections for our customers.

More information on these activities is available via the ENA website[2].

Whilst growth in generation and storage will be central to a decarbonised energy system, we do not expect that all projects in the current transmission and distribution pipeline will progress through to delivery. However, because this volume of pipeline is unprecedented, exactly where, how quickly and by how much it will reduce are considerable unknowns – and ones that we have to tackle in our DFES energy forecasts. Our NDP Capacity Headroom calculations are underpinned by these DFES forecasts.

2.2 Transmission network capacity

The transmission networks in central and south Scotland and the north of England typically see high power flows from Scotland into England. This is predominantly due to high volumes of renewable generation in Scotland, leading to an overall north-south power flow through the region. The existing transfer capacity between Scotland and England is 6.6GW, the ESO Future Energy Scenarios forecast onshore and offshore wind in Scotland to be up to 60GW by 2040, increasing the transfer requirement to 40GW. Integrated and co-ordinated transmission solutions are required to efficiently address complex system needs.

Historically, customers could not connect to the distribution network until transmission network reinforcements had been completed, with some customers having connection dates more than 10 years away. As part of the ENA reforms, we have been proactively working with all system and network operators to allow customers to connect to the distribution network without needing to wait for these major transmission works to be completed. Delegated Technical Limits at GSPs will allow customers to receive earlier connection dates and connect ahead of enabling works, though they may be instructed to reduce their output/consumption when needed.

In Scotland, SP Transmission have introduced Load Management Schemes (LMS) to permit connections in advance of some enabling works, maximising utilisation of existing and future networks providing non-firm and Restricted Available Access (RAA), and provide earliest possible connection date. LMS has already enabled around 30 projects to connect at 14 GSPs, totalling ~600MW of generation, by utilising the non-firm capacity of a GSP. There are further 40 projects contracted to connect to these GSPs via LMS schemes with an additional 1.4GW of generation. In addition, further LMS schemes have been contracted at further 43 GSPs which will add a further 3.7GW of non-firm generation.

In addition to fully utilising non-firm capacity of the existing GSPs on the network, there are already 14 new connection points triggered across the network to facilitate contracted DER.

2.3 Growth in industrial scale battery connections

Applications for storage projects are increasing faster than any other technology. As part of the ENA reforms, we led and implemented the development of tactical solutions to better define network access rights for new distribution-connected electricity storage sites. These created industry best practice, realising better use of

[2] https://www.energynetworks.org/industry/connecting-to-the-networks/reforms

existing network capacity, and providing storage customers with a common experience. These solutions enable better use of existing network capacity, reducing the risk of creating additional capacity which is very lightly utilised.

The central belt of Scotland has experienced a particular clustering of energy storage connections, with over 4.4GW of projects either already connected, or with contracts to connect to the distribution network.

2.4 The Forth Green Freeport supporting industrial decarbonisation

We are working with stakeholders in Forth Green Freeport to identify and enable new connections across 550 hectares in Grangemouth, Leith, Rosyth, Burntisland and Edinburgh Airport. The Forth Green Freeport will act as a catalyst for new green technologies, alternative fuels and renewable energy manufacturing. The freeports will focus on reindustrialisation of Scotland towards Net Zero Transition. This will increase trade through Scotland's sea and air gateways and support the growth of trading businesses across the Firth of Forth and at sites spread north, south and west of the estuary.

2.5 Increase in other large demand connections

We are working with stakeholders to facilitate low carbon housing developments and decarbonisation of industrial and commercial establishments with increased capacity needs ranging from ca. 5 – 30MW. We have also experienced an increase in applications to connect industrial and commercial data centres with capacities ranging from ca. 20-50MW.

2.6 Electrification of transport – Ultra-rapid charging and HGVs

We are supporting the rollout of high-capacity electric vehicle charging at some of the region's busiest motorway services. These projects have included creating new electricity capacity for Hamilton, Gretna and Annandale Water motorway service areas.

In addition, we are supporting Heavy Good Vehicles (HGV) Decarbonisation Pathway for Scotland. To provide better cohesion between the DNOs and the road haulage sector, we will work with operators to forecast HGV electricity usage out to 2040, encouraging mutual sharing of information and holding workshops for operators.

We are members of Strategic EV Connections Working Groups with Transport for Scotland, Transport for the North, and Transport for Wales. We support the Scottish and Welsh Blue Lights EV Group to facilitate EVCP connections for our emergency services colleagues for both devolved governments and are working to develop similar relationships across the similar organisations in England.

2.7 Our role supporting Local Authorities

Our Strategic Optimiser team has supported our 22 Scottish Local Authorities develop their Local Heat and Energy Efficiency Strategy (LHEES) submissions to Scottish government. This support included proactively developing a LHEES tool for each of the Local Authorities to complete high level analysis and develop their plans, with SPEN's network information as an integral part of the process. We've also been actively involved in the development of our eight Welsh Local Authorities' equivalent Local Area Energy Plans (LAEPs), and have laid the groundwork to extend this support to our 10 English Local Authorities over the next year. Separately, we've supported Local Authorities optimise the design and implementation of public EV charging and heat electrification initiatives, including by providing costs and timescales for 1,400 potential locations, and are working with Fife Council and Liverpool City Council to develop a heat network proposal for Dunfermline and four locations in Liverpool. These activities place us at the heart of our Local Authorities' decarbonisation plans – the insights this gives us informs our network development plans, meaning they are coordinated with our Local Authorities' ambitions and plans.

2.8 Register of strategic projects

Some projects and developments will be key catalysts or enablers for Net Zero and would benefit from early visibility and coordination. This is particularly true of cross vector projects and industrial clusters of decarbonisation projects. Over the last year we have been working with stakeholders to develop a register of projects with strategic significance in our areas. This register includes information on the nature of each project (location, capacity requirement range, how these requirements are likely to change over time); the project's significance (links to government targets, policy landscape etc.); and whether any additional support needs to be sought.

3 DSO Network Infrastructure

We are delivering DSO network infrastructure, tools and capabilities. These are outside the scope of the NDP, but are relevant as they help make better use of existing capacity, better target load-driven interventions, and increase the range of tools we have available to create capacity – these all help provide the capacity our customers need.

The following are key examples of the DNO network infrastructure and tools we are in the process of delivering:

3.1 Scalable network management and flexibility dispatch infrastructure

Constraint Management Zones (CMZs) enable greater use of customer flexibility, automation, and provide operational tools to provide capacity instead of reinforcement. CMZs include advanced control systems that actively coordinate and dispatch operational solutions. These help to save money by avoiding significant reinforcements and help make best use of existing capacity. As an example, one functionality of CMZs is to automatically manage the output from large generators, such as wind farms, to ensure that network electricity flows don't exceed what the network is capable of. We are also developing our CMZs with additional functionality such as flexibility service coordination to enable real time dispatch, active fault level management to maximise capacity for generation, and coordination of System Restoration in the unlikely event of a national power issue. This architecture is key to enabling the DSO and we are deploying 30 wide area CMZs covering over 50% of our networks.

We have deployed four constraint management zones (CMZs) in SPD. These are at Dunbar, Berwick, Coylton and Newton Stewart.

In RIIO-ED2, in SP Distribution, we will deliver 11 more CMZs and we will extend their functionality to help our control team manage the increasingly complex and interactive network. This next generation of CMZs will coordinate and dispatch operational solutions – using network models, live data from network monitors, and automated analysis, they can make better decisions in shorter timescales than humans can to keep network power flows within limits and defer the need for reinforcement.

CMZs, along with the ANM platform, are a key component of enable a smarter and more flexible network that safely makes best use of existing network capacity. For more information see our DSO Strategy[3].

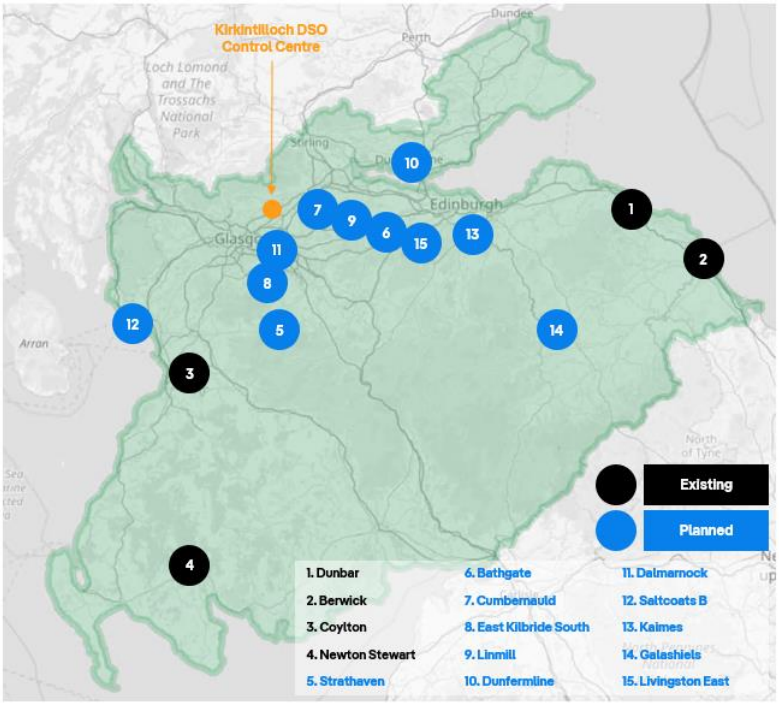


Figure 2: Existing and planned CMZs

[3] Our DSO Strategy is available at https://www.spenergynetworks.co.uk/userfiles/file/SPEN_ED2_DSO_Strategy_Report_July_2021.pdf

3.2 Operational IT and telecoms

Operational IT and telecoms is the network's nervous system, which our flexibility, innovative, and smart interventions to provide capacity depend on. We will be investing to deliver the reliable, cyber-secure, low latency communication network that DSO outputs and other DSO infrastructure depend on.

3.3 Network visibility

Visibility of network demand, generation, and power flows is important to help us efficiently and safely plan and operate the network to meet our customers' needs – it helps us get more out of existing network capacity and make more targeted, timely, and efficient intervention to provide capacity. We are rolling out real time fault level monitoring and LV monitoring across our network and making greater use of smart meter data. In RIIO-ED2 we are deploying LV monitoring at over 14,000 LV substations. This will extend monitoring coverage to 76% of customers.

3.4 Enhanced forecasting

By better forecasting customer requirements we can better respond to them with more efficient and timely interventions to provide capacity. We will continue to use our industry-leading EV-Up and Heat-Up forecasting tools and continue to calibrate to keep them accurate..

3.5 Simulation and modelling

Combining simulation and modelling with measures to increase network visibility, these help us to make high quality planning and operational decisions to help ensure there is sufficient network capacity. This helps keep our network safe, efficient, and reliable for our customers as we transition to Net Zero. Central to this is our new central network planning and operational tool – our ENZ Platform. This combines network data sources (enhanced and near-time forecasts, network monitoring, smart meters, weather correction, LCT notifications, asset condition data) with a whole network model to create a real-time data-driven, whole network analytical model. This tells us what is happening on the network now, and in planning and operational timescales.

3.6 Digitalisation and IT platforms

Digitalisation and IT platforms are needed for our forecasting, modelling, flexibility platforms, and data sharing capabilities. Like with operational IT and telecoms, these are enabling investments which allow us to use a wider range of interventions to provide capacity.

4 Our Network Development Plan

4.1 Overarching process

This document is the NDP Parts 1 and 2 Network Development and Scenario Headroom Report for SP Distribution. The process below summarises how we produced NDP Parts 1 and 2 for SP Distribution and SP Manweb. For further details please refer to NDP Part 3 Methodology Statement.

- **Step 1, forecasting:** we develop our network to accommodate our customers' demand and generation requirements. Therefore the first step of network planning is to understand what these are. We do this using forecasts.
- **Step 2, network impact assessments:** we undertake industry-leading assessments to understand where, when, and how much additional network capacity is needed to accommodate these forecast customer requirements.
- **Step 3, options assessment for load-driven investment:** to provide the capacity in the optimal way, we fairly and impartially assess different types and combinations of interventions (flexibility, energy efficiency, smart, innovation, and reinforcement), different delivery models (reactive, proactive), and how they could be coordinated with other interventions to reduce customer cost and disruption.
- **Step 4, flexibility tenders:** where our assessments show we need additional capacity, we tender for flexibility services to understand the availability and cost of using flexibility to provide it.

These four steps identify the RIIO-ED2 load interventions we will make that add network capacity – these are a key input to NDP Parts 1 and 2. Whilst these create the majority of the additional capacity we will deliver, the NDP requires that we include all interventions that increase capacity:

- **Step 5, NDP Part 1 – reporting of network interventions which add capacity:** we combine the load driven interventions identified in steps 1-4 with connections-driven, losses-driven, and non-load driven interventions which add capacity, to produce NDP Part 1.

After these five steps we know all the interventions we plan to make that will add capacity – this means Part 1 of the NDP is complete. To complete Part 2:

- **Step 6, NDP Part 2 – reporting network scenario headroom:** combining our existing network model, our scenario forecasts, and our known intervention plans to calculate the "post-intervention" headroom. Our NDP Part 2 Capacity Headroom spreadsheet data files provide an indication of headroom for each primary substation/substation group for each year through to 2050.

4.2 NDP Scope

This document is the NDP Parts 1 and 2 for SP Distribution. The scope of the Network Development report (Part 1) and Network Scenario Headroom report (Part 2) and are summarised below.

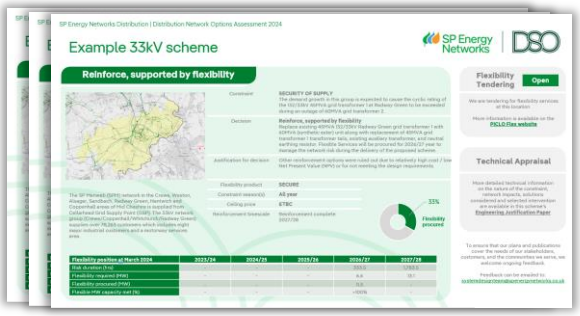
Documents	Network Development	Network Scenario Headroom	
Date Range	Planned interventions for the next 10 years.	Up to 2050. Consideration to 2050 matches the DFES date range and so can reflect the uncertainty on long term network impacts.	
Reporting granularity	Location, magnitude (MW) and timescales of interventions.	Every year for the first ten years. Every five years beyond that to the end of 2050.	
Network coverage	All Primary substations (33/11 kV).	All Primary substations (33/11 kV). NOTE: In Scotland the 132/33 kV substations are considered as Grid Supply Points (GSPs), and are excluded from this document.	
Forecast scenarios		Load scenarios based on DFES for all years up to 2050.	
Reported headroom		Demand	Generation
Network parameters underlying headroom calculations		Thermal loading	Thermal loading (including reverse power flows) Fault level
Evaluation methodology		Detailed analysis for the short-term where practical. Simple tabular comparisons for the longer-term to 2050 (loading versus firm capacity).	

4.3 Distribution Network Options Assessment (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**[4] provides detail and transparency on the process we follow to impartially select optimal solutions and how we decide when and where to rely on flexibility services instead of other network interventions.

The outcome of these decisions is published in our NDP Part 1, where we list the interventions we have planned, grouped by GSP. Where these are driven by a requirement for capacity we provide a link to our detailed Engineering Justification Paper to give transparency in the decision making process at a scheme by scheme level.

We are also trialling 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. As we move to monthly tendering for flexibility the annual DNOA publication will signpost upcoming longer-term requirements.



We intend to publish our DNOA alongside the NDP annually, and there will be links to each DNOA scheme page in the reporting of network interventions in the NDP Part 1.

For this draft of the NDP 2024, we will provide a sample of scheme pages which we link to within the NDP Part 1; these form part of the NDP consultation (see Section 4.4). We would welcome stakeholder feedback on these draft DNOA scheme pages. For our final NDP publication, we will produce DNOA scheme pages for all interventions, and the publication will be available to download in its entirety.

4.4 Stakeholder engagement

Our NDP documents are now out for consultation until **22 April 2024**.

We recognise that stakeholders views and plans can change. It is important that we keep in step with our stakeholder requirements to ensure that we continue to plan and develop our networks with the most up-to-date information. Given the purpose of the NDP is to share information with stakeholders it's important that these documents meet our stakeholders' needs. We therefore welcome stakeholder views. Consultation questions and details on how stakeholders can feedback are given in our NDP summary document. Feedback can be emailed to systemdesignteam@spenergynetworks.co.uk

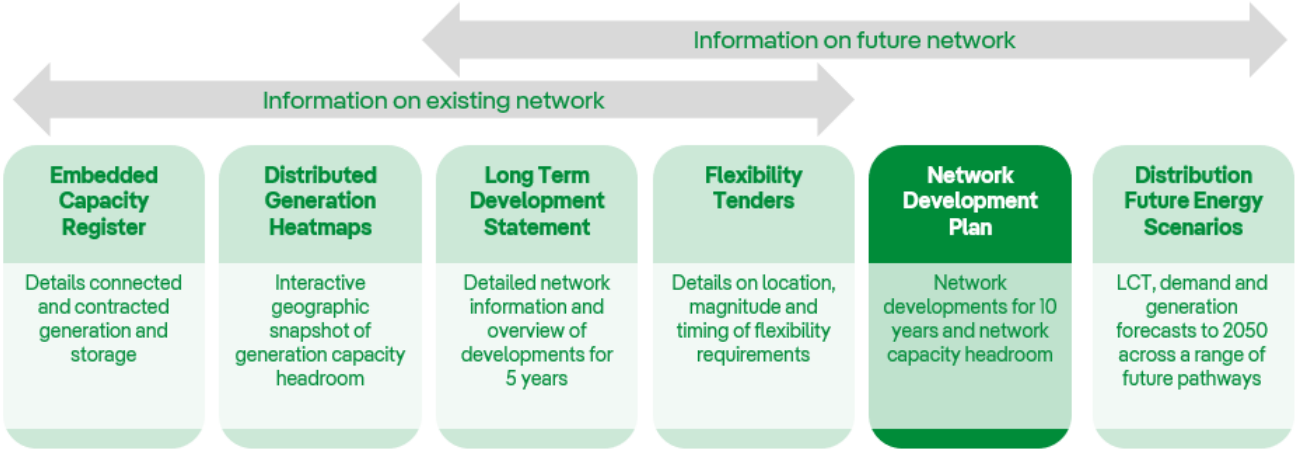
The consultation period will close **22 April 2024**. We will then publish the finalised versions of our NDP documents by **01 May 2024**.

Our NDP documents were last consulted upon in 2022. A summary of the feedback received and the actions we took is available in our NDP Methodology Statement.

[4] Our Decision Making Framework is available here: DSO Decision Making Framework - SP Energy Networks

4.5 How the NDP fits with other data provision

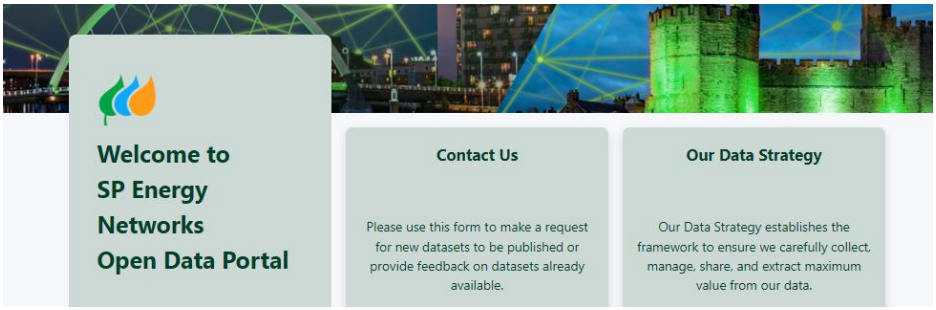
Publishing our NDP is just one measure we are taking to increase the transparency of how we plan and operate our distribution network, and is aligned with our approach of sharing an increasing range of network data with stakeholders. Other current data provision includes:



- **DFES forecasts**[5] – these are forecasts for key customer demand and generation metrics up until 2050. We develop these considering a range of sources, including UK and devolved government targets and other industry forecasts. Given the uncertainties out to 2050, we create forecasts for multiple energy scenarios. These scenarios represent differing levels of customer ambition, government and policy support, economic growth, and technology development. Our stakeholders review our forecasts and we make changes based on their well-justified feedback. We will update our DFES annually.
- **LTDS**[6] – these statements contain a range of information on our 33kV and 11kV network. This includes network asset technical data, network configuration, geographic plans, fault level information, demand and generation levels, and planned works. This information helps customers identify opportunities and carry out high level assessments of the capability of the network to accommodate new demand and generation. A main update is published every November with a minor update every May.
- **Embedded Capacity Register**[7] – previously known as the System Wide Resource Register, this currently provides information on generation and storage resources (≥50kW) that are connected, or accepted to connect, to our distribution network. It is updated on the 10th working day of each month.
- **Heatmaps**[8] – these provide a geographic view of where there is available network capacity to accommodate new generation.
- **Flexibility tenders**[9] – we tender for flexibility for all viable network constraints. When we run tenders we publish information on the location, magnitude, and duration of the constraint. In some cases we will also send ceiling price information.

[5] Our DFES is available here: Distribution Future Energy Scenarios - SP Energy Networks
[6] Our LTDS is available here: Long Term Development Statement - SP Energy Networks
[7] Our Embedded Capacity Register is available here: Embedded Capacity Register - SP Energy Networks
[8] Our heatmaps are available here: Distributed Generation Heat Maps - SP Energy Networks
[9] Our flexibility services and tenders are available here: Flexibility Services - SP Energy Networks

4.6 Our commitment to open data



Our Open Data portal provides a single, easy-to-access interface for our users, enabling them to easily explore, filter, view, download and consume our available data. Via our portal, stakeholders can :

- Download data in multiple formats
- Consume data via an API
- Feedback on datasets
- Subscribe for datasets specific updates

SP Energy Networks is committed to becoming a data-centric organisation, harnessing the power of data to drive strategic decision-making, foster innovation, and embrace sustainability. We recognise that access to data, and information, will be a key enabler in our ability to achieve net zero, and that we have an important role in facilitating efficient whole system planning and operation, and supporting the development of new markets and opportunities. We are committed to sharing data with our customers and stakeholders on a "presumed open" basis. Through our ongoing engagement, we are aware that stakeholders require access to data and information about our network to develop accurate plans, enhance project proposals, and to understand their impact on our network. It is also important for transparency that our decision making and our future plans are shared with our stakeholders, allow them to feedback their views and to use this data and information to inform their decision making.

To enable us to efficiently and effectively share our data, we have developed and launched an online "Open Data Portal". This portal was launched in 2023 and can be freely accessed by our customers and stakeholders via the SP Energy Networks website. The site enables users to search, view, and export datasets in simple, standardised format. Users can easily search our data catalogue and detailed metadata, as well as independently download, export and consume data via an API. We are also working to develop the visualisation capabilities of the portal, enhancing the provision of information for users. Our datasets are easy to find in our Open Data Portal. Users have the ability to search on keywords and themes of the datasets. We also have detailed descriptions and definitions in place to support our stakeholders to understand the content. Work has been carried out this year to implement standardised terms in our Open Data Portal , and we are now looking forward to working with the wider industry to ensure that these terms align.

We make it easy for stakeholders to access our data, with all our openly published, and shared, datasets hosted on our Open Data Portal. The portal is accessible via our SP Energy Networks website, and we have recently undertaken changes to our website to promote visibility, providing our stakeholders with a clear and simple path to access our data. All datasets have been transitioned to our Open Data Portal, meaning that our Stakeholders do not need to visit more than one location when looking for access to our data. We have also uploaded the datasets that underpin our strategic documentation into the Open Data Portal, facilitating our Stakeholders to download the datasets and perform their own analysis. We recognise that not all stakeholders have the same requirements when it comes to accessing data and that is why we make our datasets available in a number of formats including CSV, Excel and JSON, and with the ability for them to be downloaded via an API. We also work alongside our stakeholders, where possible, to provide data in their preferred format. As an example, we recently converted our GIS Shapefiles into Excel format following a stakeholder request in January 2024.

We embrace continuous review and improvement of the data that we publish to better meet our stakeholder needs. Shortly after implementation of our Open Data Portal, we uploaded our GIS Shapefiles onto our Portal, under a shared data licence, in direct response to high stakeholder demand. Access to these files has been well received by our stakeholders and we continue to work alongside them to identify opportunities for refinement, whilst always ensuring a robust data triage assessment is applied prior to publication. In October 2023, we extended our GIS Shapefiles to include additional information on poles and stays, and non-powered cables and lines in direct response to working with our stakeholders.

4.7 Information and contact

The information used to compile this report is derived from SP Distribution plc's own data. Whilst all reasonable care has been taken in the preparation of this data, SP Distribution plc is not responsible for any loss that may be attributed to the use of this information.

Opportunities exist for the connection of new load or generation throughout the SP Distribution system. System conditions and connection parameters are site specific and therefore the economics of a development may vary across the system. Developers are encouraged to discuss their development opportunities and SP Distribution will be pleased to advise on connection issues.

To discuss a specific enquiry about a new connection to the distribution network, or an enhancement to an existing connection, please contact: gettingconnected@scottishpower.com

5 Understanding the results in this document

5.1 Network Development Plan results (NDP Part 1)

Our NDP Part 1 outlines the specific details of all the interventions we are planning in the SP Distribution network that increase network capacity. This means that in our NDP Part 1 we have not only included load-driven interventions but also included losses-driven and asset management-driven interventions which increase network capacity, even though this is not the primary reason for the intervention.

We have included interventions that add capacity and are part of our Business Plan for RIIO-ED2 (April 2023 – March 2028). Beyond 2028 we are yet to plan interventions (we will start this in 2025 when we start preparing for RIIO-ED3). The capacity headroom results (Part 2) provide an indication of potential future intervention needs for the period between 2028-2031, for the range of scenarios.

The Engineering Justification Papers (EJPs) for each RIIO-ED2 capacity driven intervention are linked to in the NDP Part 1 tables to give transparency in the decision making process at a scheme by scheme level. These are the technical and cost appraisals undertaken to develop robust, efficient, and fully justified intervention plans for our load and non-load plans.

In reviewing the planned network interventions, it is worth noting that the timing and type of network intervention may vary, depending on the rate of change in stakeholder requirements influenced by regional and national policies, requirements for emerging new connections, and further development of flexibility markets.

5.1.1 Types of constraints

There are three main types of network constraint. These are:

Thermal constraints – where network current would exceed equipment thermal ratings. Thermal constraints can affect any type of asset at any voltage level. High loadings on certain assets may simply reduce their life, however significant overloading introduces safety risk. For example, an overhead line conductor will sag more if it is overloaded – this may risk the statutory minimum safety clearance distances outlined in the ESQCR[10].

The thermal loading on each asset is considered against its capability under normal and fault/outage conditions. Equipment thermal ratings are considered to vary seasonally with temperature through the year. Cyclic thermal ratings of assets are used when assessing the network under fault/outage conditions. The cumulative time exposure to overloads, and whether equipment has sufficient cool back periods are considered. We prioritise interventions when the network assets are at risk of exceeding 100% of their thermal rating.

Voltage constraints – where network voltage would be in breach of statutory limits. Network voltages can be too low (usually caused by excess demand), too high (usually caused by excess generation), or change too quickly (instantaneous change in voltage due to planned/unplanned outages). Voltage excursions can cause damage to customer equipment and network assets, or introduce safety risks.

We have a duty to maintain voltages within the statutory limits at each voltage level. We prioritise interventions when the network is at risk of breaching these limits.

Fault current constraints – where the network fault current would exceed the fault current rating of switchgear. If this happened, it would represent a serious safety risk as the network could not be safely isolated in the event of a fault. Fault current constraints can affect equipment at any voltage level.

Circuit breakers may be called upon to disconnect faulting equipment from the network; or energise onto faulty or earthed equipment. A range of types of fault (including 3-phase and single-phase faults) are assessed under make and break fault duties. Where substations are approaching switchgear capability or operationally managed, detailed assessments of the maximum fault flows through each individual breaker are undertaken. Substation infrastructure such as busbars, supporting structures, flexible connections, current transformers, and terminations must be capable of withstanding the mechanical forces associated with the passage of high magnitude fault current i.e. through-current withstand duty. Where switchgear is in excess of 95% of equipment or design rating we consider the substation to be constrained.

[10] Electricity Safety, Quality and Continuity Regulations (ESQCR). Available here: https://www.hse.gov.uk/esqcr/index.htm

These constraints can occur together or independently. In all cases, these network constraints are a result of there being insufficient network capacity to accommodate customer power flows.

5.1.2 Types of interventions

To resolve constraints we consider a range of flexible, energy efficient, smart, innovative, and conventional intervention solutions. Table 1 shows the six main categories of interventions to add capacity. They are not mutually exclusive, so can be combined to provide capacity.

Table 1: Types of intervention

	Intervention Type	Description
	**Asset intervention**	Where we permanently increase network capacity by replacing existing assets or adding more assets – for example, a new substation.
	**Flexibility Services**	Where customers agree to actively manage their demand/generation to help avoid constraints (see Section 5.1.3 for more information).
	**Innovative Solutions**	
	Smart Network Interventions	Where we look to get more out of existing network capacity.
	Using Enhanced Network Asset Ratings	Where we seek to increase the thermal capacity of individual existing network assets without having to replace them.
	Network Reconfiguration	Where we temporarily or permanently adjust the topography of the network to better match existing network capacity with customer power flows.
	Energy Efficiency	Where customers have agreed to passive measures to manage their demand to help avoid constraints.

5.1.3 Flexibility

To meet evolving customer needs, we are developing smarter, more flexible network solutions to help mitigate the need for traditional reinforcement and reduce costs for our customers. This is cheaper for our customers as it enables us to delay expensive reinforcement work for as long as possible.

Flexibility services are where our customers agree to actively manage their demand or generation to help us manage capacity constraints on our network. Flexibility services can help us defer or avoid new network capacity, can be deployed more quickly than reinforcement interventions, and can help democratise and bring competition to the energy sector. They provide an agile smart means of managing our network, and are complementary to reinforcement solutions by providing short-term solutions where we need to act quickly or manage uncertainty. They will play a key part in helping to manage the pace of the Net Zero transition.

Given this, we tender for flexibility for all viable network constraints. This helps us understand the availability and cost of flexibility, which we use in our options assessment.

In previous years, we procured the ENA products under Sustain, Secure, Restore and Dynamic. These products have now been updated under the 2023 Products Alignment Programme. Table 2 shows the definitions and how the new aligned products will be utilised. More information on the new aligned products developed by the ENA Working Group is available on the ON Flexibility Products Review and Alignment page on the ENA website[11].

When we tender for flexibility we state the location, service product (see Table 2), service window and time (e.g. 4-6pm weeknights between October and March), required magnitude (MW/MVArs), and any other necessary technical parameters (e.g. response time). In some cases we will also send ceiling price information.

[11] https://www.energynetworks.org/publications/on-flexibility-products-review-and-alignment-(feb-2024)

Table 2: Flexibility products

Flexibility Product	Product Description
Scheduled Utilisation (SU)	In this product, the time that flexibility is delivered has been pre-agreed in advance with the provider. This product will primarily benefit flexibility service providers that cannot respond in real-time or near to real-time. This service is used to manage seasonal peak demands and defer network reinforcement.
Operational Utilisation (OU)	This product allows for the use case where the amount of flexibility delivered is agreed nearer to real time. This can be utilised to facilitate a change in demand profile from flexibility service providers based on network conditions close to real-time. The assets will be dispatched for the required level of service that is required based upon actual network measurement data thus managing the cost. We utilise this product in order to restore network supplies following an unplanned outage/fault where the regulatory funding does not allow for availability payments e.g. customer interruptions (CI).
Operational Utilisation + Scheduled Availability (OUSA)	This product procures, ahead of time, the ability of a flexibility service provider to deliver an agreed change following a network abnormality. The availability will be defined at the point of procurement and cannot be modified once the contract has been agreed. The assets will be dispatched for the required level of service that is required based upon actual network measurement data, meaning that the DNO/ESO is only paying utilisation payments based upon the actual needs of the network. An example use case for this product is when a DNO is planning for sufficiency of flexible services contracts based upon long range forecasting of network constraints.
Operational Utilisation + Variable Availability (OUVA)	This product allows for DNOs to procure a level of contracted capacity, but then refine the requirements in terms of availability closer to the event. The assets will be dispatched for the required level of service that is required based upon actual network measurement data, meaning that the DNO is only paying utilisation payments based upon the actual needs of the network. An example use case for this product is when a DNO is planning for sufficiency of flexible services contracts based upon short-medium range forecasting of network constraints.

We will continue to test every viable network constraint for flexibility. To date we have operated bi-annual bidding rounds, in the spring and autumn, which seek to procure long-term requirements often over multiple years. Based on stakeholder feedback regarding the ability to deliver long term contracts. we are moving to a new procurement model and from May 2024 we will begin tendering on a monthly basis for the following month's requirements. This will also increase the certainty of service delivery from flexibility service providers, increasing the confidence by DSOs that flexibility services can provide practical solutions to network constraints.

For more information on our flexibility activities, please visit the flexibility area of our website[12]. This includes links to our tenders on the Piclo procurement platform.

[12] https://www.spenergynetworks.co.uk/pages/flexibility.aspx

5.1.4 Summary of interventions

Figure 3 summarises the interventions by driver (i.e. why we need to make them). Figure 4 summarises the interventions by type (i.e. how we are making them). As a reminder, these graphs only show interventions on primary substations upwards given the scope of the NDP. This means they exclude interventions on the LV and HV networks, which account for the vast majority of the interventions we need to make to provide capacity.

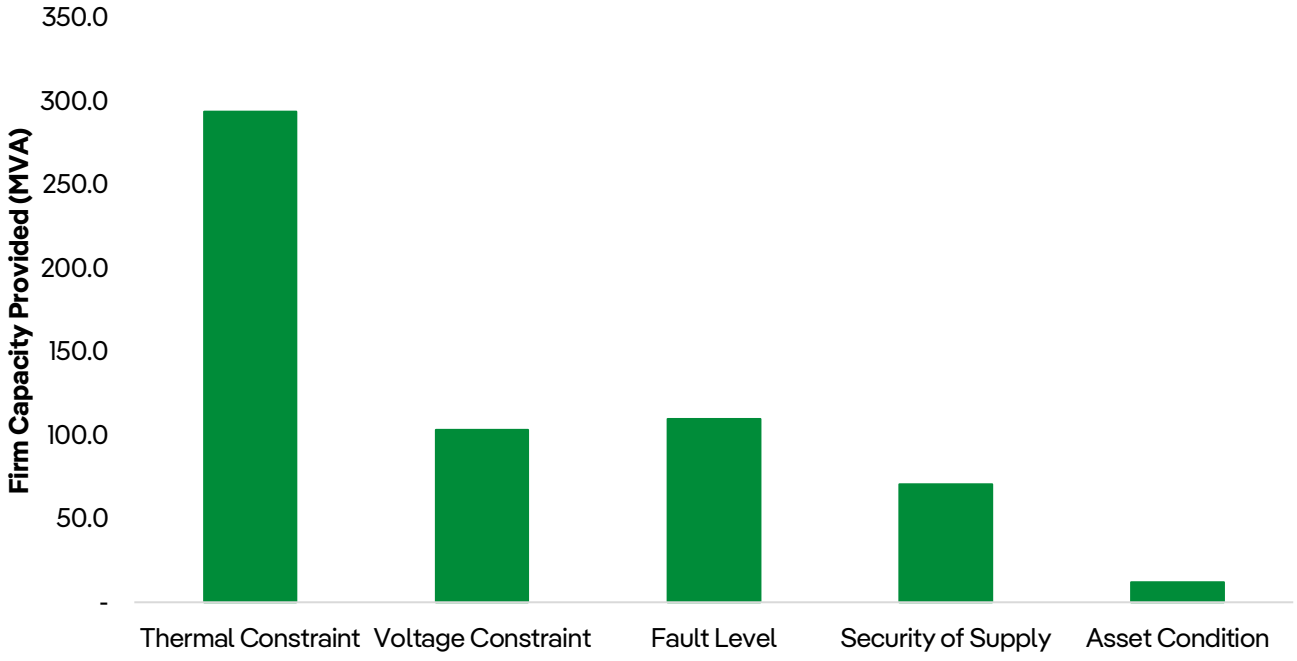


Figure 3: SP Distribution summary of interventions by driver to 2028

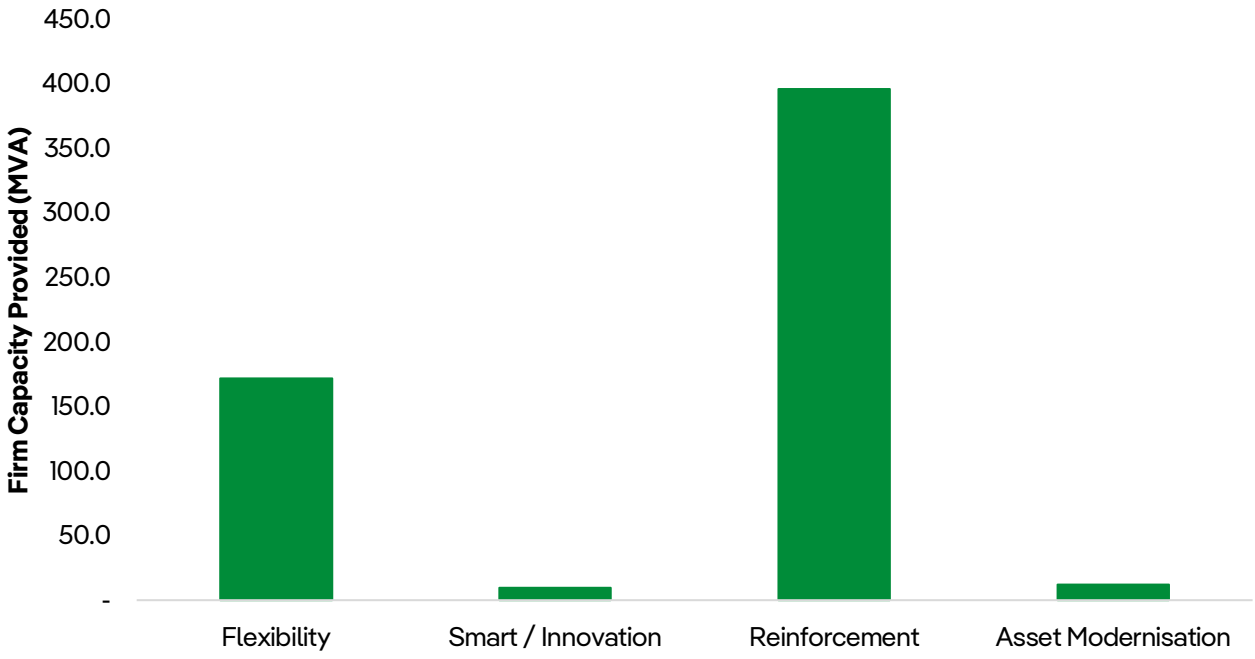


Figure 4: SP Distribution summary of interventions by type to 2028

Figure 3 shows that the need to provide thermal capacity is the main driver of interventions. Figure 4 shows that reinforcements and flexibility account for the great majority of the interventions we will make to provide capacity.

Our load and non-load intervention plans are both designed to be adaptable so they can respond to emerging customer needs. This means the interventions we actually deliver may differ slightly from those we currently plan to deliver. We will only make changes to the delivery plan where it is in customers' interests.

5.2 Network scenario headroom results (NDP Part 2)

Future network scenario headroom is indicated for all SP Distribution primary substations (33/11kV) in terms of demand and generation. For further details on the process to forecast capacity headroom see our NDP Methodology Statement.

5.2.1 Demand headroom

To calculate the demand headroom, we consider the expected increase in demand from the baseline, low and high scenarios, up to 2050, and compare these with the firm capacity of the group, including all planned interventions that increase capacity and flexibility services. A positive number indicates spare capacity and a negative number indicates a forecast constraint.

In reviewing the capacity headroom results, it is worth noting:

- The firm capacity is the maximum load the substation can support whilst keeping the network operating safely within limits. For primary substations this is generally the capacity available during single circuit outage conditions.
- When calculating the firm capacity, we consider the season of most onerous demand (typically winter). This is because the ratings of some equipment differ seasonally.
- For multi-transformer substations, the firm capacity considers only the capacity that can be available through automatic processes (e.g. parallel operation of the transformers or automatic changeover schemes).
- For single-transformer substations, the firm capacity values include the capacity that will be available through both automatic and manual switching processes, provided these can be carried out within the time constraints specified in Engineering Recommendation P2.
- In the headroom calculations we consider demand for developments that are due to connect, including that of Green Recovery schemes.

5.2.2 Generation headroom

To calculate the generation headroom, we consider the expected increase in generation from the baseline, low and high scenarios, up to 2050, and compare these against the reverse power flow capability of the substation/substation group, and the fault level limits.

The fault levels are calculated under the most onerous network conditions to yield the maximum anticipated fault currents. The most onerous network condition is considered to be when the following conditions occur concurrently:

- all generating apparatus is in service;
- all transformers are set to nominal tap position;
- the system is intact (N); and
- fault level contributions are included from all independent generators.

Fault contributions from synchronous generators and converter connected generators are treated differently. Typical fault current contributions from synchronous generators and converter connected generators are used to determine the available fault level headroom when considering forecast generation.

5.2.3 Further considerations

In reviewing the capacity headroom results, it is worth noting:

- Headroom results take account of planned interventions, as outlined in Section 6 of this document. A negative headroom result changing to a positive result is indicative of a planned intervention taking place or a decrease in demand.
- Headroom results do not take account of the additional capacity provided through the rollout of Constraint Management Zones (CMZs) or other flexible connection arrangements - see Section 6 of this document.

- Generation headroom at a substation/group may be limited by upstream constraints beyond our network boundary. These upstream constraints are flagged in column E within the Part 2 spreadsheets, but are not reflected within the capacity headroom values. Any new generation connections where there are upstream constraints beyond our network boundary will be subject to detailed network assessments to determine the actual generation capacity headroom.
- Demand and generation forecasts are subject to factors which can change over time and influence pre-determined plans.
- The timing and type of network interventions may vary, depending on the rate of change in stakeholder requirements influenced by regional and national policies, and requirements for emerging new connections.
- We have taken all reasonable endeavours to ensure the accuracy of the results using information available at the time of publishing. We are not responsible for any loss that may be attributed to the use of the information presented in this report and the capacity headroom results.

6 Part 1 – Network development information

Our NDP Part 1 outlines the specific details of all the interventions we are planning in the SP Distribution network that increase network capacity. This means we have also included in our NDP Part 1 losses-driven and asset management-driven interventions which increase network capacity even though this is not the primary reason for the intervention. This section provides a detailed breakdown of our 10-year intervention plans, arranged by GSP and disaggregated by intervention driver, down to the HV voltage level of primary (33kV/HV) sites. The information provided is as follows:

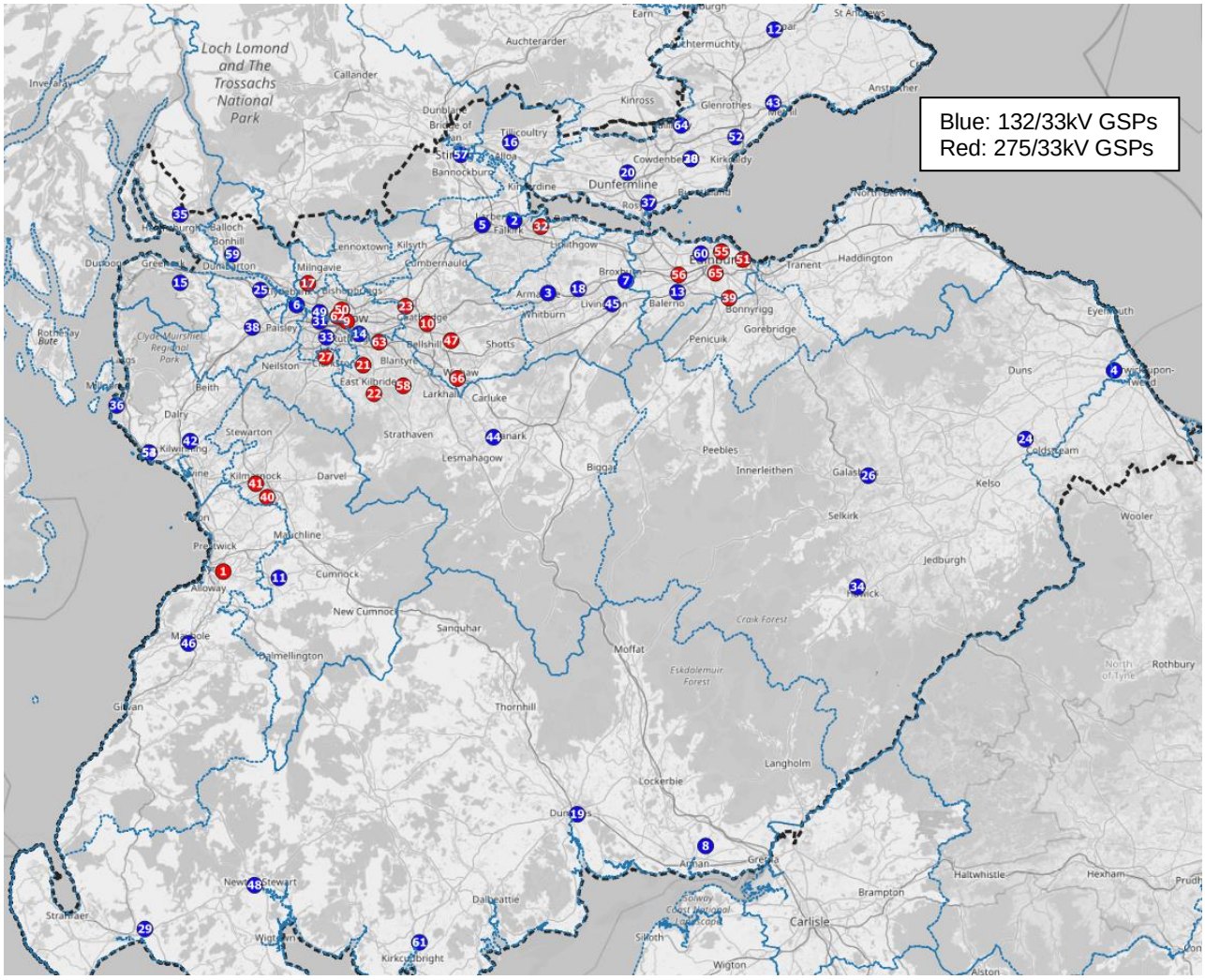
For each individual intervention the following information is summarised:

- Network Area: Name of the network group where the intervention is to be carried out.
- Driver: Primary driver for the intervention (thermal, voltage, fault level, asset modernisation[13], etc.).
- Type: Type of intervention (Section 5.1.2).
- Solution: Brief description of the intervention.
- Flexibility: Flexible capacity to be employed in MW.
- Increase in firm capacity: Capacity change resulting from the intervention in MVA.
- Expected by: Expected intervention completion year.
- Status: Whether the intervention is in delivery or planned.

In addition to the list of interventions summarised in the following sections, we are planning to install enhanced voltage control at a number of primary (33kV/HV) sites during RIIO-ED2 (1 April 2023 - 31 March 2028). For details, see **EJP**.

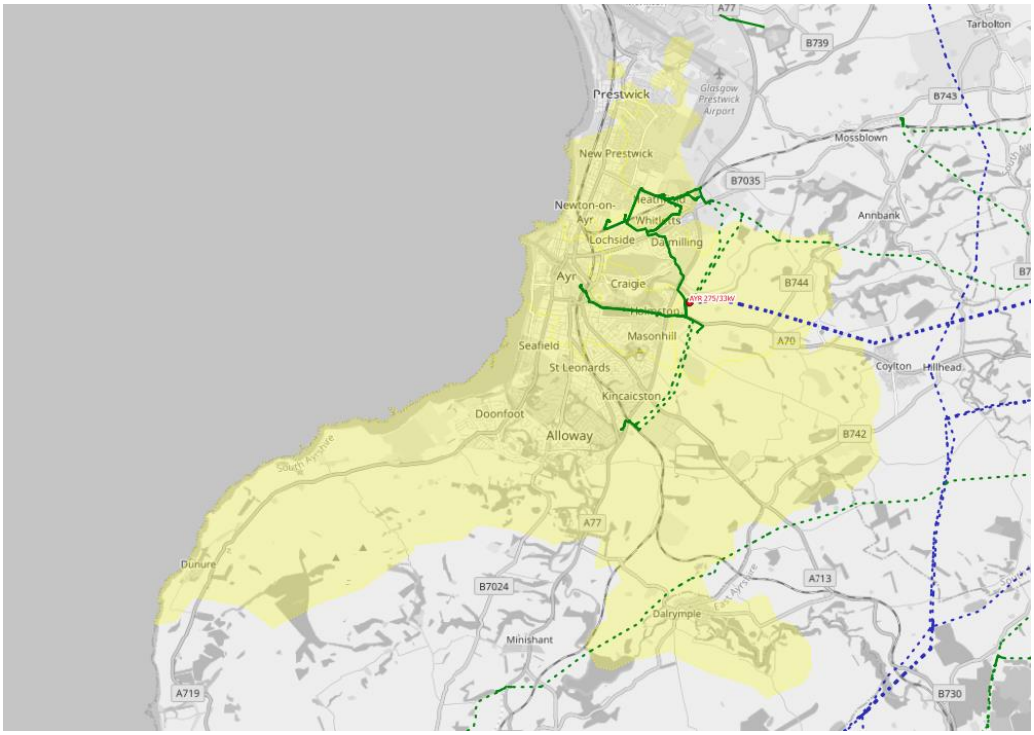
[13] Only asset modernisation interventions associated with substation asset replacement are included.

The map below shows the GSP locations. Users assessing this document electronically can navigate to the GSP of interest by clicking on the names of the GSPs in the list further below.



1 - Ayr	18 - Drumcross	35 - Helensburgh	51 - Portobello
2 - Bainsford	19 - Dumfries	36 - Hunterston Farm	52 - Redhouse
3 - Bathgate	20 - Dunfermline	37 - Inverkeithing	53 - Saltcoats A
4 - Berwick	21 - East Kilbride	38 - Johnstone	54 - Saltcoats B
5 - Bonnybridge	22 - East Kilbride South	39 - Kaimes	55 - Shrubhill
6 - Braehead Park	23 - Easterhouse	40 - Kilmarnock South	56 - Sighthill
7 - Broxburn	24 - Eccles	41 - Kilmarnock Town	57 - Stirling
8 - Chapelcross	25 - Erskine	42 - Kilwinning	58 - Strathaven
9 - Charlotte Street	26 - Galashiels	43 - Leven	59 - Strathleven
10 - Coatbridge	27 - Giffnock	44 - Linnmill	60 - Telford Road
11 - Coylton	28 - Glenniston	45 - Livingston East	61 - Tongland
12 - Cupar	29 - Glenluce	46 - Maybole	62 - West George Street
13 - Currie	30 - Glenrothes	47 - Newarthill	63 - Westburn Road
14 - Dalmarnock	31 - Govan	48 - Newton Stewart	64 - Westfield
15 - Devol Moor	32 - Grangemouth	49 - Partick	65 - Whitehouse
16 - Devonside	33 - Haggs Road	50 - Port Dundas	66 - Wishaw
17 - Drumchapel	34 - Hawick		

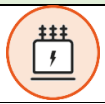
6.1 Ayr



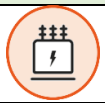
This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 32,000 customers in Glengall, Heathfield, Mill Street, Old Bridge Road and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	1*
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

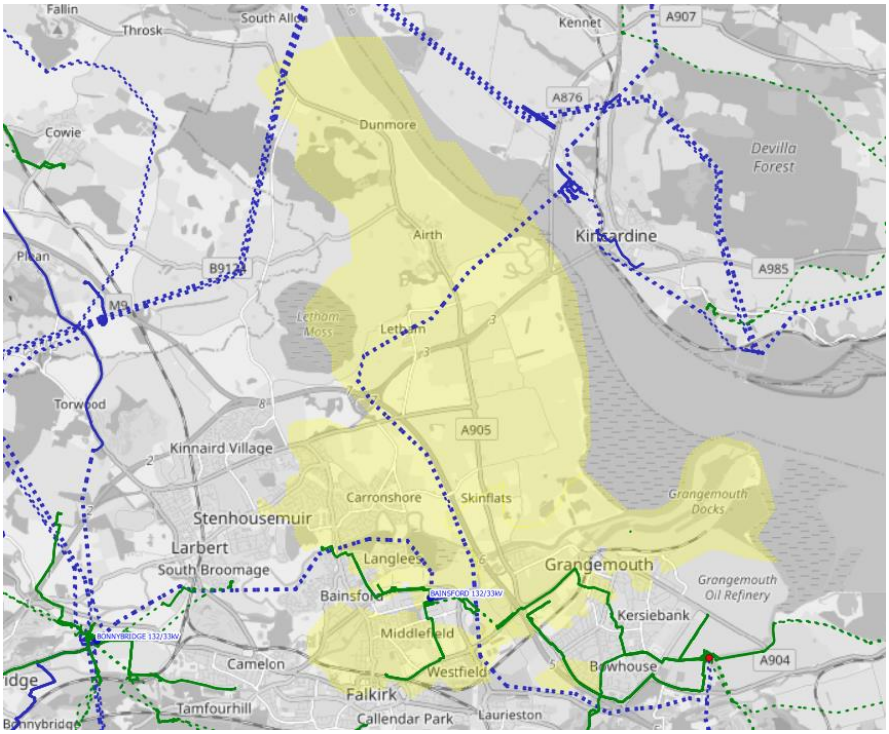
EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Ayr GSP	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Heathfield Rd Ayr	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2027/28	Planned

*Could increase generation hosting capacity.

6.2 Bainsford



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 16,000 customers in Callendar, Carron, Earls Road and surrounding areas.

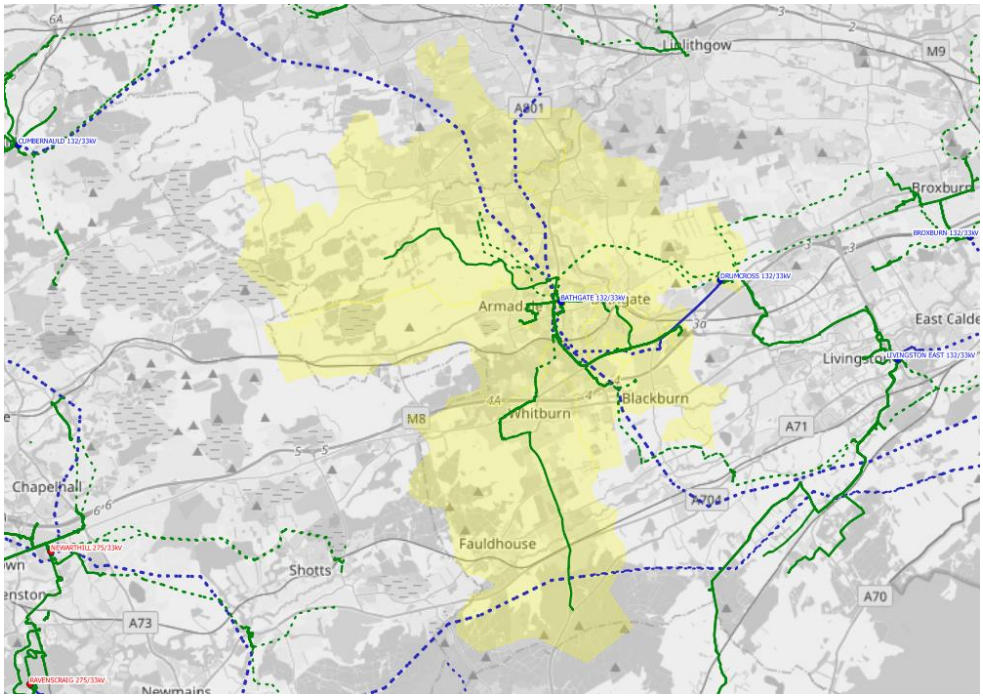
Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Callendar Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2026/27	Planned

*Could increase generation hosting capacity.

6.3 Bathgate



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 29,000 customers in Paulville, Pyramid, Armadale, Muckraw, Polkemmet, Blackburn and surrounding areas.

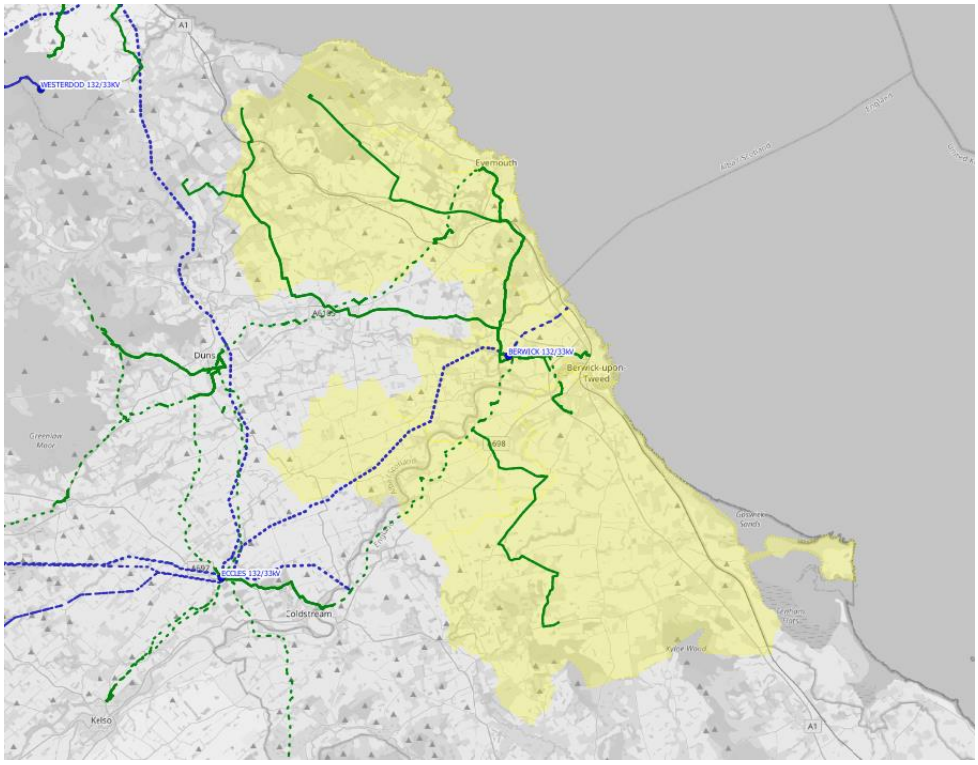
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Bathgate GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Bathgate For details see: EJP	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.4 Berwick



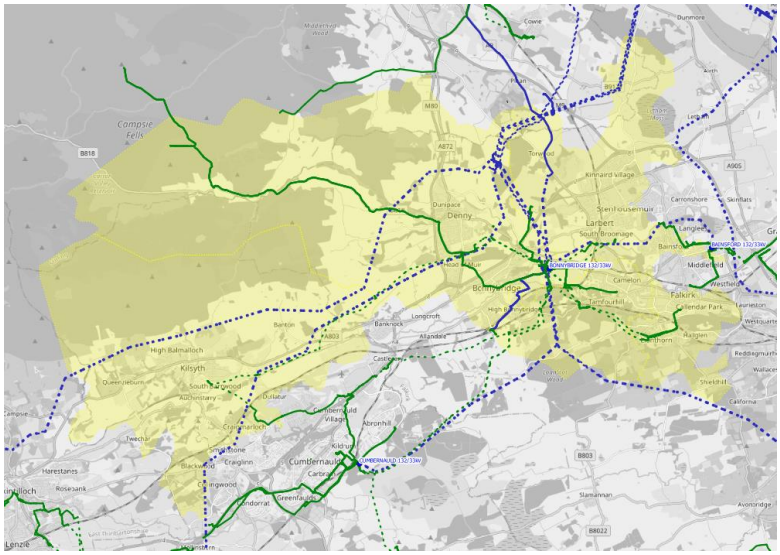
This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 17,000 customers in North Road, Loaning, Horncliffe, Eyemouth, Norham, Coldstream, Ayton and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1
		EHV/HV	3
		HV	-
	Capacity Added (MVA)		13.2
	Flexibility Services (MW)		5.0

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Eccles Grid	Thermal		**Circuit Reinforcement** Uprating of the Eccles to Duns 33kV circuit	-	8.2	2023/24	Delivery

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Coldstream Primary	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	0.9	-	2025/26 to 2027/28	Planned
Ayton Primary	Thermal		**Ayton Primary Reinforcement** Replacement of existing Ayton 33/11kV 2 x 5MVA transformers with 10MVA units along with interim constraint management (in the year 2023/24 and 2024/25) via flexibility services For details see: EJP	-	5.0	2025/26	Planned
		SU	**Ayton Primary** Flexibility services to manage the network risk during delivery of reinforcement For details see: EJP	4.1	-	2023/24 to 2027/28	Planned

6.5 Bonnybridge



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 39,000 customers in Larbert, Camelon, Falkirk, Myothill, Kilsyth and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	2
		HV	-
	Capacity Added (MVA)		5.4
	Flexibility Services (MW)		12.5

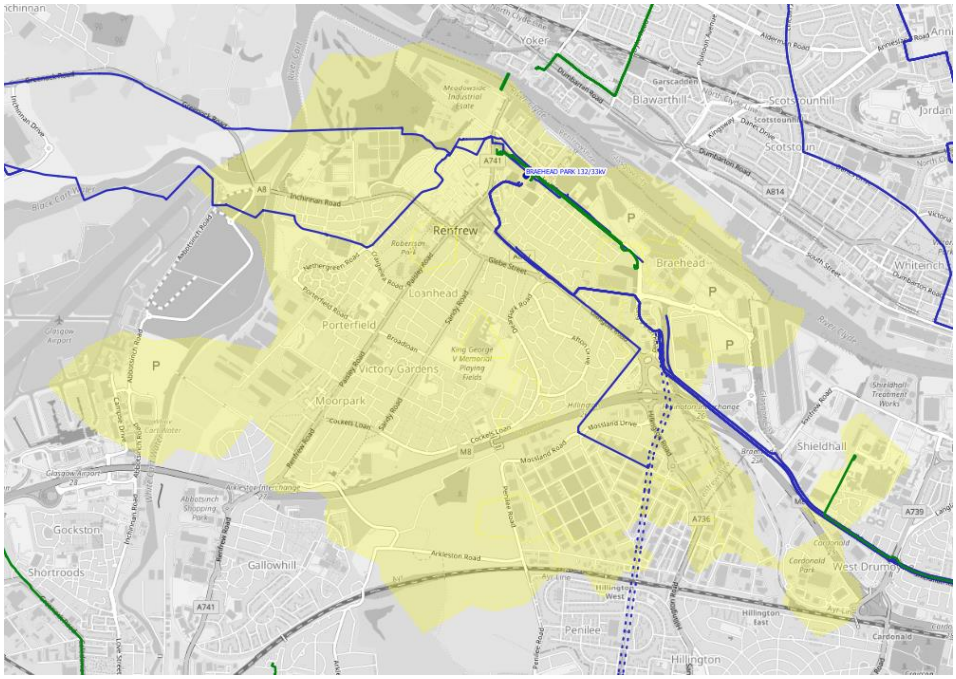
*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Bonnybridge GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Bonnybridge For details see: EJP	-	*	2025/26	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Larbert Primary	Thermal		**33kV Circuit Upgrades** Uprate sections of 33kV circuit supplying Larbert Primary For details see: **EJP**	-	5.4	2027/28	Planned
		 SU	**Larbert Primary** Flexibility services to manage the network risk during delivery of reinforcement For details see: **EJP**	12.5	-	2023/24 to 2027/28	Planned

6.6 Braehead Park



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 11,000 customers in Kings Inch Road, Renfrew Ferry and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1
		EHV/HV	1*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		140.5

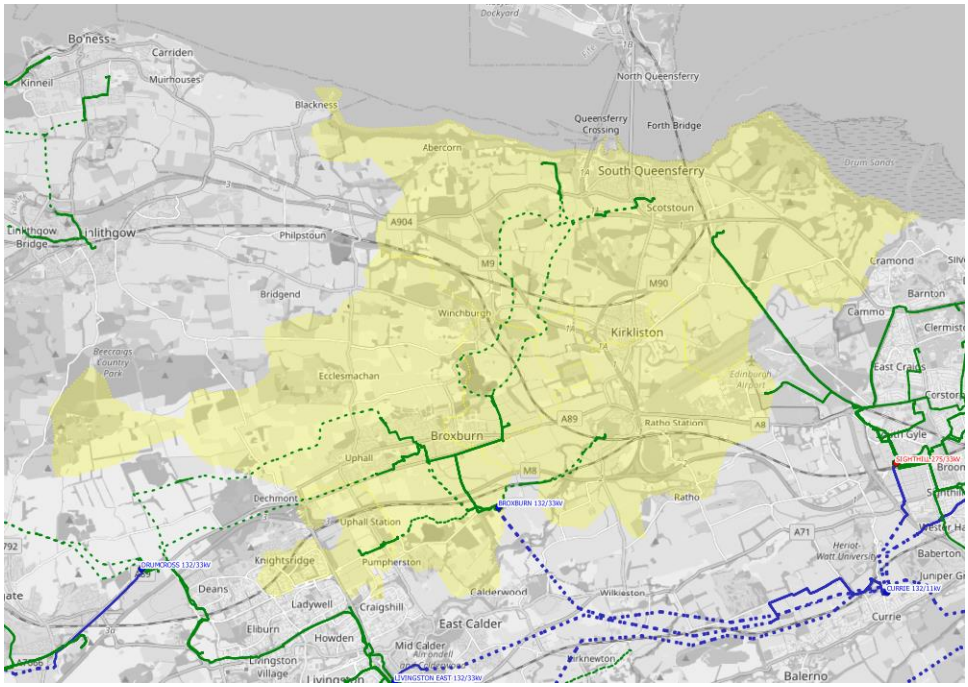
*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Braehead Park GSP	Thermal	OU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: **EJP**	140.5	-	2023/24 to 2027/28	Planned

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Renfrew Ferry	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Renfrew Ferry For details see: **EJP**	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.7 Broxburn

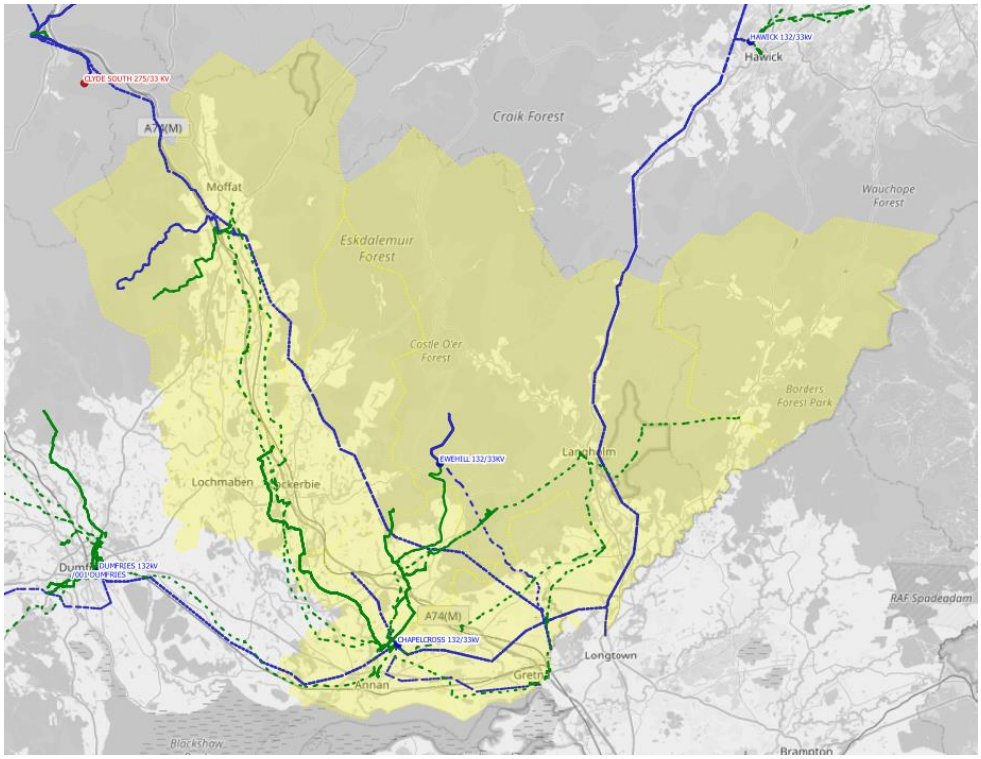


This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 20,000 customers in East Mains, Broxburn, South Queensferry, Newbridge, Cameron and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		25.5
	Flexibility Services (MW)		-

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Broxburn	Thermal		**Circuit Reinforcement** Two additional 33kV circuits (at least 400mm² Al XLPE) from Broxburn to pick up East Mains Primary substation, a distance of ~ 2km	-	25.5	2023/24	Delivery

6.8 Chapelcross

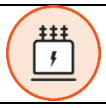


This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 22,000 customers in Annan, Lockerbie, Kirkbank, Moffat, Gretna, Middlebie, Langholm, Newcastleton, Carrutherstown and surrounding areas.

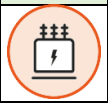
Summary	**Number of Interventions and Schemes**	**132kV/EHV**	1
		EHV	3*
		EHV/HV	1
		HV	-
	Capacity Added (MVA)		65.0
	Flexibility Services (MW)		1.1

*Could increase generation hosting capacity.

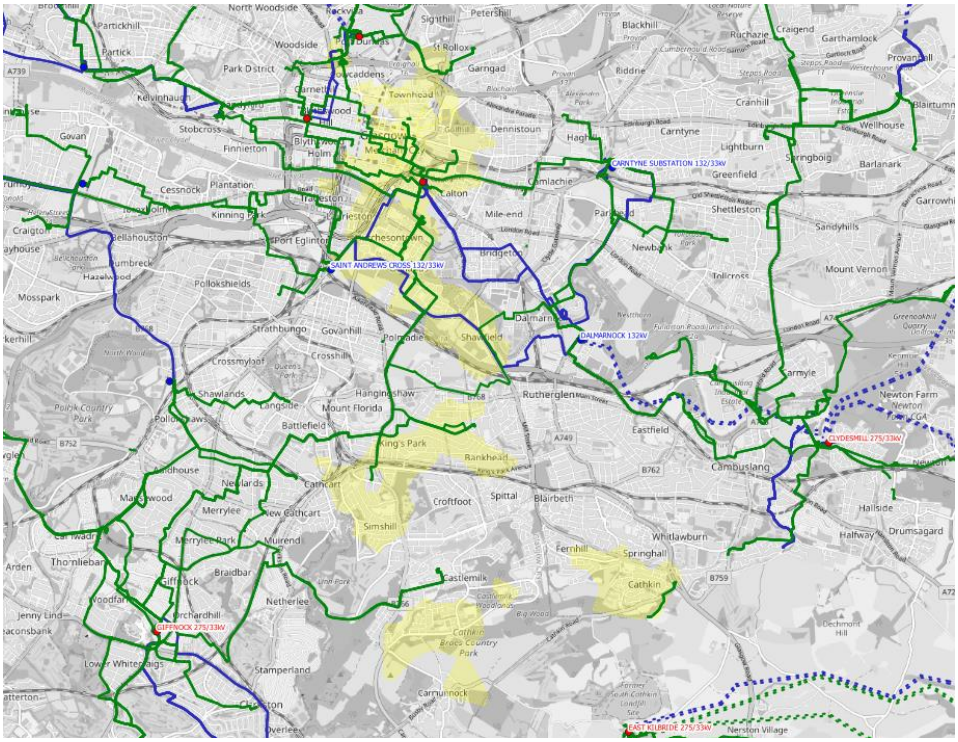
132kV/EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Moffat GSP	Voltage/ Thermal		**New Moffat GSP** New 132/33kV 2x 60MVA Moffat grid supply point near Moffat primary For details see: DNOA and EJP	-	60.0	2024/25	Planned

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Chapelcross GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Chapelcross For details see: EJP	-	*	2025/26	Planned
Newcastleton Primary	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2027/28	Planned
Lockerbie Group	Thermal	 SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	1.1	-	2025/26 to 2027/28	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Newcastleton Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	5.0	2027/28	Planned

6.9 Charlotte Street



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 21,000 customers in Rottenrow, Virginia Street, David Street, Hunter Street, Carmunnock Road and surrounding areas.

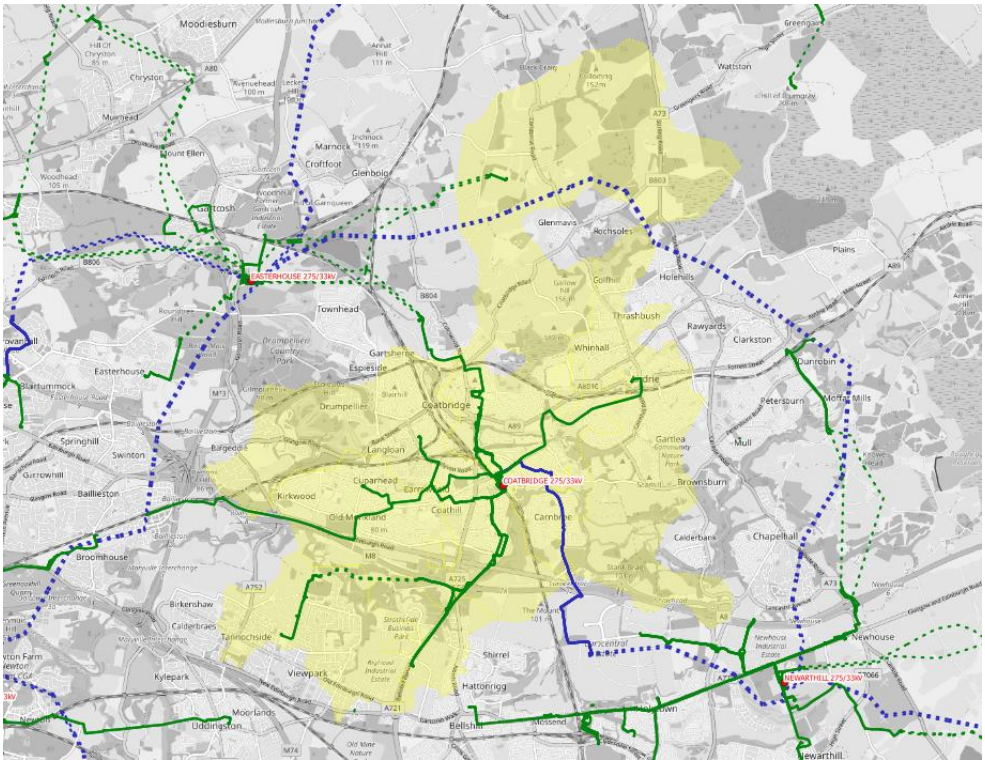
Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Hunter Street Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.10 Coatbridge



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 34,000 customers in Coats Street, Myrtle Road, Woodside, Dundyvan, Airdrie, Clark Way and surrounding areas.

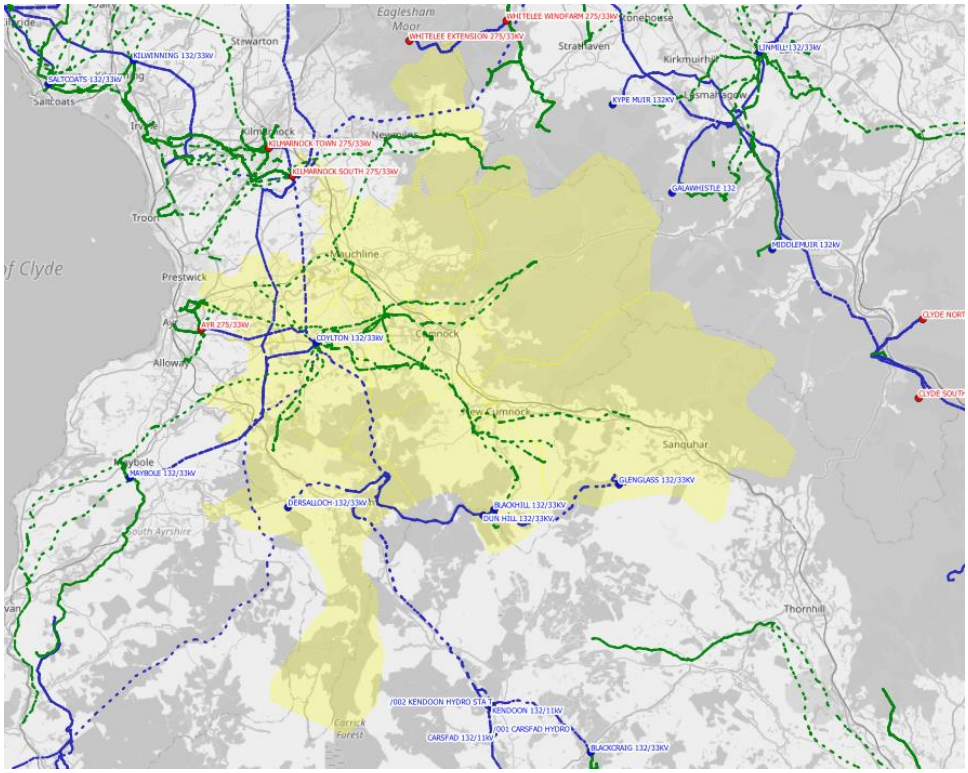
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Coatbridge GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Coatbridge For details see: **EJP**	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.11 Coylton



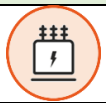
This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 27,000 customers in Lethanhill, Killoch Colliery, Cronberry, Cumnock, New Cumnock, Fauldhead, Drumley, Mauchline, Darvel and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1*
		HV	1*
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

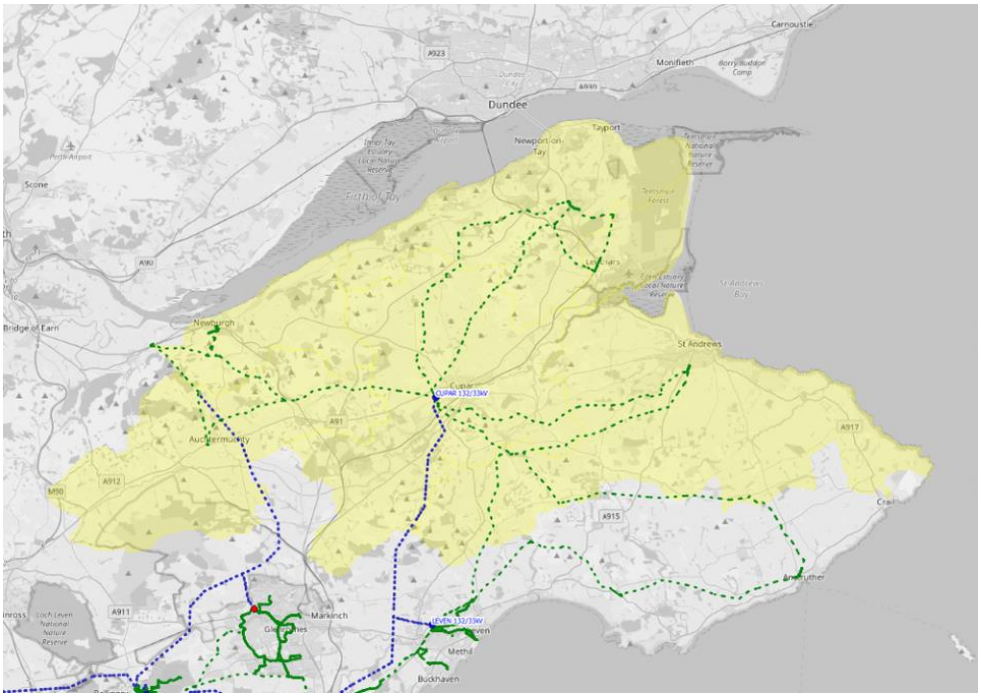
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Darvel Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Lethanhill	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned

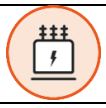
*Could increase generation hosting capacity.

6.12 Cupar

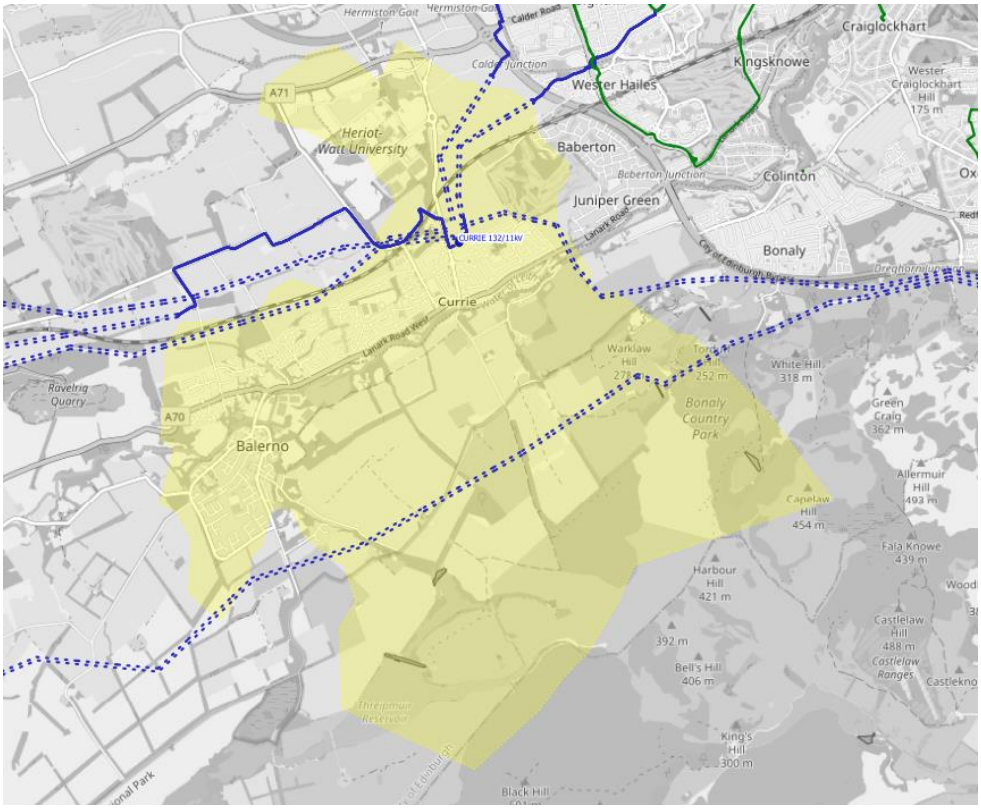


This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 30,000 customers in Cupar, St. Andrews, Forgan, Leuchars, Auchtermuchty, Newburgh and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	3
		HV	-
	Capacity Added (MVA)		37.0
	Flexibility Services (MW)		5.7

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
St. Andrews	Voltage		**St. Andrews Primary Reinforcement** New 33kV circuits from Cupar GSP to supply new 33/11kV 2 x 32MVA primary substation at Guardbridge along with interim constraint management via flexibility services For details see: DNOA and EJP	-	32.0	2027/28	Planned
	Security of Supply	 SU	Flexibility services to manage the network risk during delivery of reinforcement For details see: DNOA and EJP	5.7	-	2023/24 to 2027/28	Planned
Newburgh Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	5.0	2024/25	Planned

6.13 Currie

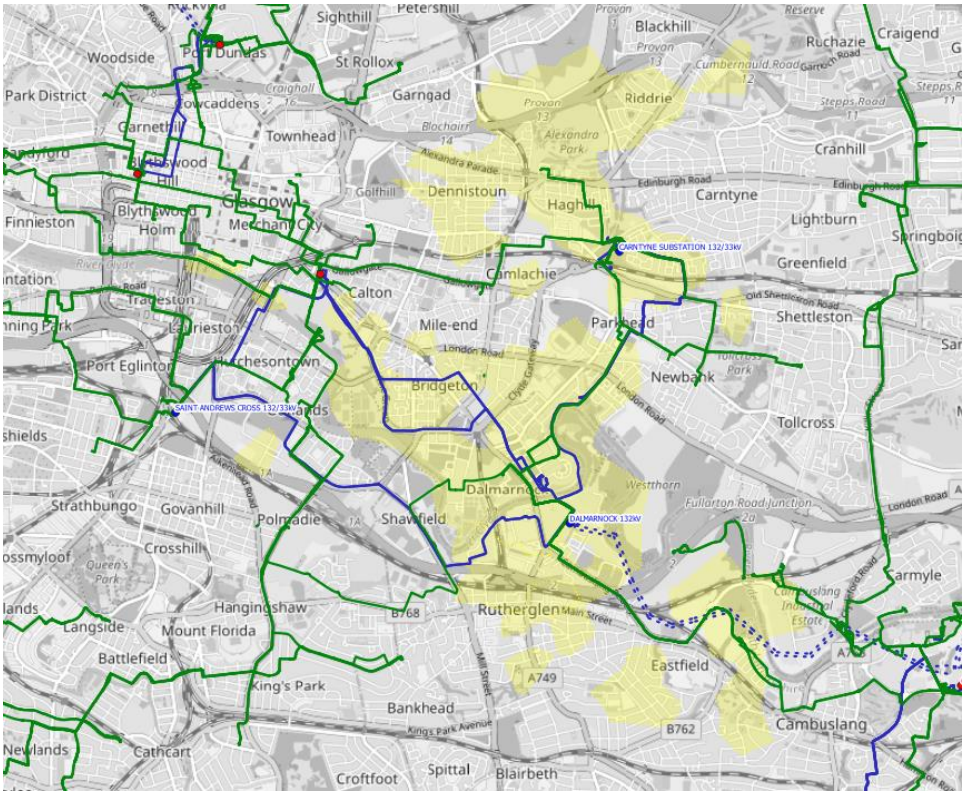


This section of network is fed via two 30MVA 132/11kV grid transformers. This group supplies around 5,000 customers in Currie and neighbouring areas.

Summary	**Number of Interventions and Schemes**	**132kV/EHV**	1
		EHV	-
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		30.0
	Flexibility Services (MW)		-

132kV/EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Currie GSP	Fault Level		**Currie GSP Fault Level Mitigation** New 132/33kV 2 x 60MVA Currie GSP and new 33/11kV 2 x 20MVA Currie primary substation For details see: **EJP**	-	30.0	2025/26	Planned

6.14 Dalmarnock



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 19,000 customers in Ashgrove Street, Cambuslang, Eastercraigs and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1*
		HV	2*
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

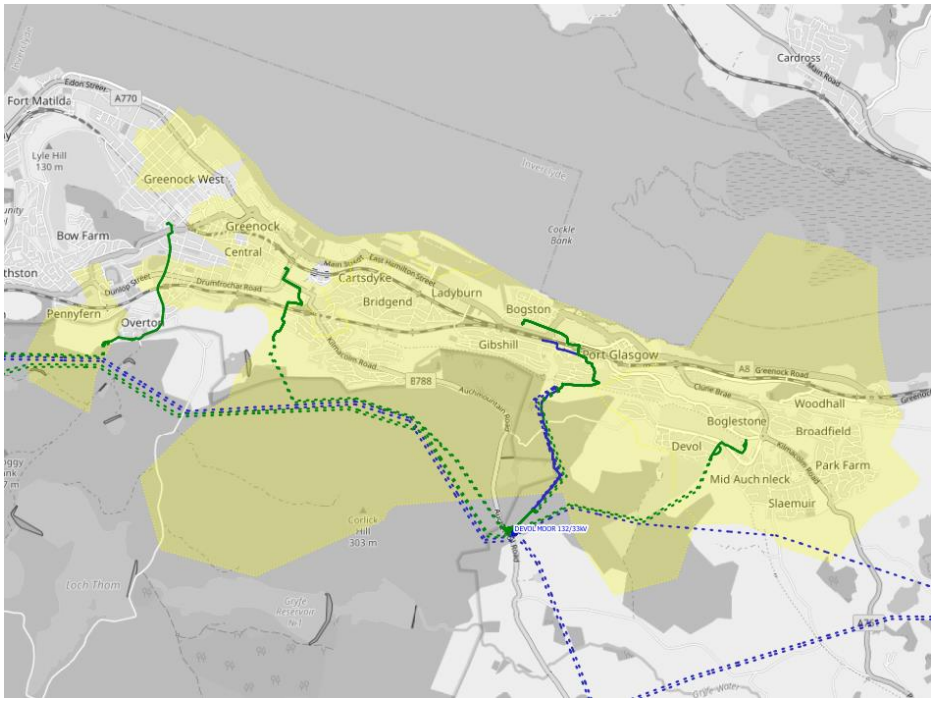
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Ashgrove Street Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2026/27	Planned

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Ashgrove Street Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned
Eastercraigs Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2024/25	Planned

*Could increase generation hosting capacity.

6.15 Devol Moor



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 18,000 customers in Port Glasgow, Baker Street, Boundary Street and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1*
		HV	1*
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

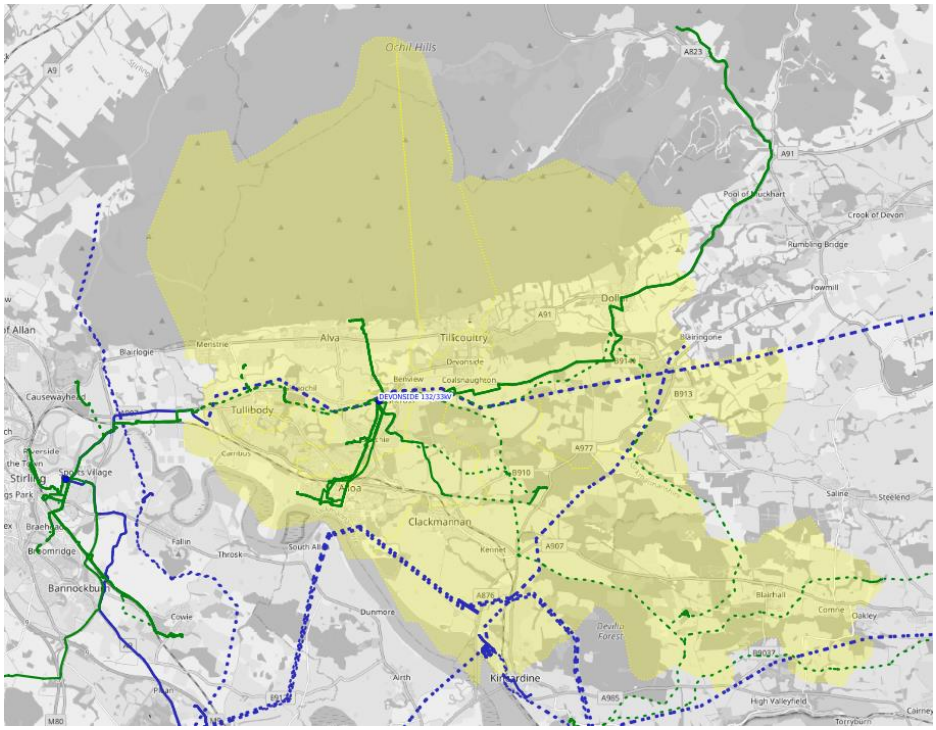
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Port Glasgow Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Port Glasgow Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.16 Devonside



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 27,000 customers in Sauchie, Kelliebank, Dollar, Gartarry, Menstrie and surrounding areas.

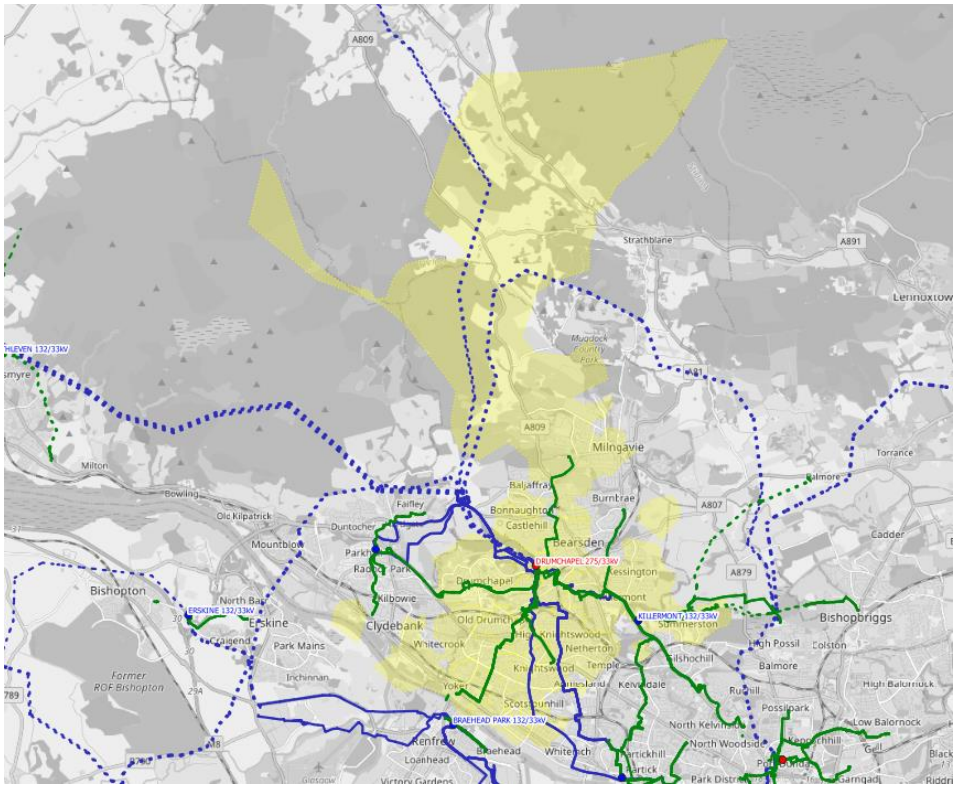
Summary	**Number of Interventions and Schemes**	**EHV**	2*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Devonside GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Devonside For details see: EJP	-	*	2023/24	Delivery
Gartarry	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2027/28	Planned

*Could increase generation hosting capacity.

6.17 Drumchapel



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 47,000 customers in Drumchapel Road, Craigdhu Road, Westerton, Archerhill Road, Hecla Avenue, Yoker Ferry Road and surrounding areas.

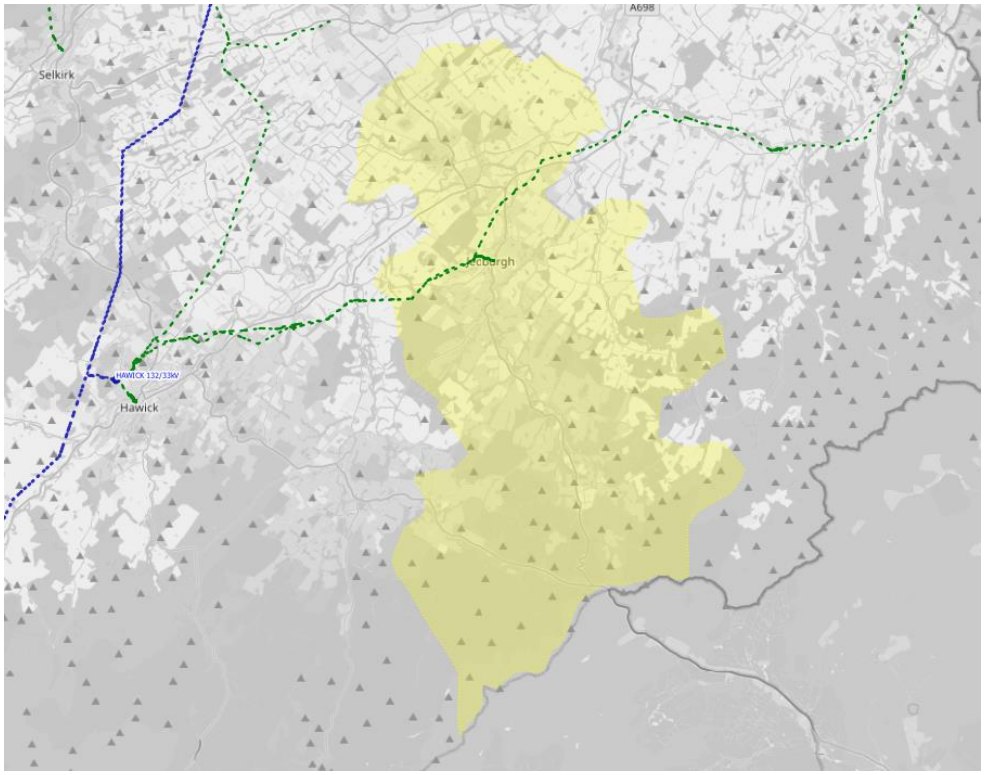
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Westerton Primary	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Westerton For details see: **EJP**	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.18 Drumcross



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 5,000 customers in Deans and surrounding areas.

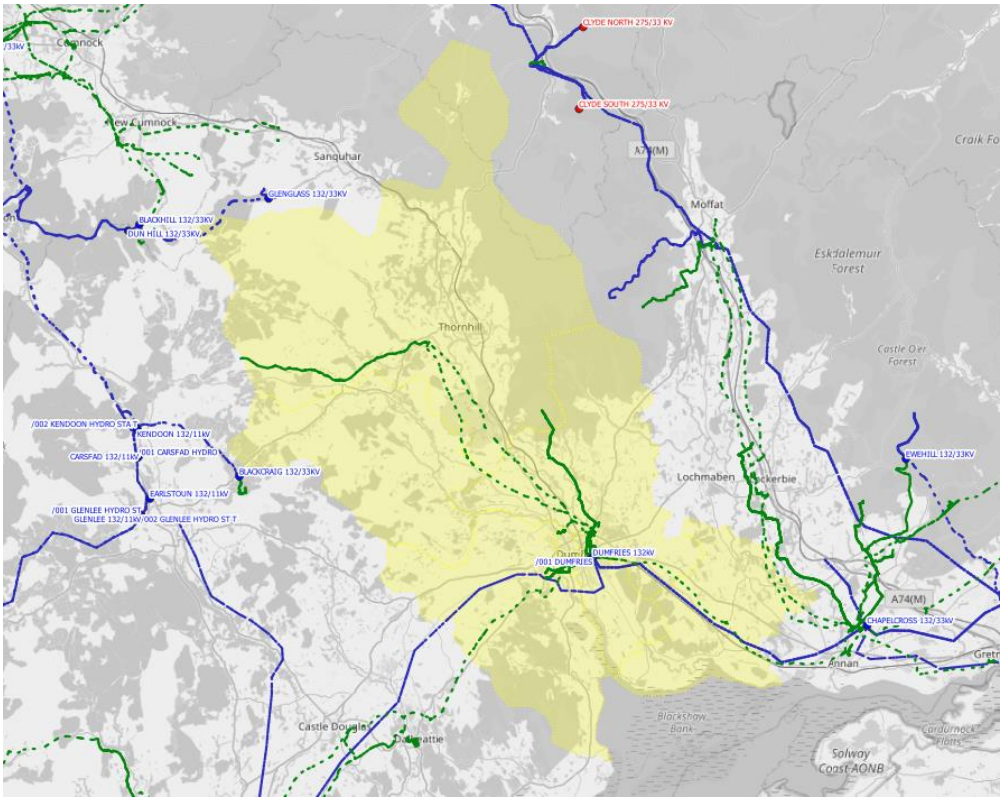
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Deans Primary	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Deans For details see: **EJP**	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.19 Dumfries



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 30,000 customers in Dumfries 11kV, Heathhall, Cargenbridge, Lochside, Maxwellton, Dunscore, Penpont, Carrutherstown and surrounding areas.

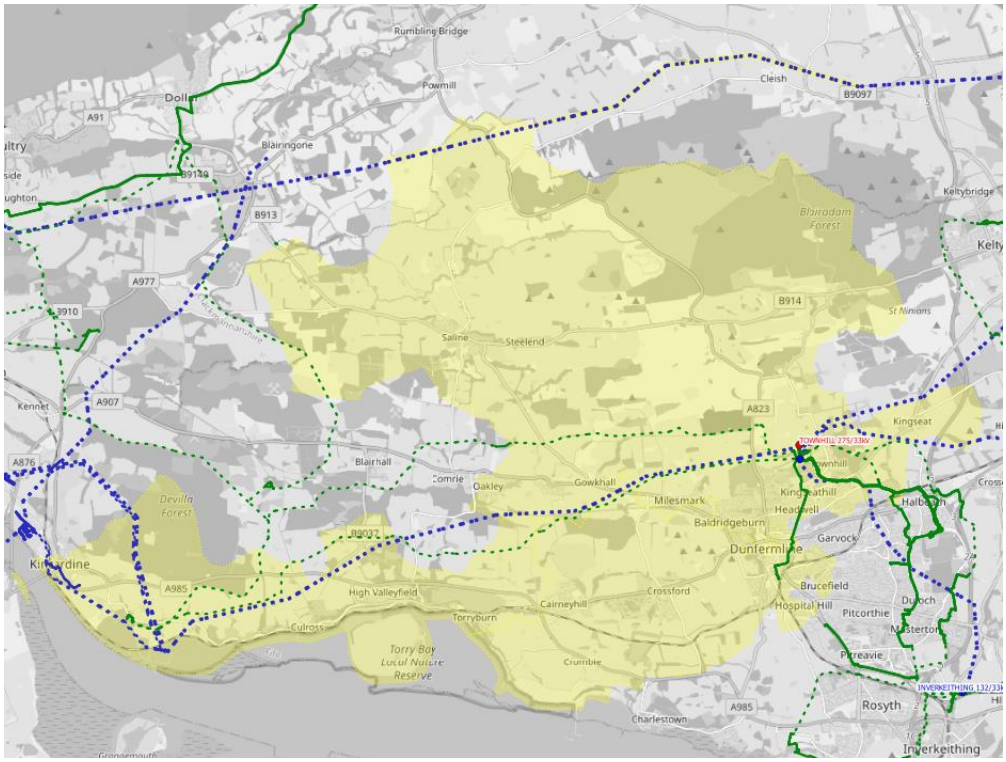
Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Penpont Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2024/25	Planned

*Could increase generation hosting capacity.

6.20 Dunfermline



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 20,000 customers in Townhill, Nethertown, Longannet, Halbeath and surrounding areas.

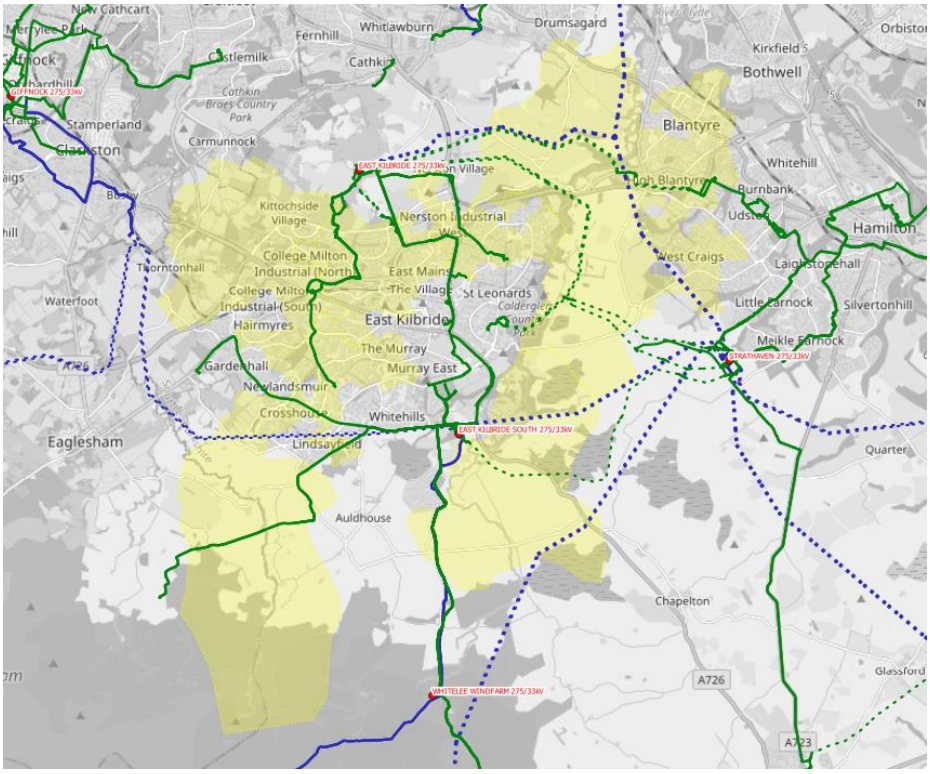
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Dunfermline GSP	Fault Level		**Switchgear Reinforcement** Replace the existing 33kV switchboard installed at Dunfermline GSP. The main driver for this project is due to fault level and the limitations of the existing board	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.21 East Kilbride



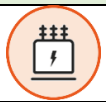
This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 29,000 customers in Markethill, Westwood, College Milton, Hunter and High Blantyre and surrounding areas.

Summary	**Number of Interventions and Schemes**	**275kV/EHV**	1*
		EHV	-
		EHV/HV	1*
		HV	1*
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

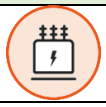
*Could increase generation hosting capacity.

275kV/EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
East Kilbride GSP	Fault Level		**New Transmission Capacity Charges (NTCC)** Installation of bus-section, current limiting reactor. For details see: EJP	-	*	2024/25	Delivery

*Could increase generation hosting capacity.

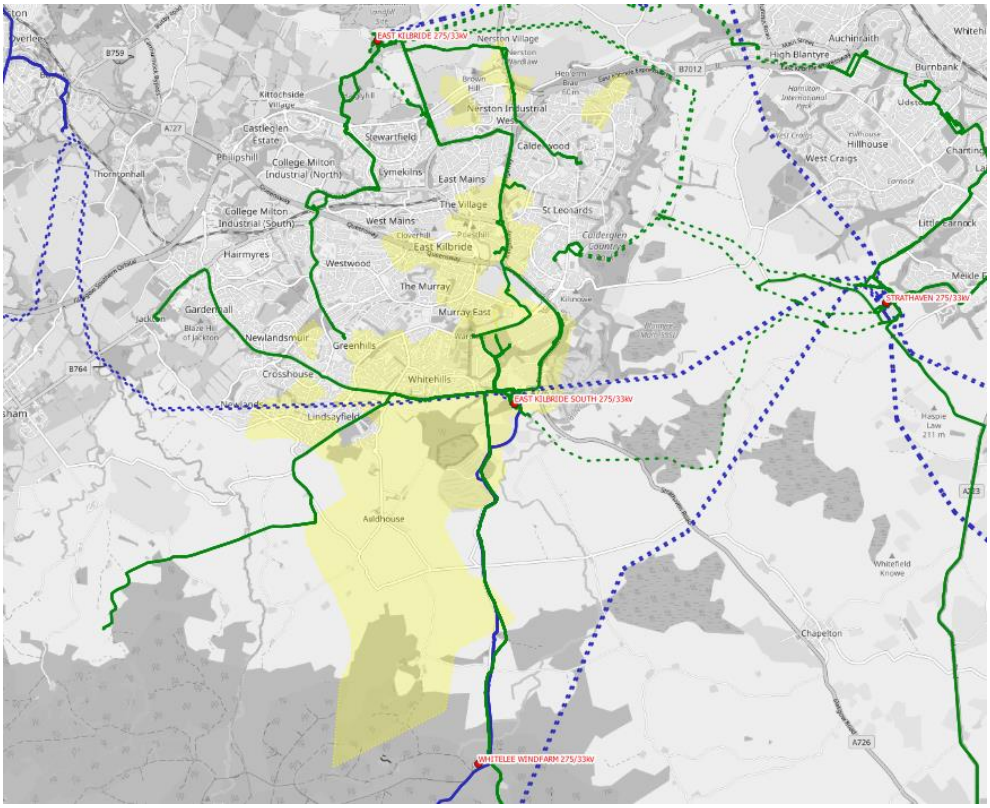
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
High Blantyre Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2024/25	Planned

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
High Blantyre Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.22 East Kilbride South



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 11,000 customers in Kelvin, Common Farm, Jackton and surrounding areas.

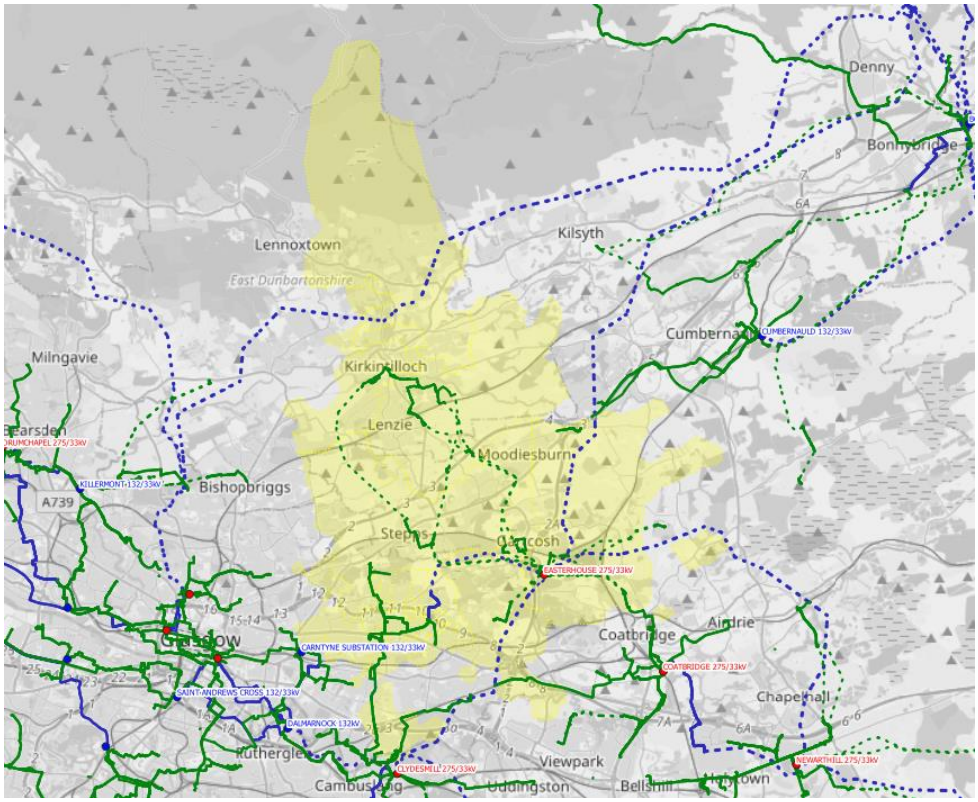
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
East Kilbride South	Fault Level		**Switchgear Reinforcement** Installation of bus-section, current limiting reactor	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.23 Easterhouse



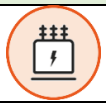
This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 48,000 customers in Woodisle, Kirkintilloch, Bishop, Gartsherrie, Stepford, Avenue End Road, Consett Street, Bartiebeith Road and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	2*
		EHV/HV	2*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

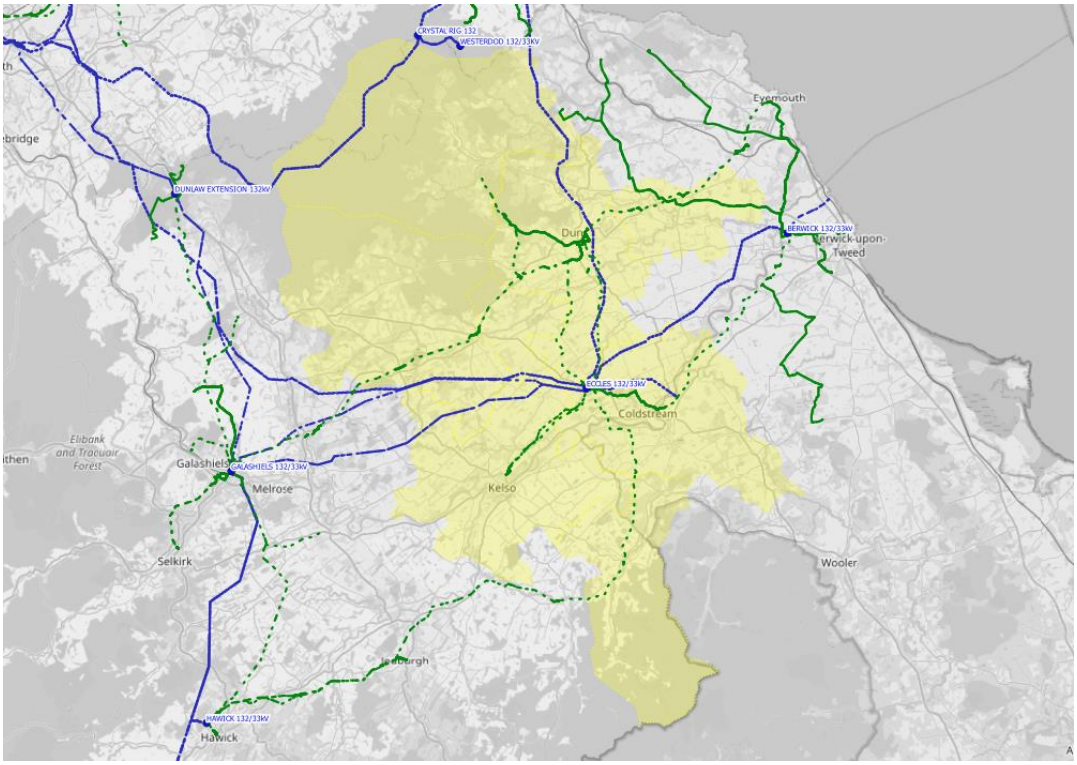
EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Easterhouse GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Easterhouse For details see: **EJP**	-	*	2024/25	Planned
Bartiebeith Road 33kV	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Bishop Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2027/28	Planned
Stepford Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2024/25	Planned

*Could increase generation hosting capacity.

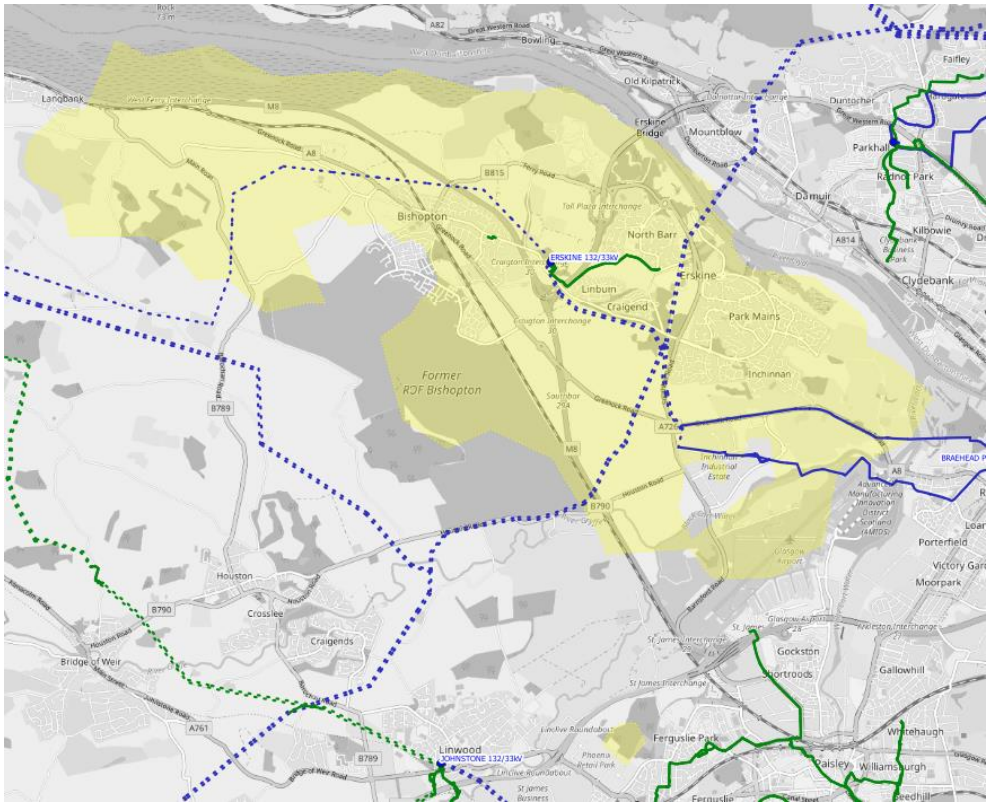
6.24 Eccles



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 12,000 customers in Yetholm, Oakfield - Kelso, Duns, Whitchester, Greenlaw, Gordon, Chirnside and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

6.25 Erskine



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 9,000 customers in Erskine and surrounding areas.

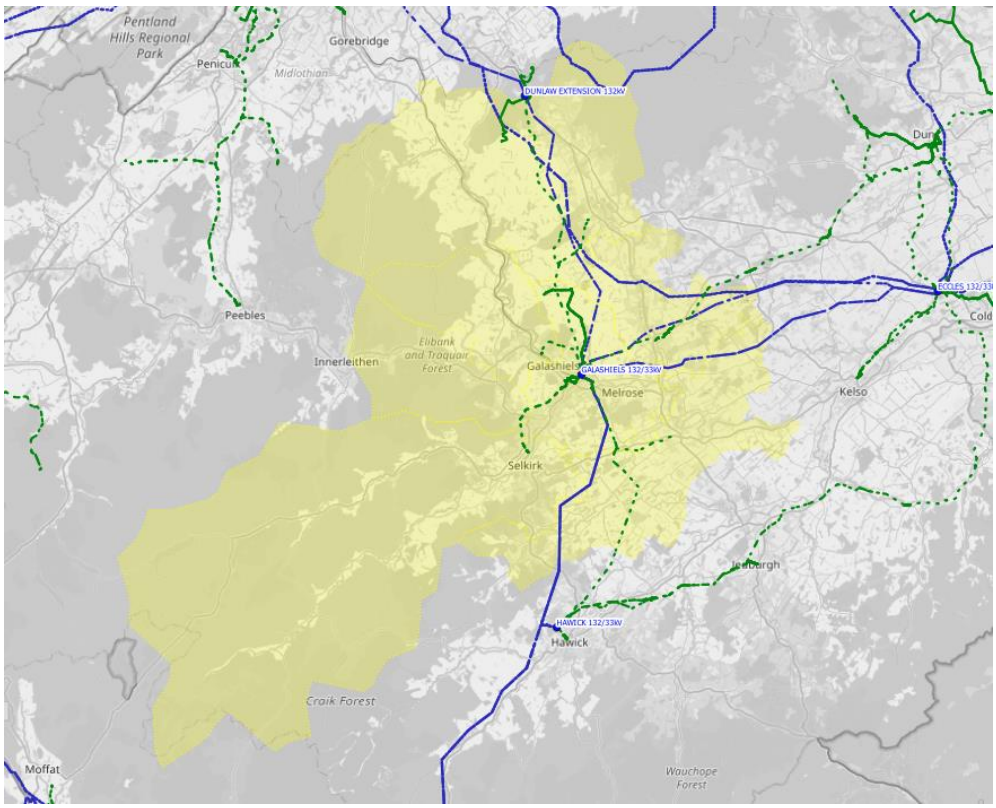
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Erskine	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Erskine For details see: EJP	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.26 Galashiels



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 21,000 customers in Netherdale, Yair Bridge, Selkirk, Glendinning Terrace, Lauder, Earlston (Borders) and surrounding areas.

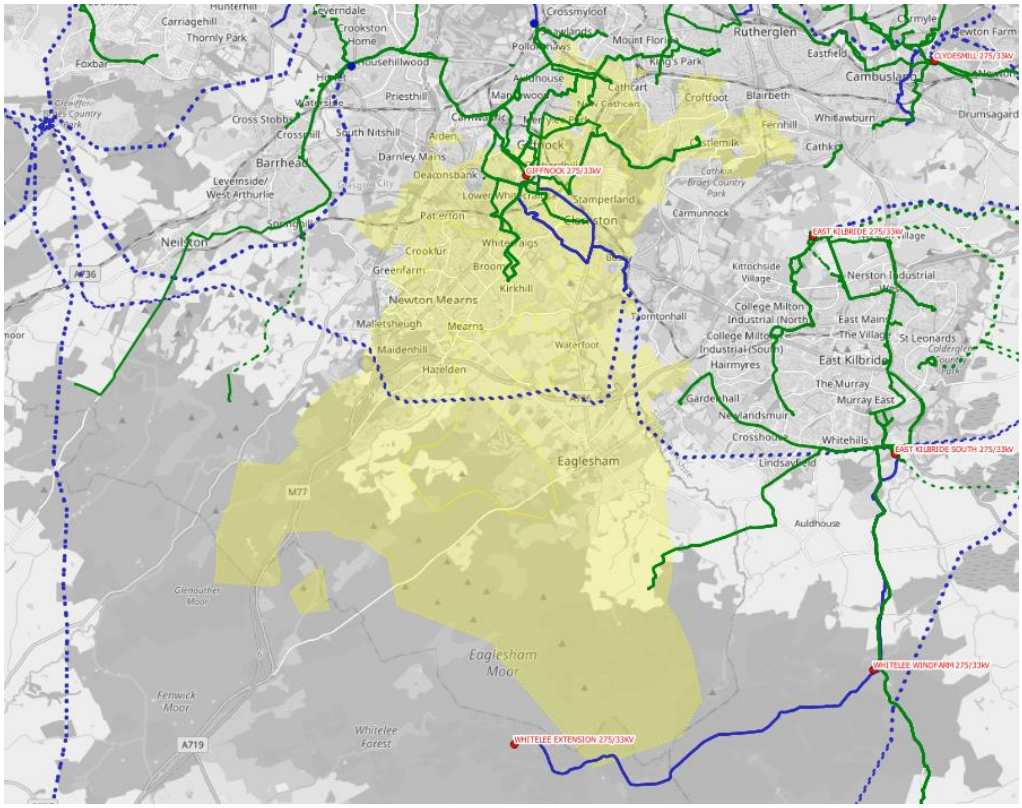
Summary	**Number of Interventions and Schemes**	**EHV**	3*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		7.5
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Yair Bridge	Security of Supply		**Yair Bridge Primary Reinforcement** New EHV circuit to secure Innerleithen demand For details see: **EJP**	-	7.5	2025/26	Planned
	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2025/26	Planned
Galashiels Grid	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2024/25	Planned

*Could increase generation hosting capacity.

6.27 Giffnock

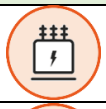
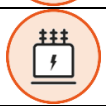


This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 62,000 customers in Castle, Berryhill Road, Castlemilk, Clarkston, Newlands, Burnfield, Langside and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1
		HV	2*
	Capacity Added (MVA)		-
	Flexibility Services (MW)		12.6

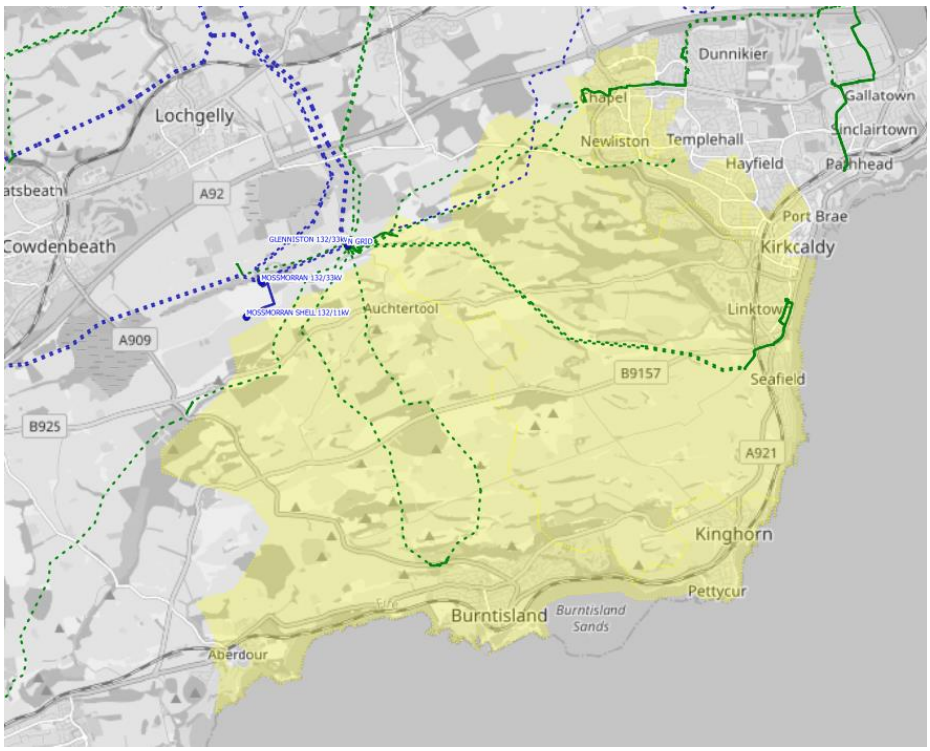
*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Castle Primary	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	12.6	-	2023/24 to 2027/28	Planned

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Clarkston Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2024/25	Planned
Burnfield Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2027/28	Planned

*Could increase generation hosting capacity.

6.28 Glenniston



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 16,000 customers in Burntisland, Raith, Linton Lane, Cluny Road and some neighbouring areas.

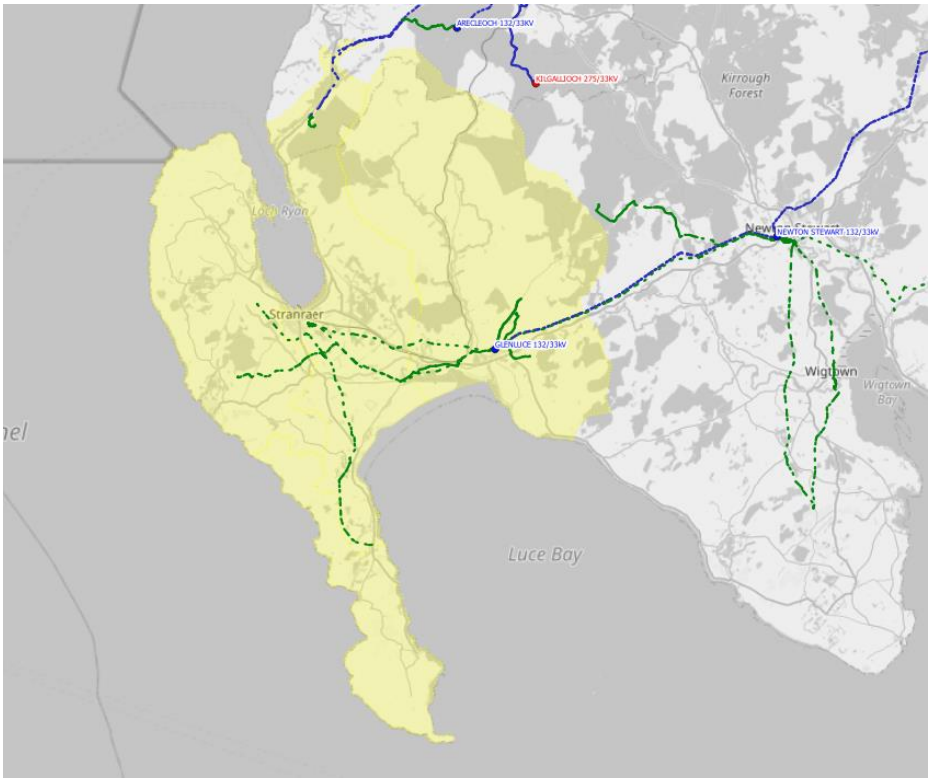
Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Raith Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.29 Glenluce

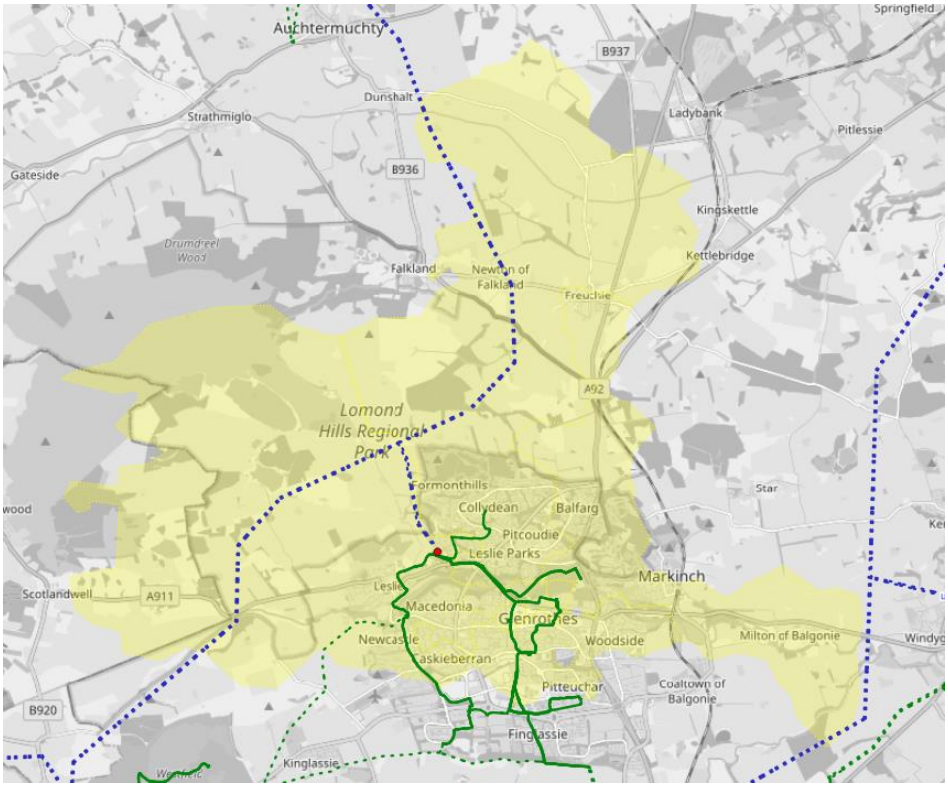


This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 10,000 customers in Glenluce. Stranraer, Auchneel, Barrhill and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	2
		HV	-
	Capacity Added (MVA)		7.8
	Flexibility Services (MW)		5.8

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Stranraer Primary	Voltage		**Stranraer Primary Reinforcement** ±7.5MVAr STATCOM at Stranraer primary For details see: EJP	-	7.8	2027/28	Planned
		SU	**Stanraer** Flexibility services to manage the network risk during delivery of reinforcement For details see: EJP	5.8	-	2023/24 to 2027/28	Planned

6.30 Glenrothes

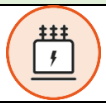


This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 19,000 customers in Collydene, Glenwood, Queensway, Warout Road and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	2
		HV	1*
	Capacity Added (MVA)		2.0
	Flexibility Services (MW)		5.2

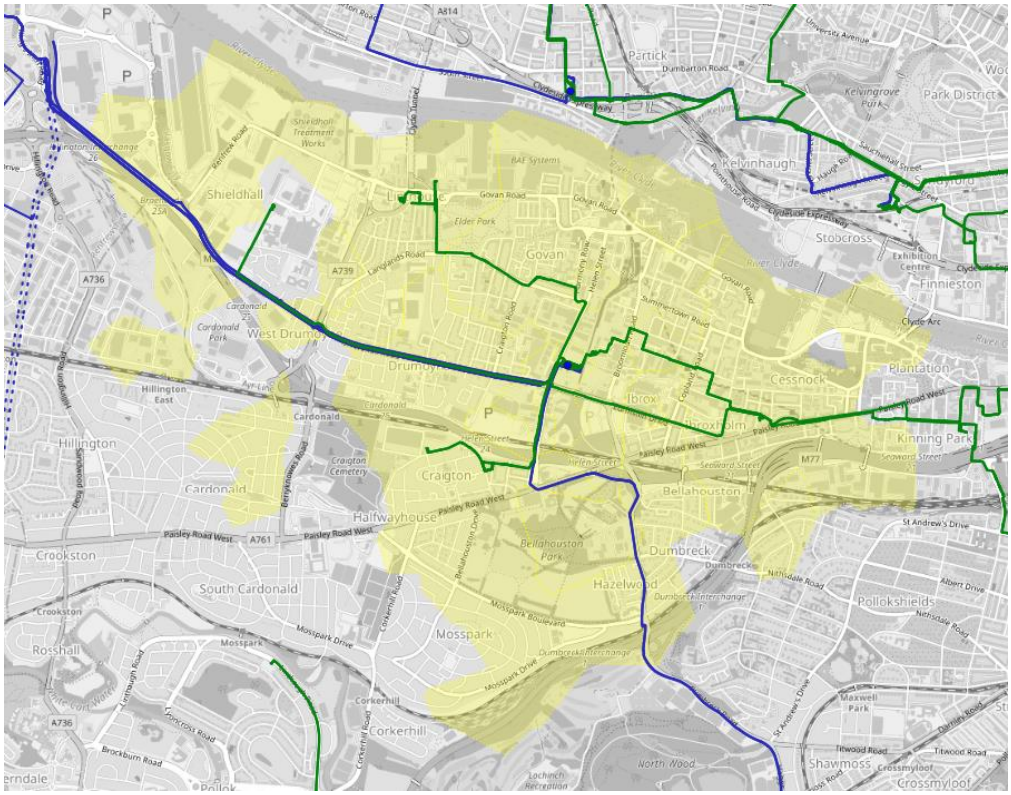
*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Warout Road Primary	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	5.2	-	2023/24 to 2027/28	Planned
Queensway Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	2.0	2024/25	Planned

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Queensway Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.31 Govan



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 16,000 customers in Elizabeth Street, Cardonald, Linthouse, Helen Street and some neighbouring areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	1
	Capacity Added (MVA)		21.0
	Flexibility Services (MW)		-

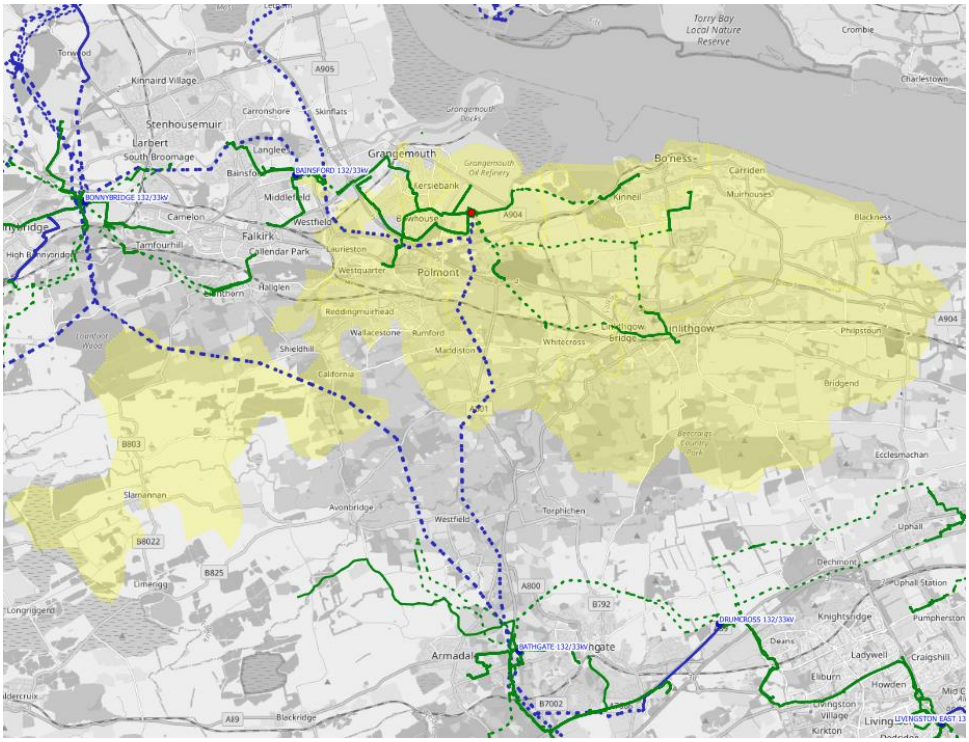
*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Govan GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Govan For details see: EJP	-	*	2025/26	Planned

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Admiral St, Elizabeth St & St Andrews Cross	Thermal		**Govan - St. Andrews Cross 6.6kV Upgrade** Voltage uprating of Govan to 11kV. Uprating of Admiral St/Elizabeth St & removal of St Andrews Cross primary substations For details see: **EJP**	-	21.0	2026/27	Planned

6.32 Grangemouth



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 33,000 customers in Boness Kinneil, Manuel, Linlithgow, Gauze Road, Wholeflats, Zetland Park, Polmont and surrounding areas.

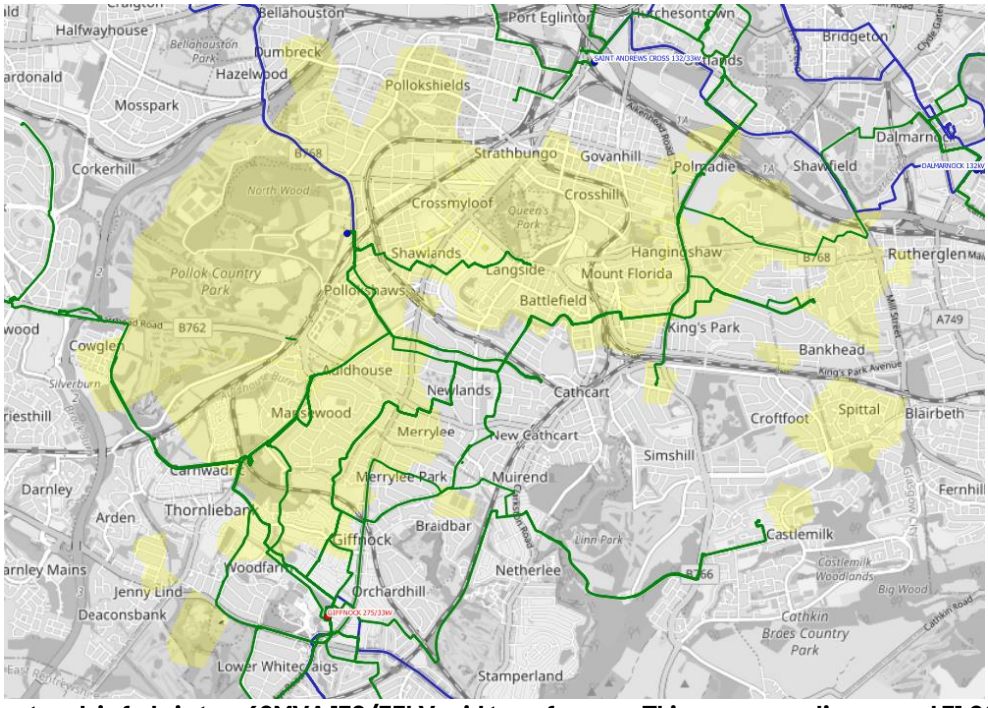
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Polmont Primary	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Polmont For details see: EJP	-	*	2024/25	Planned

*Could increase generation hosting capacity.

6.33 Haggs Road



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 31,000 customers in Haggs Road, Langside, Westfield Ave and surrounding areas.

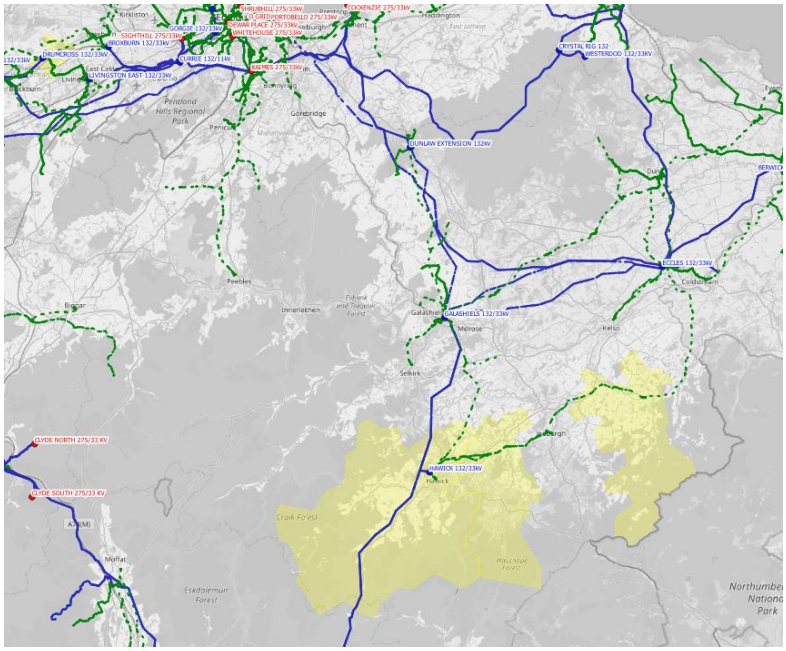
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Haggs Road GSP	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.34 Hawick



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 14,000 customers in Commercial Road, Denholm, Deans Close, Morebattle and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	3*
		HV	1*
	Capacity Added (MVA)		8.3
	Flexibility Services (MW)		3.2

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Hawick GSP	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2025/26	Planned

*Could increase generation hosting capacity.

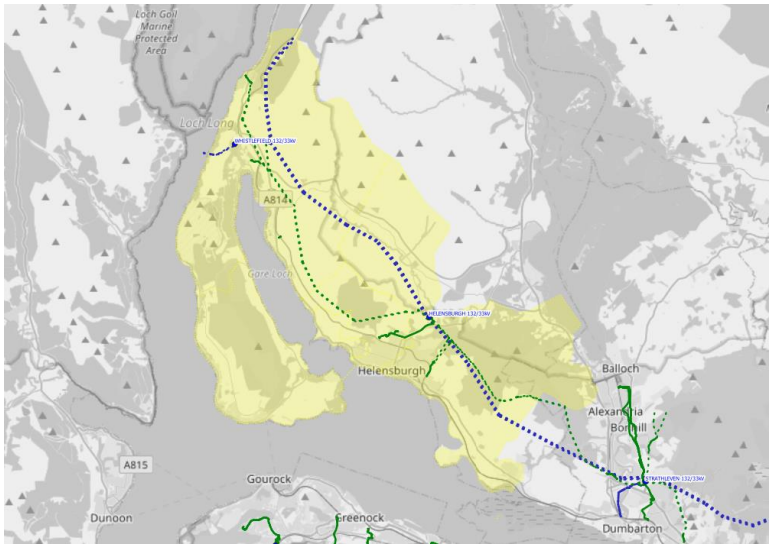
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Deans Close	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace Transformer(s)	-	*	2024/25	Planned
Commercial Road Primary	Thermal		**33kV Circuit Upgrades** Uprate sections of 33kV circuit supplying Commercial Road Primary For details see: EJP	-	8.3	2027/28	Planned
		SU	Flexibility services to manage the network risk during delivery of reinforcement For details see: EJP	3.2	-	2023/24 to 2027/28	Planned

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Commercial Road	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned

*Could increase generation hosting capacity.

6.35 Helensburgh



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 12,000 customers in Woodend, Garelochhead, Finnart, Craigendoran and surrounding areas.

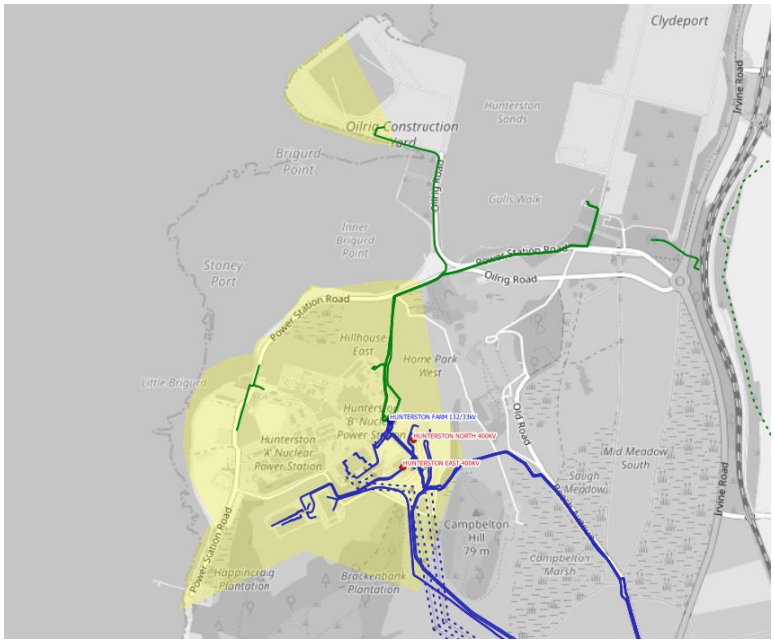
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Helensburgh GSP	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2024/25	Planned

*Could increase generation hosting capacity.

6.36 Hunterston Farm



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies 2 customers in Hunterston (Primary).

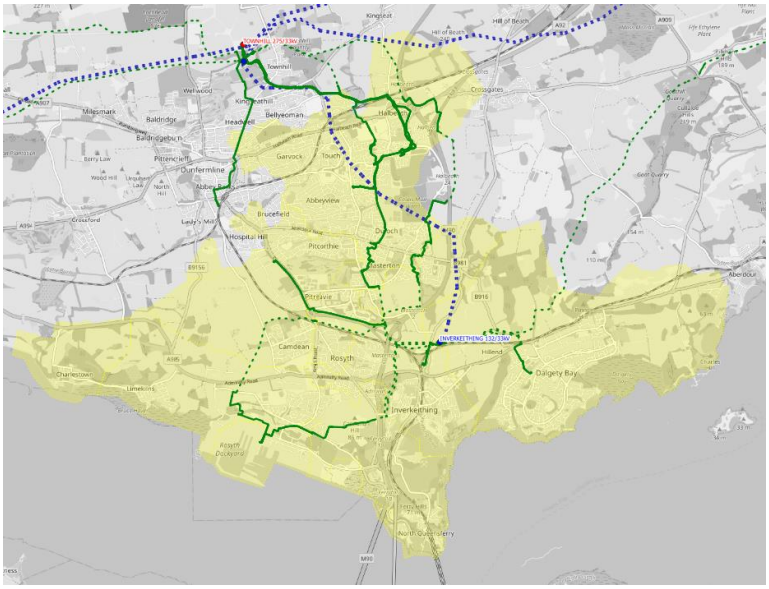
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Hunterston Farm GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Hunterston Farm For details see: EJP	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.37 Inverkeithing



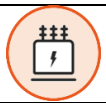
This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 28,000 customers in Dalgety, Burnside, Castlandhill, Pitreavie, Calais and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	3*
		EHV/HV	2*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		8.3

*Could increase generation hosting capacity.

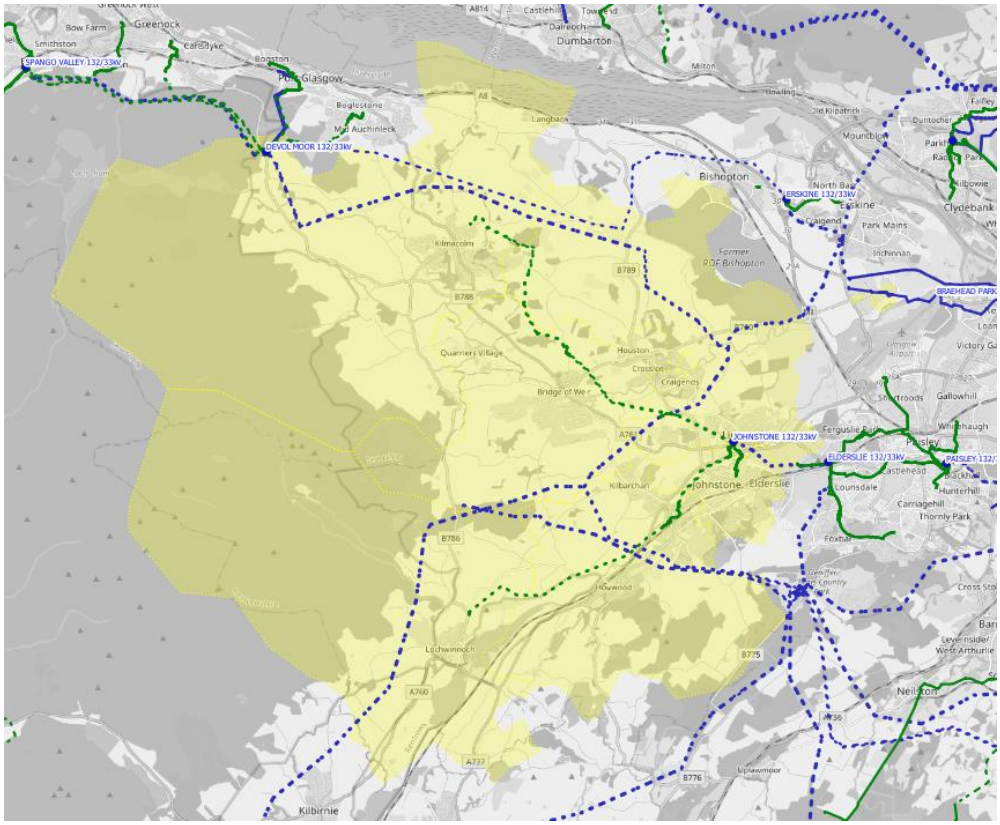
EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Castlandhill Primary/Pitreavie Primary	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	3.5	-	2025/26 to 2027/28	Planned
Inverkeithing GSP	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned
Calais Primary	Thermal		**Calais Primary Reinforcement** Install a 3-panel board switching station offline, 33kV cable transfer and removal of overhead line assets	-	*	2024/25	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Calais Primary	Thermal	 SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	4.8	-	2026/27 to 2027/28	Planned
Castlandhill	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2025/26	Planned

*Could increase generation hosting capacity.

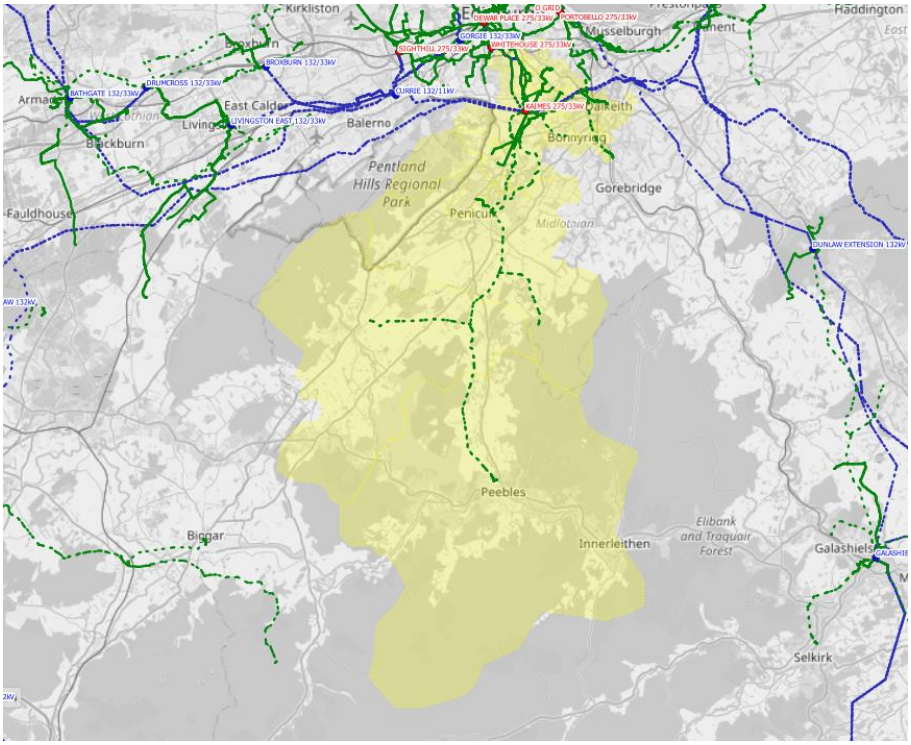
6.38 Johnstone



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 27,000 customers in Johnstone (Primary), Ardgour Drive, Milliken, Lochwinnoch, Girthill, Kilmacolm and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

6.39 Kaimes



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 53,000 customers in Little France, Poltonhall, Lugton, Kings Buildings, Bush Estate, Frogston Road East, Burghlee, Penicuik, Loanstone, West Linton, Kingsland and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	4
		EHV/HV	2*
		HV	1*
	Capacity Added (MVA)		30.4
	Flexibility Services (MW)		67.8

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Kaimes GSP	Thermal		**Kaimes GSP Reinforcement** New 33kV circuits to reconfigure Kings Buildings and Lugton primary substation to be supplied from Whitehouse GSP For details see: DNOA and EJP	-	30.4	2026/27	Planned
		SU	**Kaimes GSP** Flexibility services to manage the network risk during delivery of reinforcement For details see: DNOA and EJP	17.8	-	2023/24 to 2025/26	Planned
		SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	29.2	-	2026/27 to 2027/28	Planned
Kingsland - West Linton – Loanstone	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	10.1	-	2023/24 to 2027/28	Planned

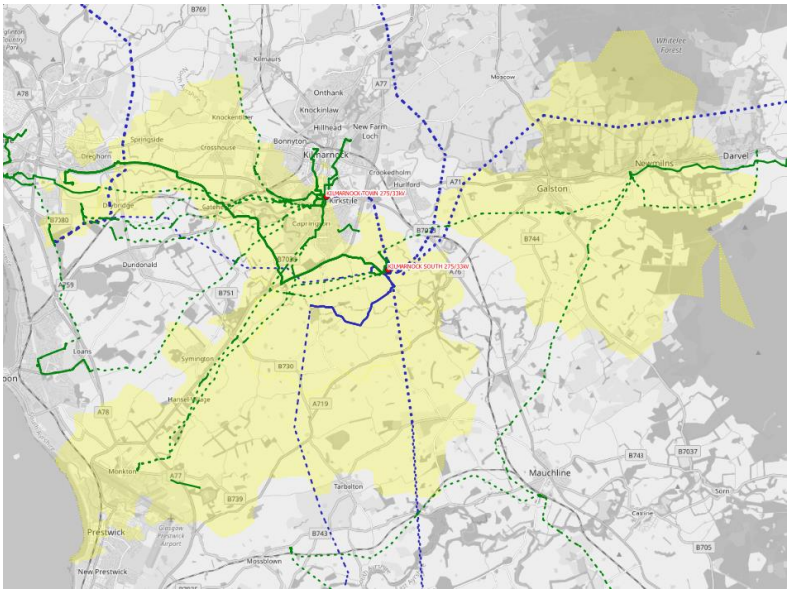
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Kingsland Primary	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	10.7	-	2023/24 to 2027/28	Planned
Loanstone Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2024/25	Planned

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Kings Buildings	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned

*Could increase generation hosting capacity.

6.40 Kilmarnock South



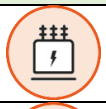
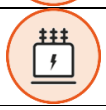
This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 10,000 customers in Kilmarnock Main, Riverside, Monkton, Newmilns and some neighbouring areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	2
		HV	1
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

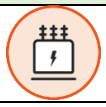
*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Kilmarnock South GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Kilmarnock For details see: EJP	-	*	2024/25	Planned

*Could increase generation hosting capacity.

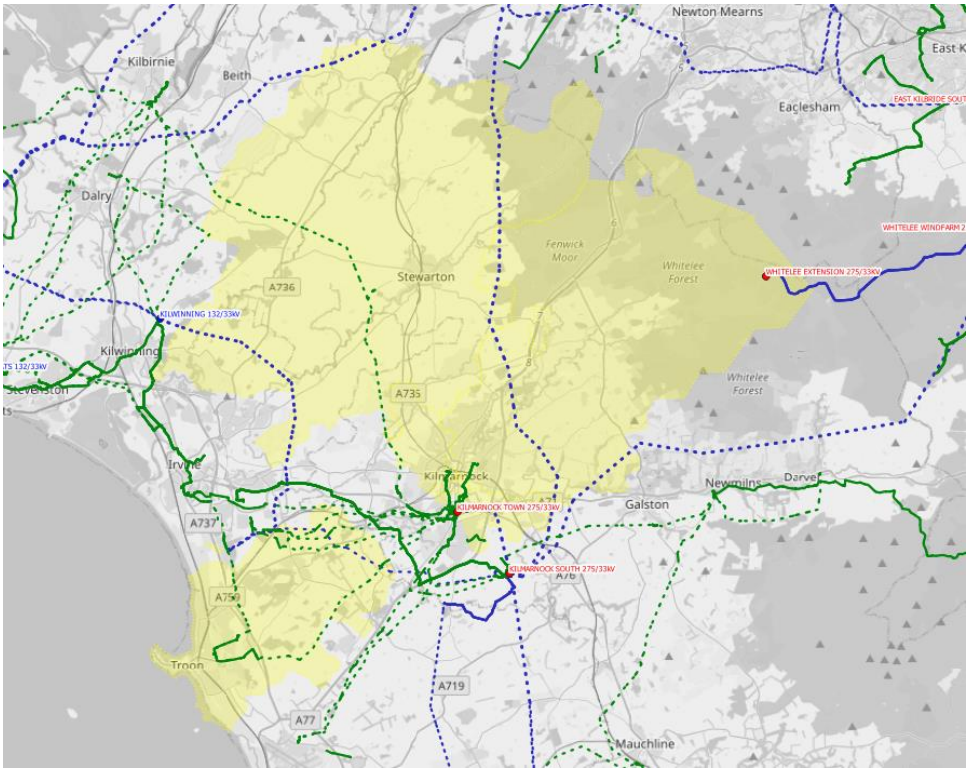
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Monkton Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2026/27	Planned
Newmilns Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2025/26	Planned

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Monkton Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2027/28	Planned

*Could increase generation hosting capacity.

6.41 Kilmarnock Town



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 45,000 customers in Queens Drive, Grassyards, Kilmarnock Main, Langlands Street, Troon, Stewarton and surrounding areas.

Summary	**Number of Interventions and Schemes**	**275kV/EHV**	1*
		EHV	-
		EHV/HV	2
		HV	-
	Capacity Added (MVA)		4.2
	Flexibility Services (MW)		7.1

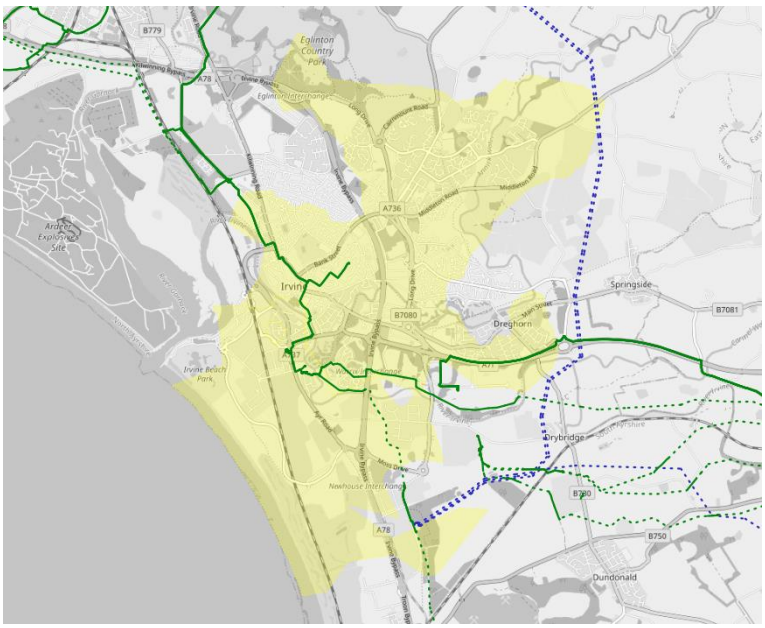
*Could increase generation hosting capacity.

275kV/EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Kilmarnock Town GSP	Fault Level		**New Transmission Capacity Charges (NTCC)** Replace both 275/33kV 120MVA transformers with dual wound 60+60MVA Units. For details see: EJP	-	*	2024/25	Delivery

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Troon Primary	Thermal		**33kV Circuit upgrades** Uprate sections of 33kV circuit supplying Troon Primary For details see: **EJP**	-	4.2	2027/28	Planned
		 SU	Flexibility services to manage the network risk during delivery of reinforcement For details see: **EJP**	7.1	-	2023/24 to 2027/28	Planned

6.42 Kilwinning

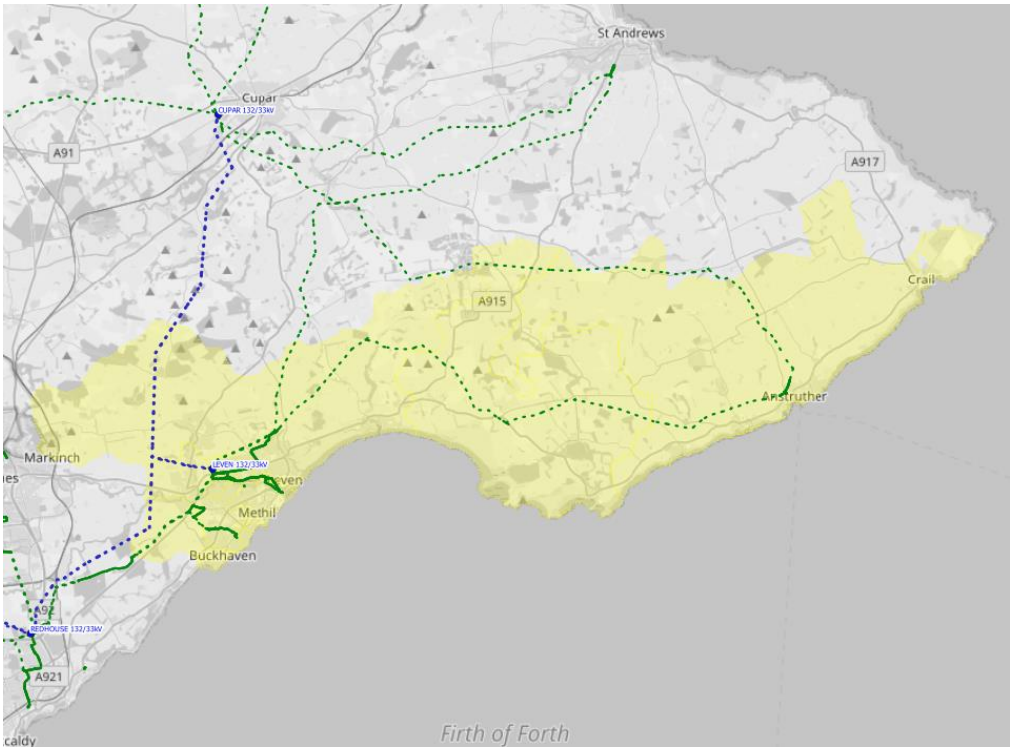


This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 11,000 customers in Dalrymple Drive, Irvine and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		27.4

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Irvine Primary	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	27.4	-	2023/24 to 2027/28	Planned

6.43 Leven



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 26,000 customers in Leven, Levenbank, Durie House, Colinsburgh, Anstruther, Methilhill and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	4
		HV	-
	Capacity Added (MVA)		30.0
	Flexibility Services (MW)		7.5

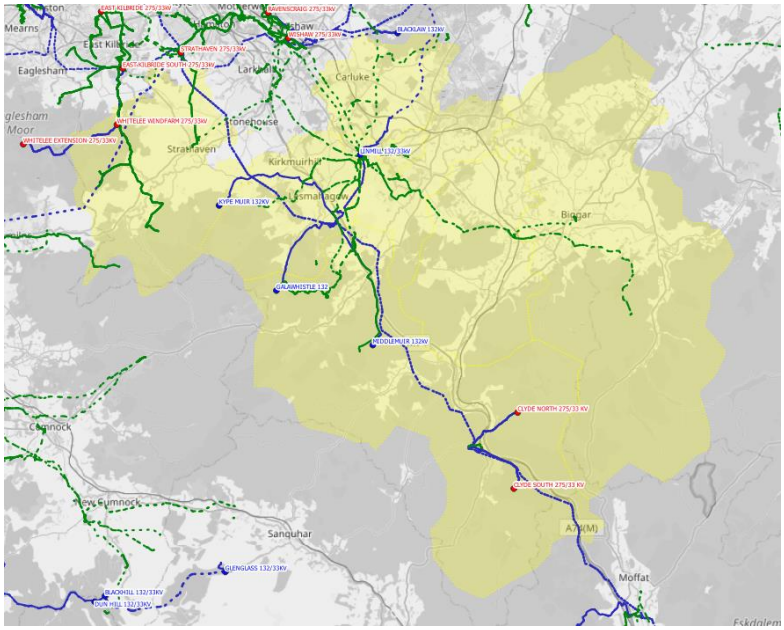
*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Leven GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Leven For details see: **EJP**	-	*	2023/24	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Leven Primary	Fault Level		**Leven Primary Fault Level Mitigation** New 33/11kV 2 x 20MVA primary substation at Leven supplied from Leven GSP For details see: EJP	-	20.0	2026/27	Planned
Levenbank Primary	Thermal		**Levenbank Primary Reinforcement** Replacement of existing Levenbank 33/11kV 2x 10MVA transformers with 20MVA units For details see: EJP	-	10.0	2024/25	Planned
		 SU	Flexibility services to manage the network risk during delivery of reinforcement For details see: EJP	7.3	-	2023/24 to 2027/28	Planned
Anstruther Primary	Thermal	 SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	0.2	-	2027/28	Planned

6.44 Linnmill

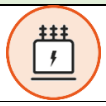


This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 28,000 customers in Lesmahagow, Douglas West, Lanark, Corra Linn, Biggar, Braidwood, Symington and surrounding areas.

		132kV/EHV	1
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		60.0
	Flexibility Services (MW)		-

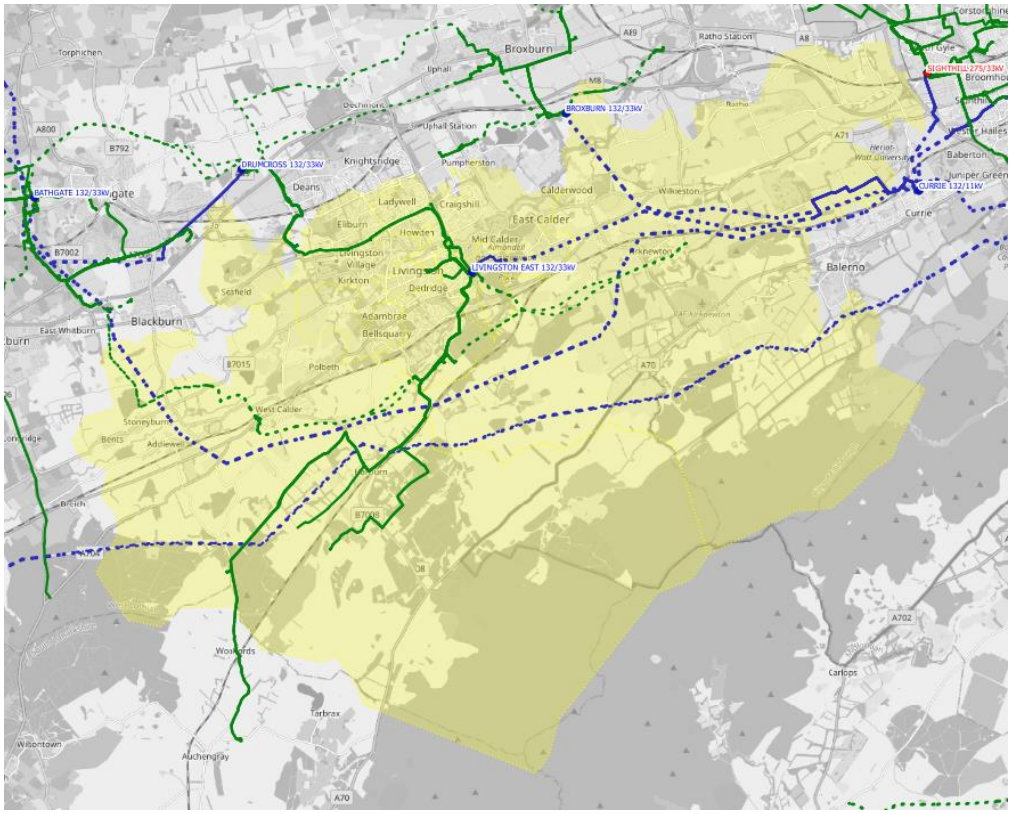
*Could increase generation hosting capacity.

132kV/EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Lesmahagow GSP	Fault Level		**New Lesmahagow GSP** New 132/33kV 2 x 60MVA Lesmahagow grid supply point into Coalburn 132kV transmission network For details see: EJP	-	60.0	2024/25	Planned

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Douglas West Primary	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned

*Could increase generation hosting capacity.

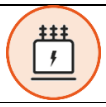
6.45 Livingston East



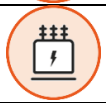
This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 29,000 customers in Dedridge, Cousland, Almondvale, Kirknewton, West Calder, Kirkton and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	3*
		HV	2*
	Capacity Added (MVA)		10.0
	Flexibility Services (MW)		12.3

*Could increase generation hosting capacity.

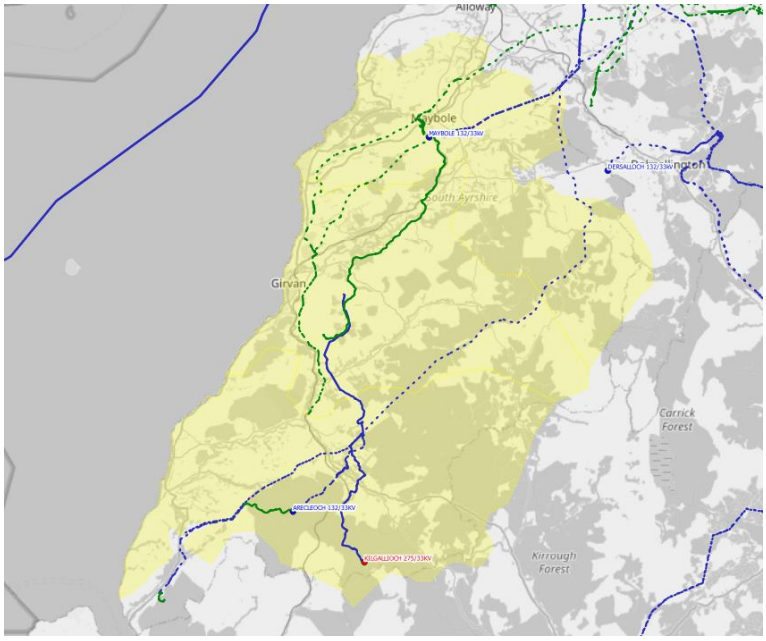
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Kirknewton Primary	Security of Supply		**Kirknewton Primary Reinforcement** Replace the two 10MVA transformers with 20MVA units and provide a dedicated connection to Kirkbank via two new 33kV cable circuits For details see: **EJP**	-	10.0	2024/25	Planned
		 SU	Flexibility services to manage the network risk during delivery of reinforcement	12.3	-	2023/24 to 2027/28	Planned
Cousland Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2027/28	Planned

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Kirknewton Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2023/24	Delivery
Cousland Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2024/25	Planned

*Could increase generation hosting capacity.

6.46 Maybole



This section of network is fed via two 30MVA 132/33kV grid transformers. This group supplies around 11,000 customers in Maybole (Primary), Girvan, Pinwherry and surrounding areas.

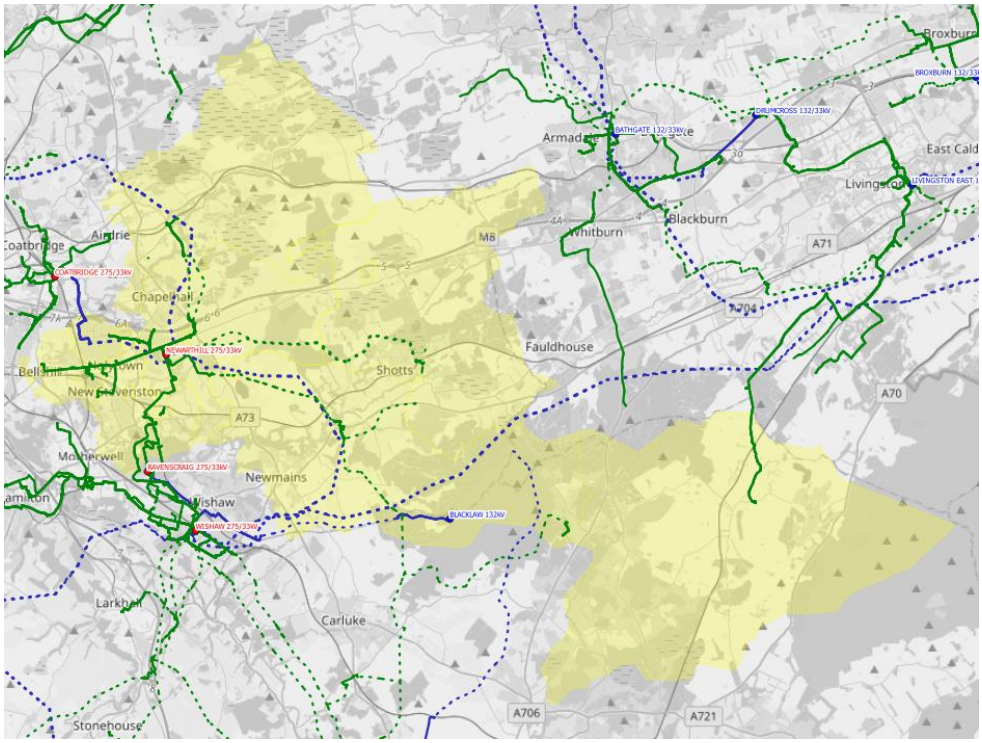
Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	2*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		0.6

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Girvan Primary	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Girvan For details see: EJP	-	*	2025/26	Planned
Maybole Primary	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	0.6	-	2027/28	Planned

*Could increase generation hosting capacity.

6.47 Newarthill



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 43,000 customers in Coddington Cres, Newhouse, Bellshill (Primary), Towers Road, Shotts, Carfin, Chapelhall, Allanbank and surrounding areas.

Summary	**Number of Interventions and Schemes**	**275kV/EHV**	1*
		EHV	-
		EHV/HV	1*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

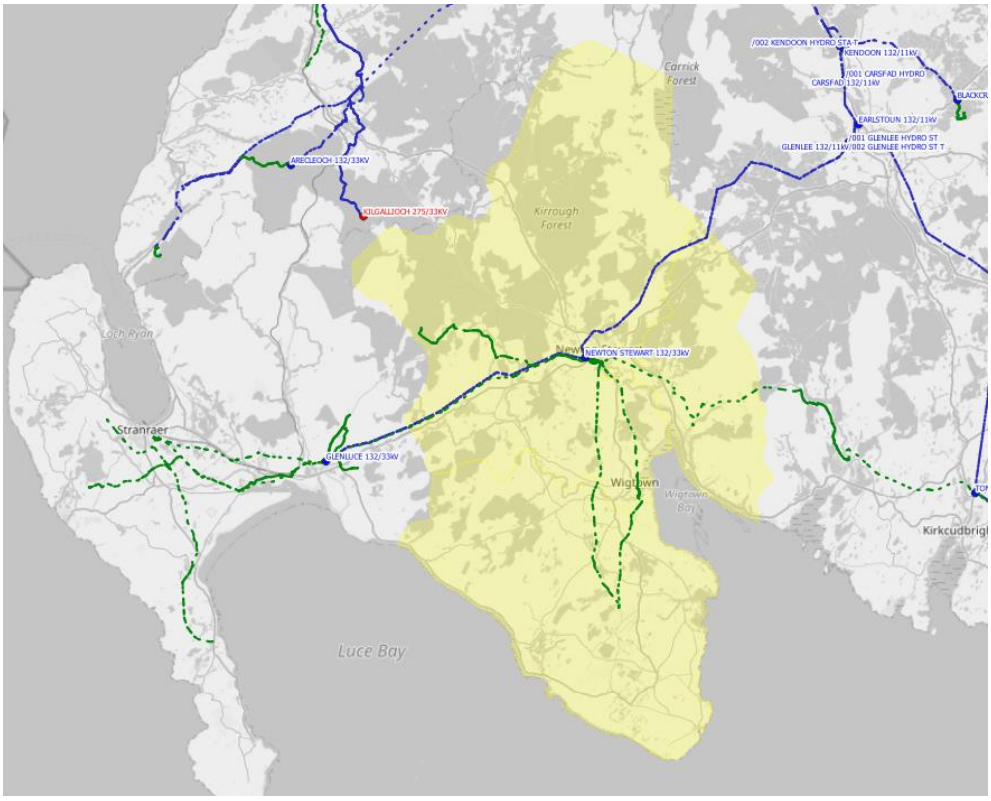
275kV/EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Newarthill GSP	Fault Level		**New Transmission Capacity Charges (NTCC)** Installation of bus-section, current limiting reactor. For details see: EJP	-	*	2024/25	Delivery

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Newhouse	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Newhouse For details see: **EJP**	-	*	2024/25	Planned

*Could increase generation hosting capacity.

6.48 Newton Stewart

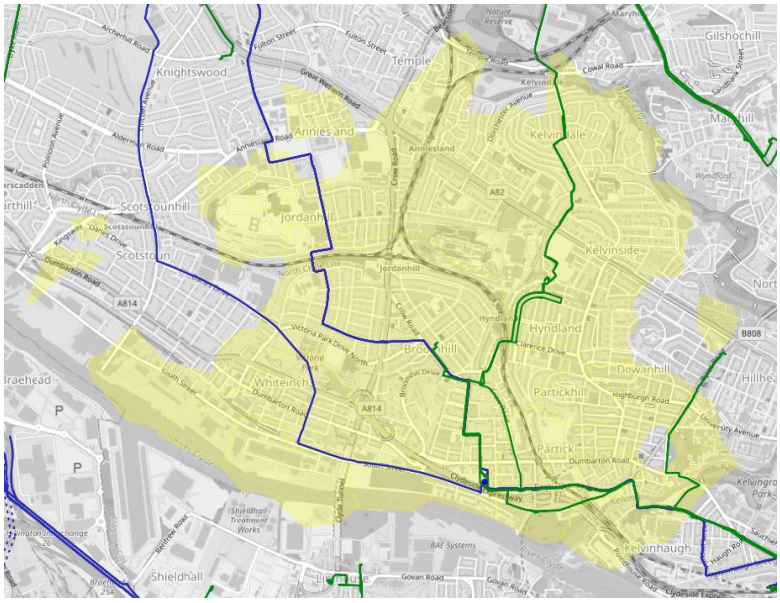


This section of network is fed via one 60MVA 132/33kV grid transformer. This group supplies around 7,000 customers in Newton Stewart, Sorbie, Creetown and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1
		HV	-
	Capacity Added (MVA)		14.0
	Flexibility Services (MW)		-

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Newton Stewart	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replacing the primary substation 12/24MVA 33/11kV transformers	-	14.0	2023/24	Delivery

6.49 Partick



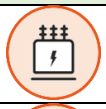
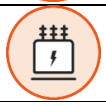
This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 26,000 customers in Old Dumbarton Road, Randolph Road, Kelvinside, Meadow Road and some neighbouring areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1*
		HV	2*
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

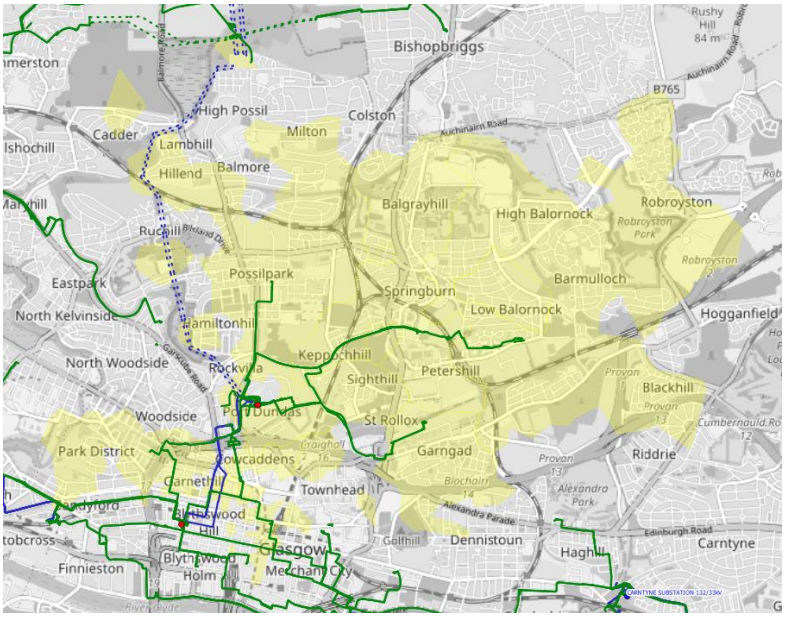
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Meadow Road Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Meadow Road Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2023/24	Delivery
Kelvinside Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.50 Port Dundas



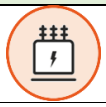
This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 28,000 customers in Denmark Street, Petershill Road, Flemington Street, Charles Street, Grant Street, Dundas Street and surrounding areas.

Summary	**Number of Interventions and Schemes**	**275kV/EHV**	1*
		EHV	-
		EHV/HV	1*
		HV	1*
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

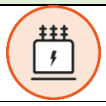
*Could increase generation hosting capacity.

275kV/EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Port Dundas GSP	Fault Level		**New Transmission Capacity Charges (NTCC)** Replace a single 275/33kV 120MVA standard impedance transformer with a higher impedance unit. For details see: EJP	-	*	2024/25	Delivery

*Could increase generation hosting capacity.

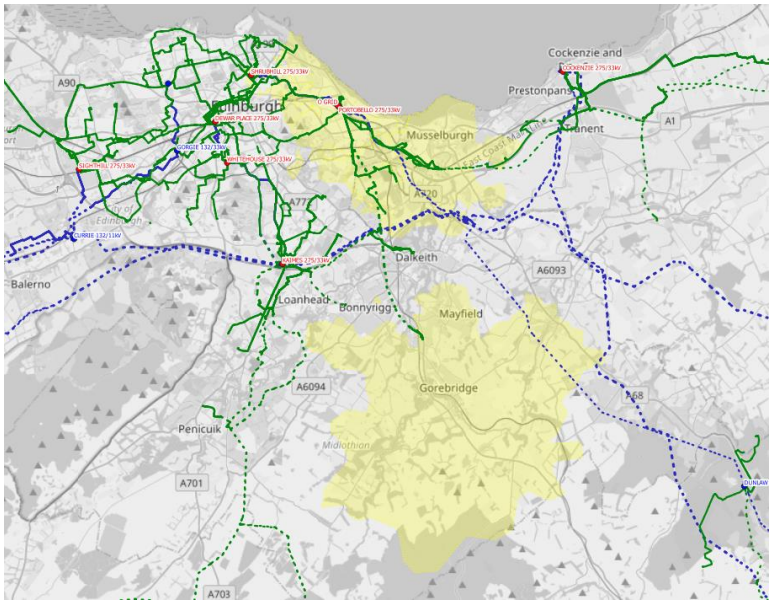
EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Flemington Street Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Flemington Street Primary	Asset Mod.		**HV Switchgear Primary Condition Modernisation Programme** Replace Switchgear	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.51 Portobello



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 60,000 customers in Lower London Road, Lochend Quadrant, Portobello, Niddrie, Lady Victoria, Monktonhall and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	2
		EHV/HV	6
		HV	-
	Capacity Added (MVA)		42.0
	Flexibility Services (MW)		47.0

*Could increase generation hosting capacity.

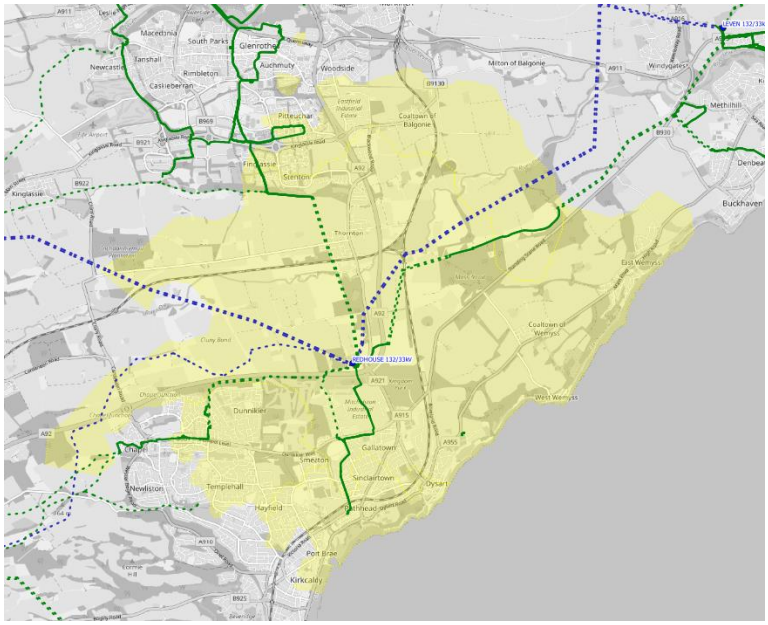
EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Portobello GSP	Fault Level		**Switchgear Reinforcement** Replacement of 33kV switch board and installation of a bus section reactor and associated control scheme and the rationalisation of the Portobello GSP substation to a standard two section busbar arrangement to resolve the fault level issue	-	*	2027/28	Delivery
	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	11.2	-	2026/27 to 2027/28	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Monktonhall - Tranent	Thermal		**Monkton Hall – Tranent Primary Reinforcement** New 33kV circuits from Cockenzie GSP to supply new 33/11kV 2x 32MVA primary substation at Musselburgh For details see: DNOA and EJP	-	32.0	2027/28	Planned
		SU	**Monkton Hall – Tranent** Flexibility services to manage the network risk during delivery of reinforcement For details see: DNOA and EJP	17.6	-	2023/24 to 2027/28	Planned
Easter Road - Lower London Road - Lochend Quadrant	Security of Supply		**Reinforcement of Single Primary Transformer Sites** Establish double transformer primary substations, to increase security of supply, at interconnected single transformer sites with significant HV customer numbers and legacy protection systems For details see: EJP	-	10.0	2027/28	Planned
		SU	Flexibility services to manage the network risk during delivery of reinforcement For details see: EJP	18.8	-	2023/24 to 2027/28	Planned
Portobello Primary	Fault Level		**Portobello Primary Fault Level Mitigation** Install two new 33/11kV transformers and two new 11kV switchboards to replace the existing legacy rated 11kV switchboard For details see: EJP	-	*	2027/28	Planned
	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	10.6	-	2026/27 to 2027/28	Planned

*Could increase generation hosting capacity.

6.52 Redhouse



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 23,000 customers in Redhouse, Chapel, Birrel Street Wynd, Cluny Road and surrounding areas.

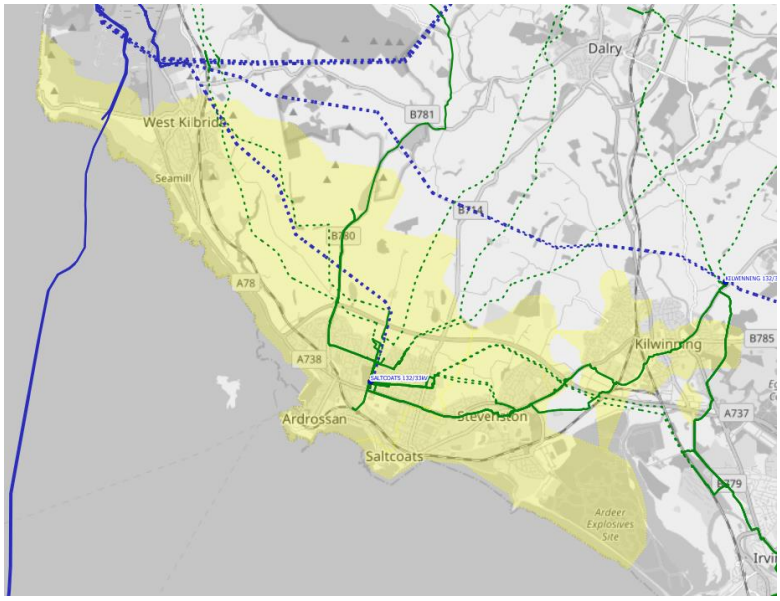
Summary	**Number of Interventions and Schemes**	**EHV**	2*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		11.1

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Redhouse GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Redhouse For details see: DNOA and EJP	-	*	2024/25	Planned
	Thermal	OUSA	**Redhouse GSP Reinforcement** Flexibility Services For details see: DNOA and EJP	11.1	-	2024/25 to 2027/28	Planned

*Could increase generation hosting capacity.

6.53 Saltcoats A



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 25,000 customers in Saltcoats Main, Stevenston, Byrehill and surrounding areas.

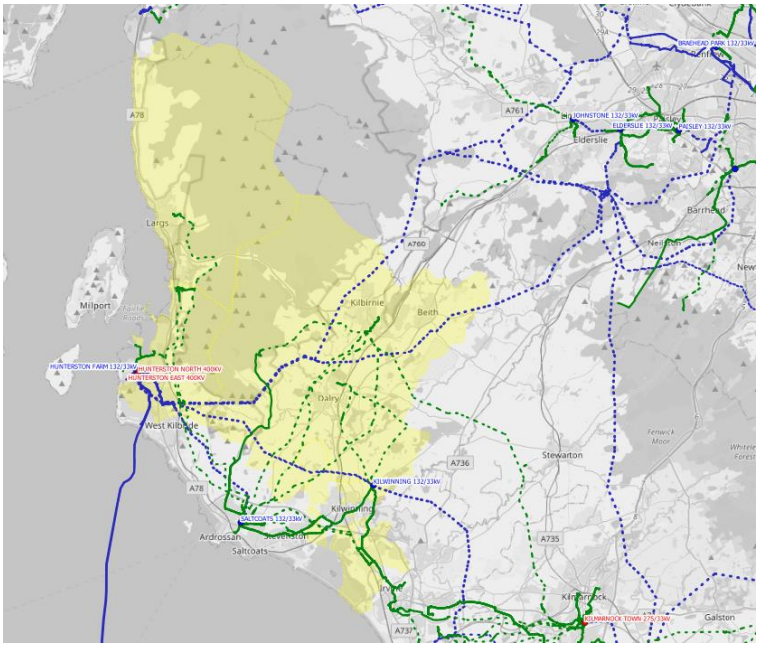
Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	2*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Saltcoats Main Primary	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Saltcoats Main For details see: EJP	-	*	2023/24	Delivery
	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.54 Saltcoats B



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 26,000 customers in Ravenspark, Fairlie, Largs, Kilbirnie and surrounding areas.

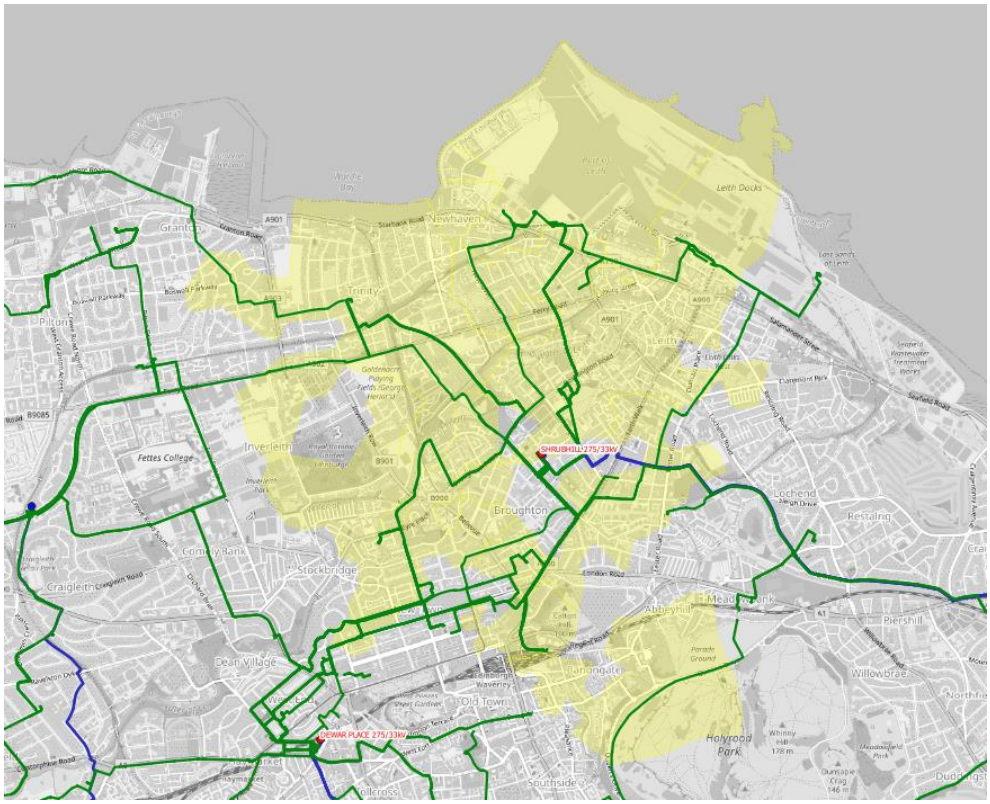
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Saltcoats B GSP	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned

*Could increase generation hosting capacity.

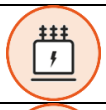
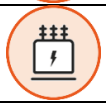
6.55 Shrubhill



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 40,000 customers in Ocean Drive, East Trinity Road, St. James Centre, Bonnington Road, Henderson Row, Calton Road, Easter Road, Annfield, Edinburgh Dock North and some neighbouring areas.

Summary	**Number of Interventions and Schemes**	**EHV**	3*
		EHV/HV	2
		HV	-
	Capacity Added (MVA)		10
	Flexibility Services (MW)		5.1

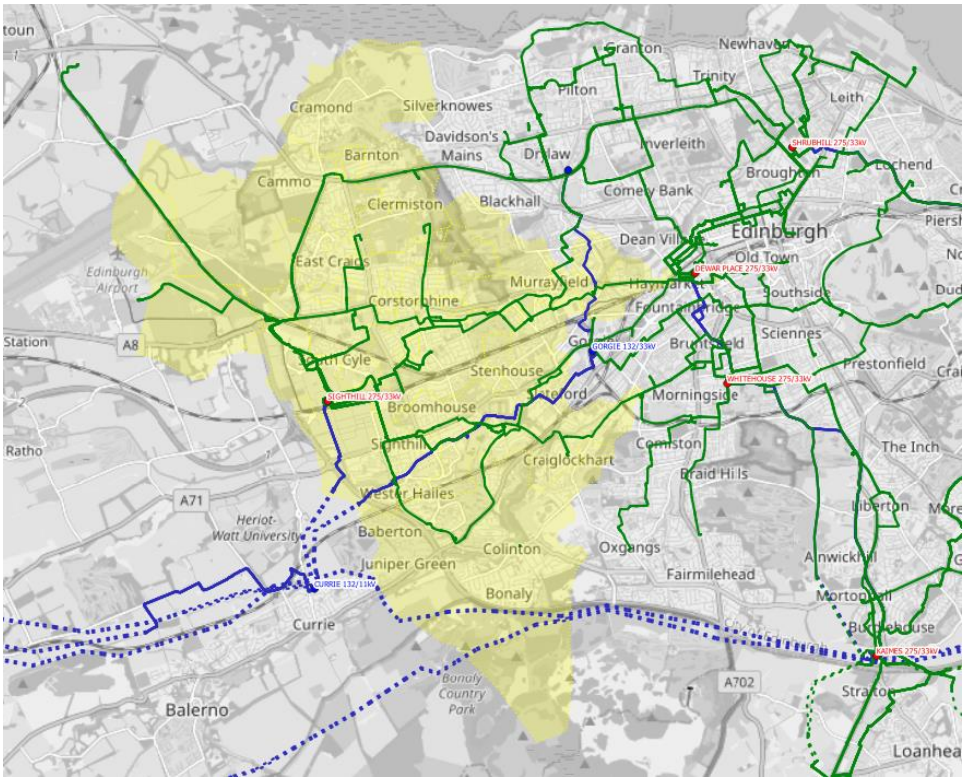
*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Shrubhill GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment and Active Fault Level Monitoring equipment at Shrubhill For details see: EJP	-	*	2024/25	Planned
Annfield Primary	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned
Edinburgh Dock North Primary	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Dispose of Switchgear	-	*	2027/28	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Easter Road - Lower London Road - Lochend Quadrant	Security of Supply		**Reinforcement of Single Primary Transformer Sites** Establish double transformer primary substations, to increase security of supply, at interconnected single transformer sites with significant HV customer numbers and legacy protection systems For details see: EJP	-	10.0	2027/28	Planned
		 SU	Flexibility services to manage the network risk during delivery of reinforcement For details see: EJP	5.1	-	2023/24 to 2027/28	Planned

6.56 Sighthill

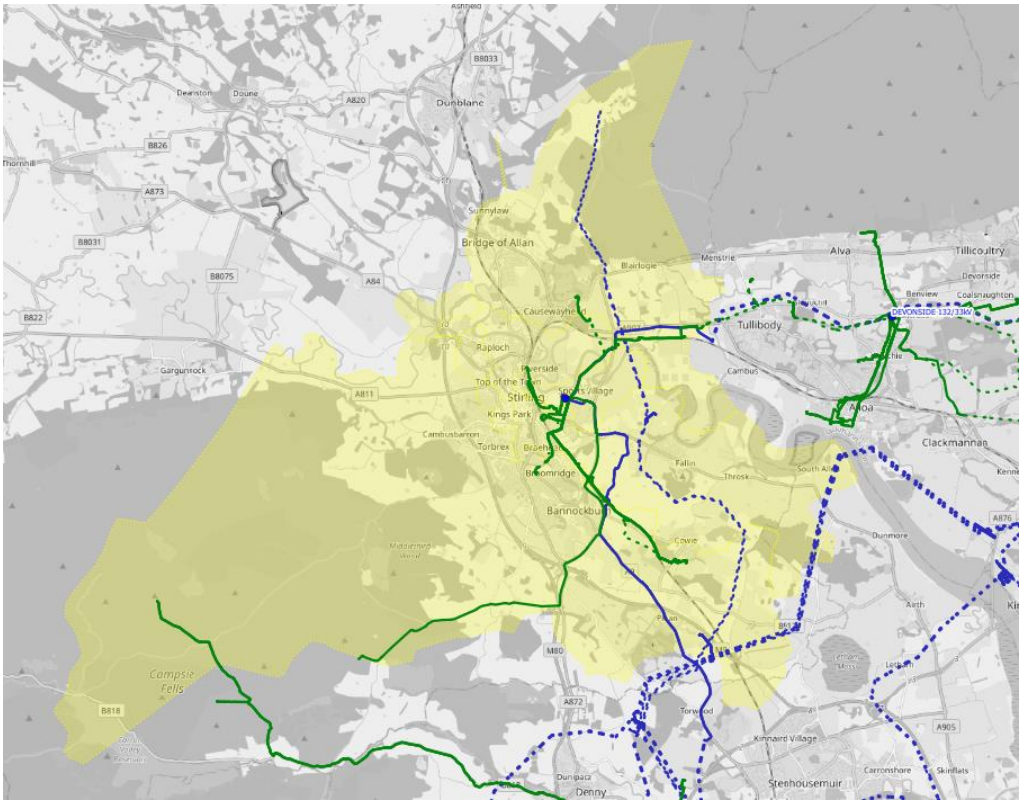


This section of network is fed via two 180MVA 275/33kV super grid transformers. This group supplies around 50,000 customers in South Gyle, Barnton Grove, Sighthill Farm, Roseburn, Gylemuir, Saughton Road North, Barnton Quarry, Colinton North, Balgreen, Rannoch Road, Kingsknowe Road North and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	2
		HV	-
	Capacity Added (MVA)		40.0
	Flexibility Services (MW)		-

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Balgreen Primary	Security of Supply		**Reinforcement of Single Primary Transformer Sites** Establish double transformer primary substations, to increase security of supply, at interconnected single transformer sites with significant HV customer numbers and legacy protection systems For details see: EJP	-	20.0	2027/28	Planned
Roseburn Primary				-	20.0		

6.57 Stirling



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 27,000 customers in Colquhoun Street, St. Ninians, Forth Street, Stirling University, Stirling and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	2
		HV	-
	Capacity Added (MVA)		4.2
	Flexibility Services (MW)		2.3

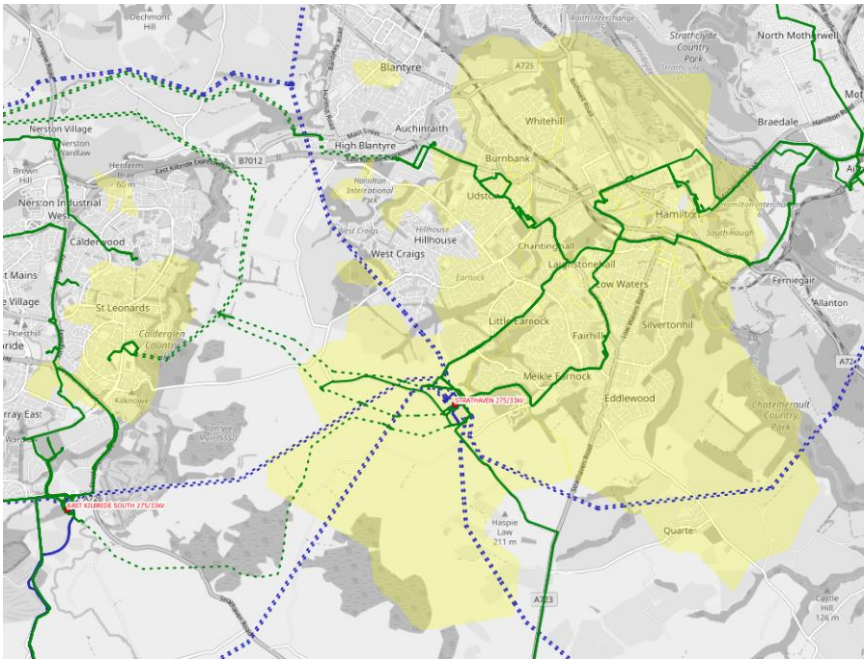
*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Stirling GSP	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2027/28	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
St Ninians Cornhill Primary	Thermal		**33kV Circuit Upgrades** Uprate sections of 33kV circuit supplying St Ninians Cornhill Primary For details see: EJP	-	4.2	2027/28	Planned
		 SU	Flexibility services to manage the network risk during delivery of reinforcement For details see: EJP	2.3	-	2024/25 to 2025/26	Planned

6.58 Strathaven



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 34,000 customers in Neilsland, Strathaven, Leonards Chapel, Burnbank, Hamilton and surrounding areas.

Summary	**Number of Interventions and Schemes**	**275kV/EHV**	1*
		EHV	-
		EHV/HV	2
		HV	-
	Capacity Added (MVA)		2.0
	Flexibility Services (MW)		7.6

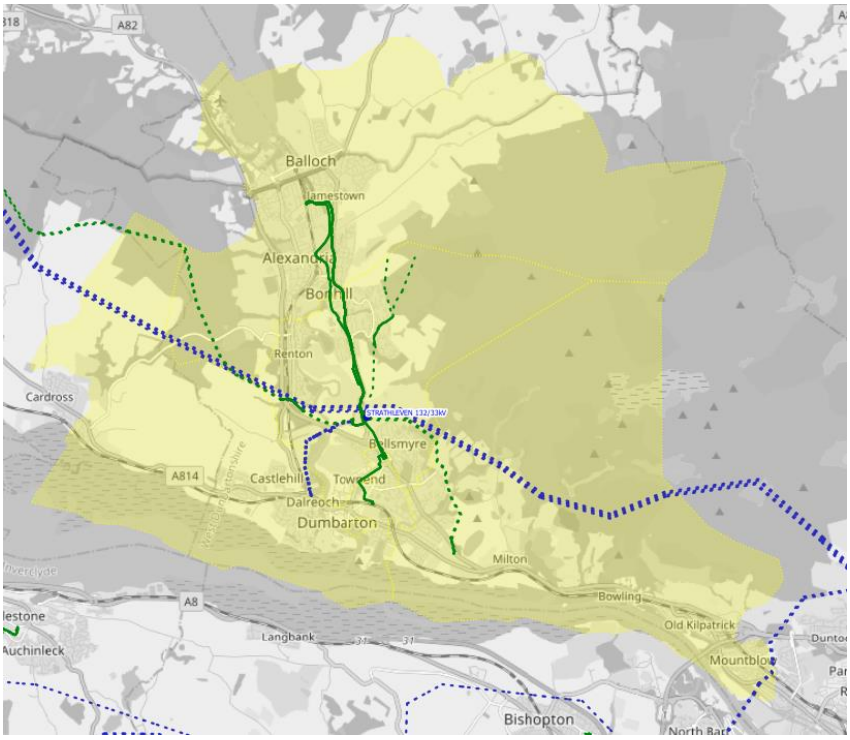
*Could increase generation hosting capacity.

275kV/EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Strathaven GSP	Fault Level		**New Transmission Capacity Charges (NTCC)** Replace a single 275/33kV 120MVA standard impedance transformer with a higher impedance unit. For details see: EJP	-	*	2023/24	Finished

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Hamilton Primary	Thermal		**Hamilton Primary Reinforcement** Upgrade HV feeders and use HV automation for load transfer For details see: **EJP**	-	2.0	2023/24	Delivery
		 SU	**Hamilton Primary** Flexibility services to manage the network risk during delivery of reinforcement For details see: **EJP**	7.6	-	2023/24 to 2027/28	Planned

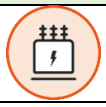
6.59 Strathleven



This section of network is fed via two 90MVA 132/33kV grid transformers. This group supplies around 26,000 customers in Strathleven, Dumbarton, Milton, Balloch and some neighbouring areas.

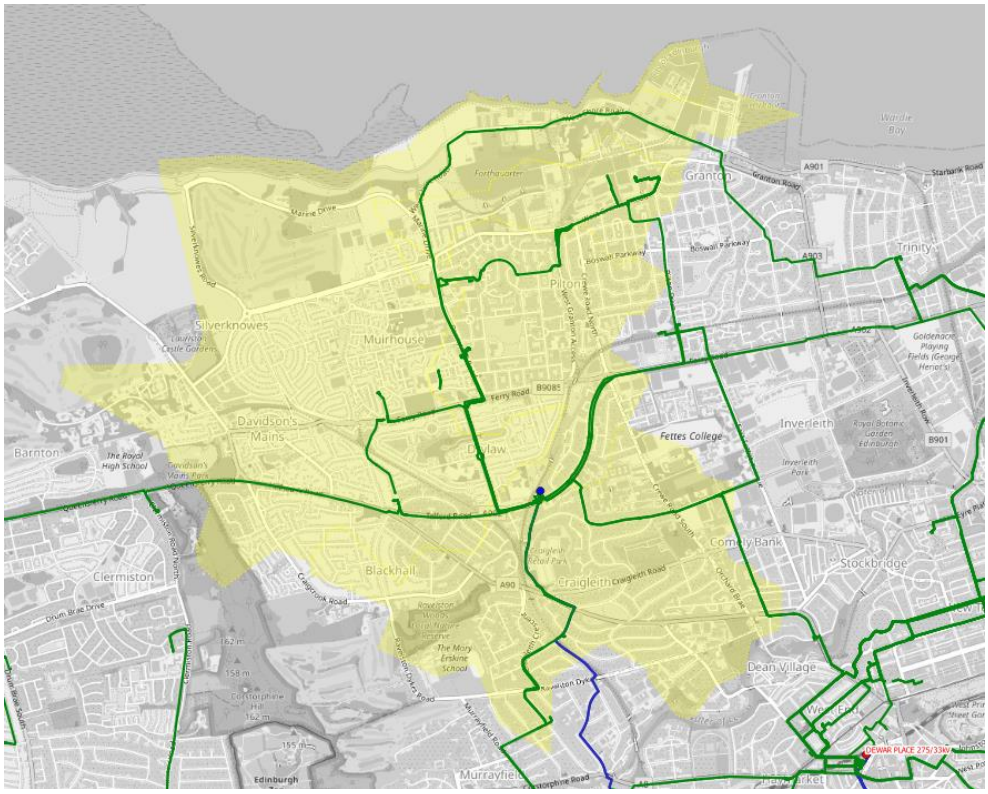
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Strathleven GSP	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.60 Telford Road



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 18,000 customers in Telford Road, Muirhouse Bank, Granton Park Avenue, Pennywell Road and surrounding areas.

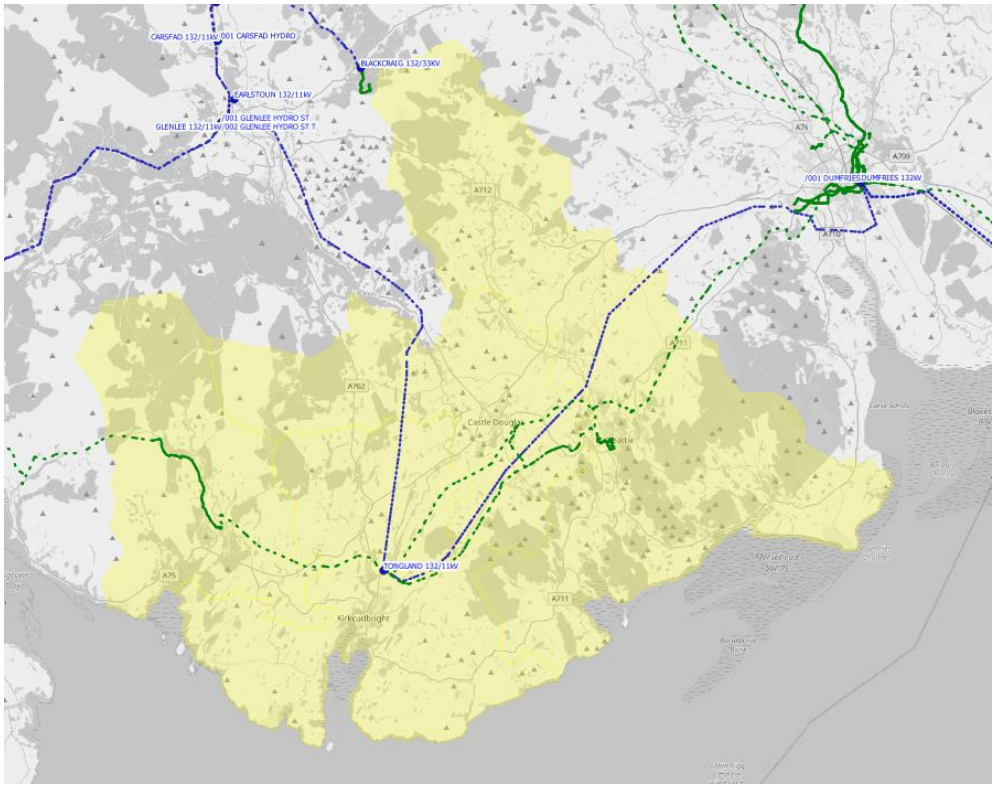
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Telford Road GSP	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2024/25	Planned

*Could increase generation hosting capacity.

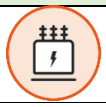
6.61 Tongland



This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 10,000 customers in Castle Douglas, Dalbeattie, Gatehouse and surrounding areas.

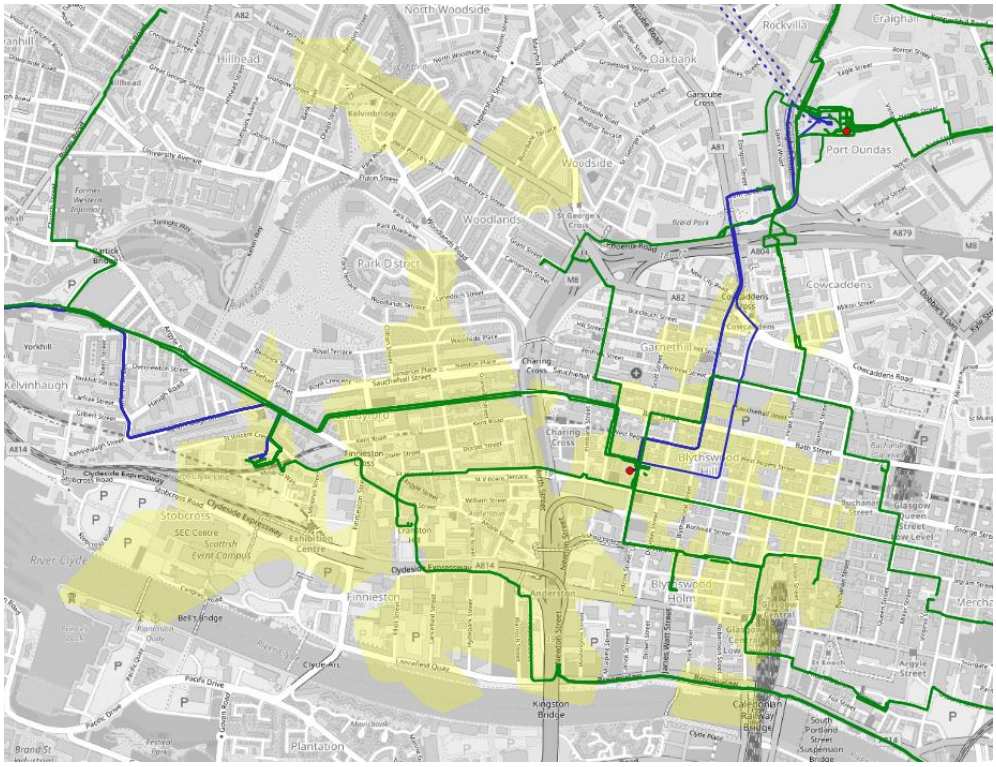
Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Castle Douglas Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2023/24	Delivery

*Could increase generation hosting capacity.

6.62 West George Street



This section of network is fed via a 120MVA 275/33kV SGT and a 90MVA 275/33kV grid transformers. This group supplies around 16,000 customers in Mitchell Street, Elliot Street, West George Street, Grant Street, Dundas Street and surrounding areas.

Summary	**Number of Interventions and Schemes**	**275kV/EHV**	1*
		EHV	1*
		EHV/HV	2*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		3.3

*Could increase generation hosting capacity.

275kV/EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
West George Street GSP	Fault Level		**New Transmission Capacity Charges (NTCC)** Replace a single 275/33kV 120MVA standard impedance transformer with a higher impedance unit. For details see: EJP	-	*	2025/26	Delivery

*Could increase generation hosting capacity.

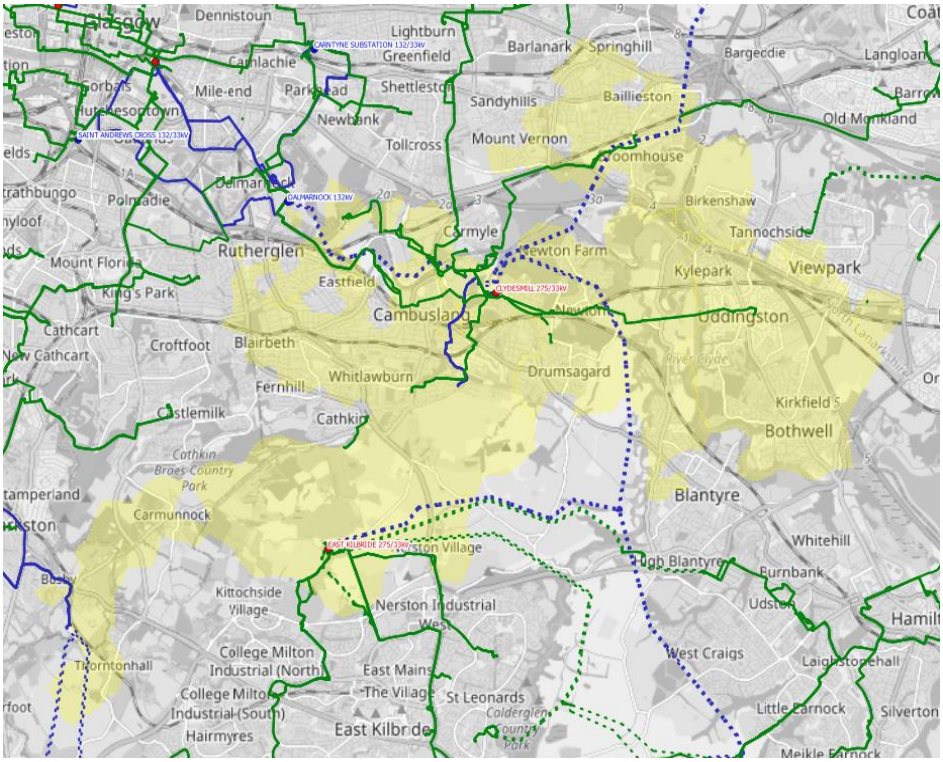
EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
West George Street GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at West George St For details see: EJP	-	*	2025/26	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
West George Street	Fault Level		**West George Street Primary Fault Level Mitigation** Replacement of 11kV switchboard at West George Street primary For details see: EJP	-	*	2025/26	Planned
Mitchell Street Primary	Thermal	 SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	3.3	-	2024/25 to 2027/28	Planned

*Could increase generation hosting capacity.

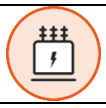
6.63 Westburn Road



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 45,000 customers in Westburn Road, Whitlawburn, Uddingston, Baillieston, Frankfield and surrounding areas.

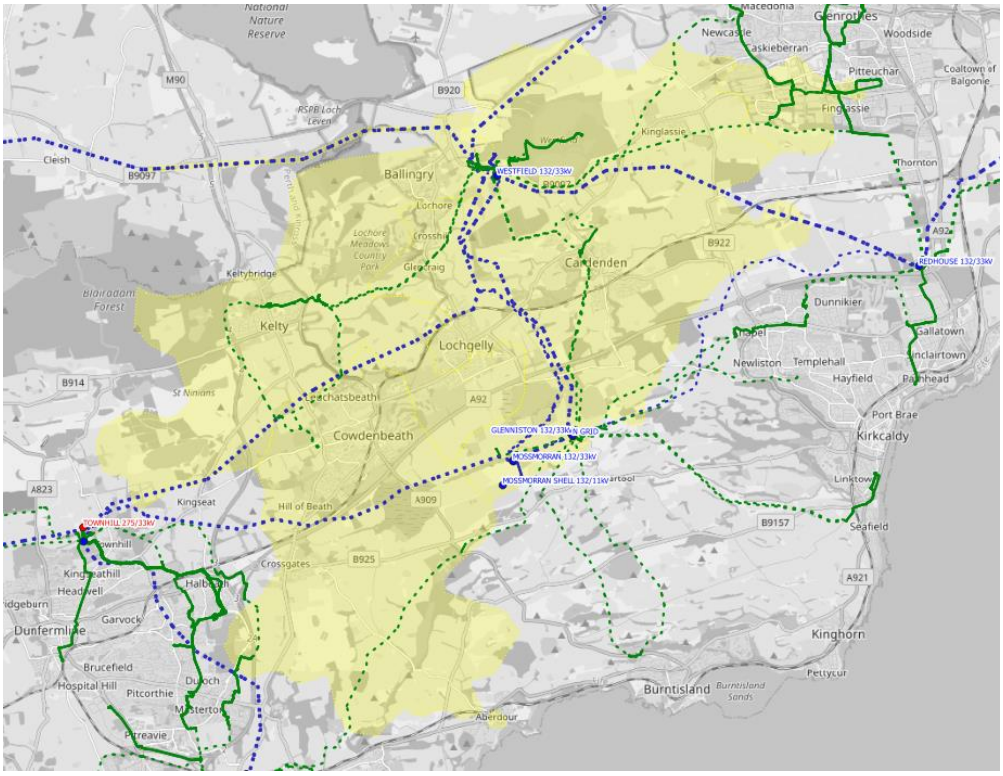
Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	3*
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Whitlawburn Primary	Fault Level		**Whitlawburn Primary Fault Level Mitigation** Establish Cathkin primary substation with two 20MVA 33/11kV transformers and a 9-panel 11kV switchboard. Replace Whitlawburn 20/40MVA units with 20MVA transformers For details see: **EJP**	-	*	2027/28	Planned
Westburn Road Primary	Fault level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Westburn Road For details see: **EJP**	-	*	2024/25	Planned
Frankfield Primary	Asset Mod.		**EHV Transformer Condition Modernisation Programme** Replace transformer(s)	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.64 Westfield

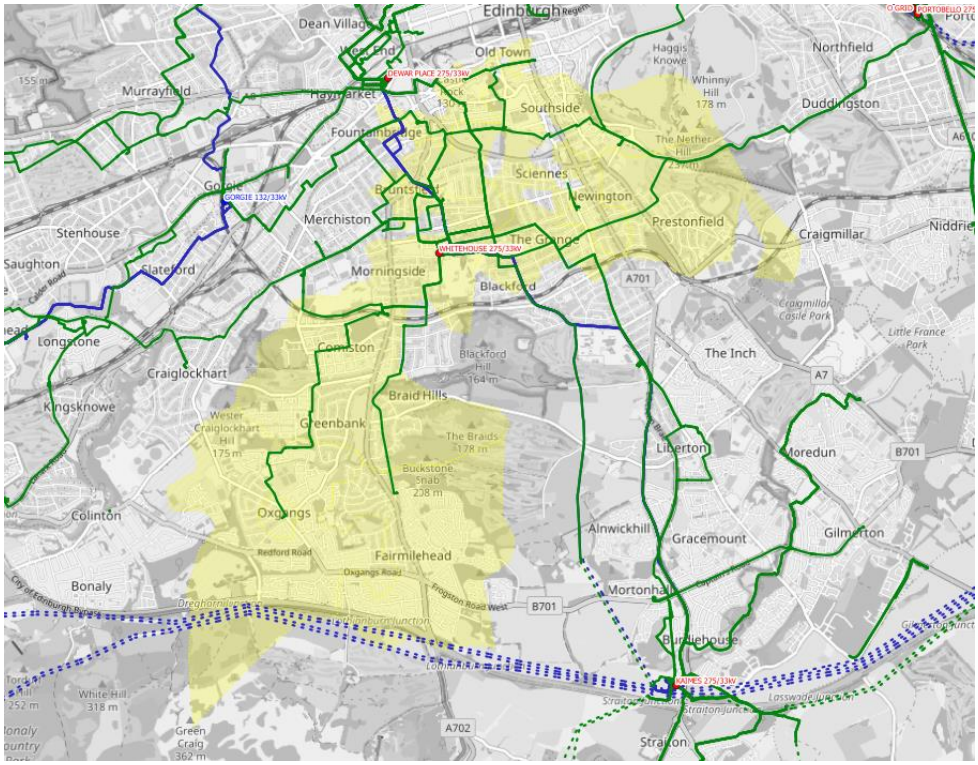


This section of network is fed via two 60MVA 132/33kV grid transformers. This group supplies around 20,000 customers in Kelty, Cowdenbeath, Bowhill, Southfield and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	-
		EHV/HV	1
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		1.3

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Bowhill Primary	Thermal	SU	**Flexibility Services for High Utilisation Groups** Flexibility services to manage thermal constraints For details see: EJP	1.3	-	2024/25 to 2027/28	Planned

6.65 Whitehouse



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 36,000 customers in Oxgangs Road, Park Road, George Square Lane, Mortonhall, Martin Miller, Maxwell Street and surrounding areas.

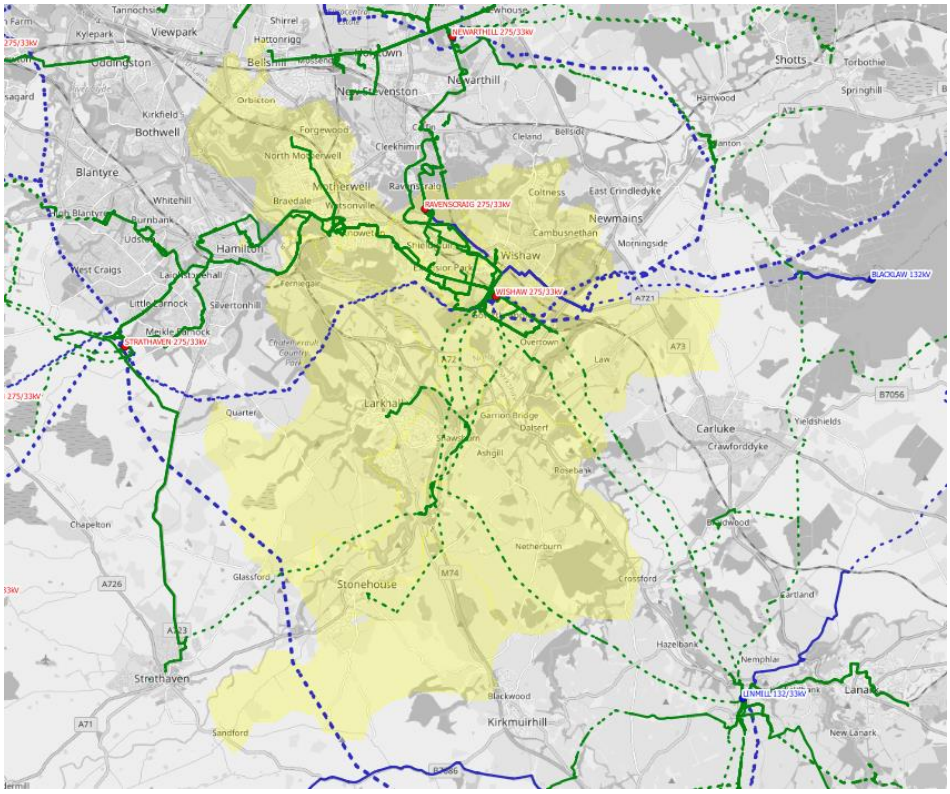
Summary	**Number of Interventions and Schemes**	**EHV**	1*
		EHV/HV	-
		HV	-
	Capacity Added (MVA)		-
	Flexibility Services (MW)		-

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Whitehouse GSP	Fault Level		**Whitehouse GSP Fault Level Mitigation** Replacement of 33kV switchboard at Whitehouse GSP. For details see: EJP	-	*	2025/26	Planned

*Could increase generation hosting capacity.

6.66 Wishaw



This section of network is fed via two 120MVA 275/33kV super grid transformers. This group supplies around 48,000 customers in Muirhouse, Larkhall Town, Larkhall (Primary), Craigneuk, Overtown, Belhaven West, Stonehouse, Watling Street, Leven Street and surrounding areas.

Summary	**Number of Interventions and Schemes**	**EHV**	2*
		EHV/HV	2
		HV	-
	Capacity Added (MVA)		6.0
	Flexibility Services (MW)		6.2

*Could increase generation hosting capacity.

EHV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Wishaw GSP	Fault Level		**Fault Level Monitoring and Management** Installation of Real Time Fault Level Monitoring equipment at Wishaw For details see: **EJP**	-	*	2024/25	Planned
Larkhall Primary	Asset Mod.		**EHV Switchgear Condition Modernisation Programme** Replace Switchgear	-	*	2026/27	Planned

*Could increase generation hosting capacity.

EHV/HV Interventions							
Network Area	**Driver**	**Type**	**Solution**	**Flexibility (MW)**	**Increase in Firm Capacity (MVA)**	**Expected By**	**Status**
Stonehouse Primary	Thermal		**Stonehouse Primary Reinforcement** New 11kV interconnector between Stonehouse and Strathaven primary substations For details see: **EJP**	-	6.0	2024/25	Planned
		SU	**Stonehouse Primary** Flexibility services to manage the network risk during delivery of reinforcement For details see: **EJP**	6.2	-	2023/24 to 2027/28	Planned

7 Part 2 – Network scenario headroom

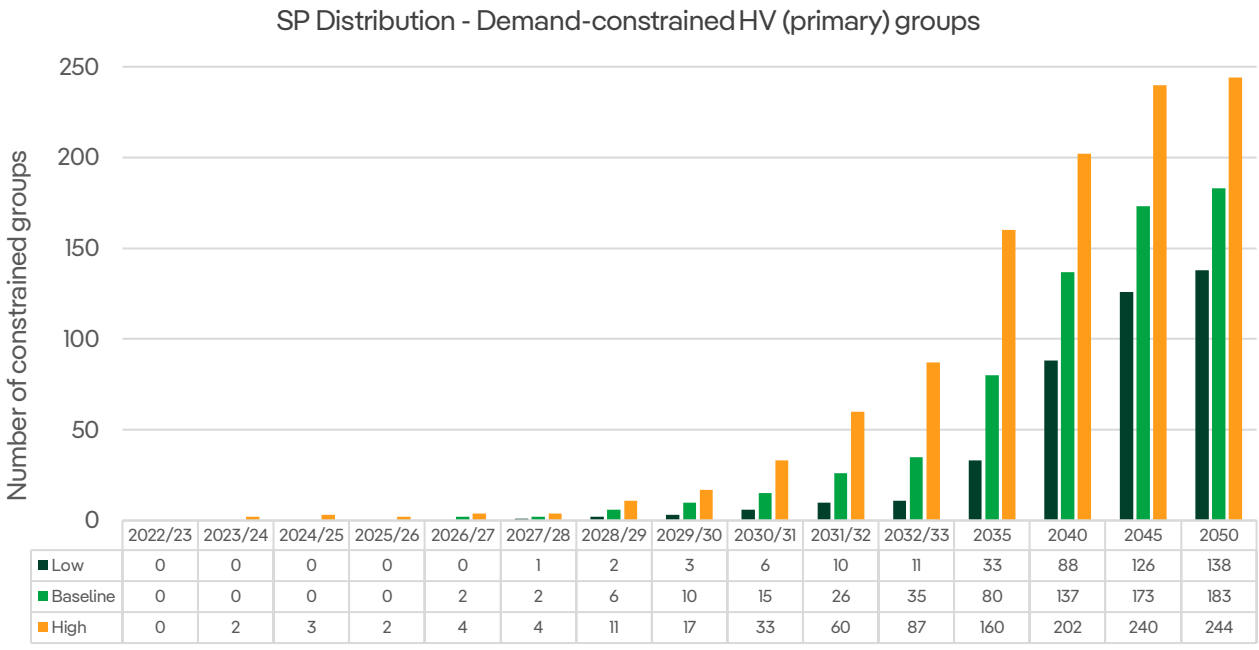
This section provides a forecast of post-intervention headroom across all network groups out to 2050. We've calculated this post-intervention headroom by combining our existing network model, our scenario forecasts, and our known intervention plans.

Our NDP Capacity Headroom spreadsheet data files provide this information for each primary (33kV/HV) substation for each year for the first ten years and every five years thereafter through to 2050. Given the forecast uncertainty in future pathways to achieve Net Zero, we have done this for each of the low, baseline, and high scenarios (see NDP Methodology Statement). We provide our headroom calculation for demand and generation separately as the constraints limiting each can be different (see Section 5.25.1.1).

7.1 Demand headroom results

Demand growth is increasing from now out to 2050 due to the decarbonisation of heat and transport. This isn't fully reflected in Figure 5, which shows the number of constrained primary groups only increasing after 2028, as this constraint data incorporates our planned RIIO-ED1 and RIIO-ED2 investments (i.e. there are few constraints up to 2028 as we have planned interventions to resolve these rather than because there is no demand increase). Constraints increase after this point, as we haven't yet planned interventions for that period (we will start this in 2025 when we start preparing for RIIO-ED3).

The difference in constraints pre-2028 and post-2028 illustrates an important point: we can provide the interventions our customers need to decarbonise providing Ofgem authorise the investment. However if the interventions aren't made then the network will suffer from widespread constraints. These would make 2050 Net Zero target unachievable, and the network would be overloaded, exposing customers to safety risks, supply interruptions, and higher overall costs. It is absolutely in our customers' interests for us to deliver additional capacity.



	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2035	2040	2045	2050
Low	0	0	0	0	0	1	2	3	6	10	11	33	88	126	138
Baseline	0	0	0	0	2	2	6	10	15	26	35	80	137	173	183
High	0	2	3	2	4	4	11	17	33	60	87	160	202	240	244

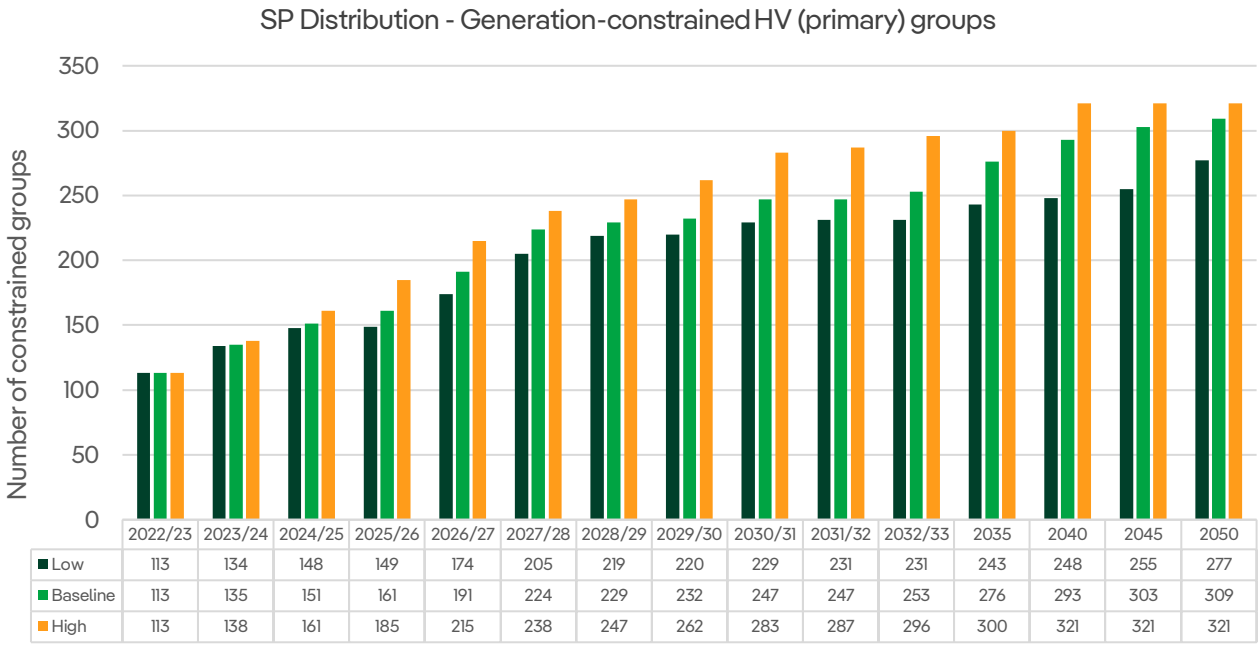
Figure 5: SP Distribution number of demand constrained primary substation groups

7.2 Generation headroom results

Generation growth is increasing from now out to 2050. This isn't fully reflected in Figure 6, which shows the number of constrained primary groups only increasing after 2028, as this constraint data incorporates our planned RIIO-ED1 and RIIO-ED2 investments (i.e. there are reducing constraints up to 2028 as we have already planned interventions to resolve these). Constraints increase after this point as we haven't yet planned interventions for that period (we will start this in 2025 when we start preparing for RIIO-ED3).

These figures show that we are not reducing all known generation constraints within RIIO-ED2. Some key points:

1. Figure 6 shows the number of primary substation groups with no spare firm capacity. However we are enabling generation to connect to some of these primary substation groups through flexible connection arrangements such as ANM and AFLM.
2. As these show constrained primary substations, these constraints will likely not impede larger-scale generation where this connects to 33kV or 132kV network assets.
3. These constraints will likely not impede domestic-scale (<50kW) generation given its minimal contribution to network constraints.
4. Figure 6 does not incorporate upstream constraints beyond our network boundary. However these are flagged within the Part 2 spreadsheets.



	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2035	2040	2045	2050
Low	113	134	148	149	174	205	219	220	229	231	231	243	248	255	277
Baseline	113	135	151	161	191	224	229	232	247	247	253	276	293	303	309
High	113	138	161	185	215	238	247	262	283	287	296	300	321	321	321

Figure 6: SP Distribution number of generation constrained primary substation groups

8 Glossary

Constraint Management Zone (CMZ) – CMZs are areas of network we have an automated control system to coordinate and dispatch different operational solutions.

Customer – means anyone connected to our network and who depends on us for an electricity supply. This includes demand, generation, and storage sites, and IDNO networks.

Decarbonisation – the process to reduce the amount of carbon dioxide (CO2) and other greenhouse gas emissions by introducing new low carbon alternatives and technologies. Much of the UK's decarbonisation strategy is based on switching carbon energy vectors (e.g. petrol/diesel for transport, and natural gas and oil for heating) to electricity and powering them with renewable generation.

Decentralisation – this reflects the extent to which generation is sited closer to demand consumption (or is even undertaken by consumers themselves) via the use of smaller-scale technologies such as solar PV and local energy storage. A less decentralised system would be characterised by fewer, larger-scale generators sited further from where the electricity is ultimately consumed (demand); a more decentralised system would be characterised by more smaller-scale generators sited closer to demand.

Distribution Future Energy Scenarios (DFES) – detailed forecasts we publish annually for our two distribution networks. We work with an external party to determine and produce them. They cover a range of demand and generation metrics (e.g. EVs, heat pumps, different generation technologies) out to 2050. https://www.spenergynetworks.co.uk/pages/distribution_future_energy_scenarios.aspx

Distributed Generation (DG) – generation connected to the distribution network, as opposed to the transmission network.

Distribution network – in England and Wales this consists of overhead lines, underground cables and other network infrastructure that operate at 132kV and below; in Scotland this is the infrastructure that operates at 33kV and below. Nearly all demand in GB is connected to the distribution network; only very large demand users (e.g. the rail network) are connected to the transmission network. Nearly all medium-scale and smaller scale generation in GB is connected to the distribution network; typically only large fossil fuel power stations, offshore generation, and large onshore generation are connected to the transmission network.

Electricity System Operator (ESO) – the company responsible for operating the GB transmission network. They have two main operational functions: balancing the total demand and generation on the system to maintain system frequency at 50Hz, and ensuring transmission power flows remain within transmission network capability and statutory limits.

Extra high voltage (EHV) – all distribution voltages greater than 22kV.

Flexibility – the ability of a consumer or generator to change their operation (i.e. their generation/consumption levels) in response to an external signal. With the push towards the electrification of heat and transport, being able to flexibly utilise demand and generation will help minimise the amount of additional network capacity required, balance the system, and provide system stability – these can all help reduce customer electricity bills.

Grid Supply Point (GSP) – the interface substations between the transmission and distribution network.

GW – equal to 1,000 MW.

High voltage (HV) – all voltages above 1kV up to and including 22kV.

Low carbon technologies (LCTs) – means the range of customer technologies that are needed to deliver decarbonisation. For example, EVs, heat pumps, storage, and renewable generation.

Low voltage (LV) – all voltages up to and including 1kV.

MVAr – mega volt amps (reactive) is a unit of reactive power. It can be useful to help manage network voltage levels. It can describe both the amount of reactive power that a user is importing (e.g. this generator is importing 1MVAr of reactive power"), and the amount of reactive power that a user is exporting (e.g. "this generator is exporting 1MVAr of reactive power").

MW – megawatt is a unit of power (not energy). It can describe both the amount of power that a demand user is consuming (e.g. "this town's peak demand has increased by 3MW due to an increase in EVs and heat pumps"), and the amount of power that a generator is producing (e.g. "3MW of solar PV generation has been installed in this area").

Minimum demand – the point in the year, typically during the summer months, when our distribution network as a whole sees the lowest demand. It is an important study condition (along with peak demand) as a network with low demand can experience voltage control issues.

Net Zero – means the legislated target of reducing greenhouse gas emissions to net zero. For the UK, there are three Net Zero targets:

i. The UK Government has introduced the Climate Change Act 2008 (2050 Target Amendment) Order 2019. This legislation introduces a legally binding target for the UK to have net zero greenhouse gas emissions by 2050. The legislation is available at: http://www.legislation.gov.uk/ukpga/2008/27/contents

ii. The Scottish Government has introduced the Scottish Climate Change (Emissions Reduction Targets) Act 2019. This legislation introduces a legally binding target for Scotland to have net zero greenhouse gas emissions by 2045. The legislation is available at: http://www.legislation.gov.uk/asp/2019/15/contents/enacted

iii. The Welsh Government has introduced The Environment (Wales) Act 2016 (Amendment of 2050 Emissions Target) Regulations 2021. This introduces a legally binding target for Wales to have net zero greenhouse gas emissions by 2050. The legislation is available at: https://www.legislation.gov.uk/anaw/2016/3/contents

Open Networks – this is a pan-industry project involving transmission and distribution network companies, the ESO, the Department for Business, Energy, and Industrial Strategy (BEIS), Ofgem, and other stakeholders. It has done much work developing DSO models, the customer experience, whole electricity system planning and distribution to transmission data exchange, and flexibility services.

Peak demand – the point in the year, typically during the winter months, when our distribution network as a whole sees the highest demand. It is an important study condition (along with minimum demand) as it places the greatest need on network capacity – our network must be able to accommodate peak demand.

Primary substation – see 'Substation'.

RIIO-ED2 – means the distribution network price control period which runs from 1st April 2023 to 31st March 2028. Before this period starts, we will agree with Ofgem the outputs we will deliver during this period, and the funding, incentives, and penalties for delivering those outputs.

Services (aka DER services or flexibility services) – DER can change its import/export position in a controlled manner in response to a signal. This capability can be utilised for the benefit of the network or wider system (e.g. a DER reducing their import to reduce the overall level of demand the network must supply). Where we utilise this capability, the DER is providing us with a 'service'. See also 'Flexibility' and 'Distribution energy resources'.

SP Transmission (SPT) – the Transmission Network Owner for Central and Southern Scotland, that owns the transmission network at 132kV, 275kV and 400kV.

SP Distribution (SPD) – the Distribution network Operator for Central and Southern Scotland, that owns the distribution network at 33kV, 11kV and LV up to customers' meters.

SP Manweb (SPM) – the Distribution Network Operator for Merseyside, Cheshire, North Shropshire, and North Wales, that owns the distribution network at 132kV, 33kV, 11kV and LV up to customers' meters.

Substation – a building or outdoor compound which contains one or more transformers and switchgear protection. The primary purpose of a substation is to change the network power flow from one voltage level to another. In a primary substation the highest voltage is EHV (primary substations are typically 33kV/11kV); in a secondary substation the highest voltage is HV (secondary substations are typically 11kV/LV).

Transmission Network – the high voltage electricity network used for the bulk transfer of electrical energy across large distances. The transmission network takes electricity from large generators (e.g. coal, gas, nuclear and offshore wind) to supply large industrial customers and the distribution network.

9 Appendix A – Procured flexibility by year

Network Area	Flexible Capacity (MW)				
	2023/24	2024/25	2025/26	2026/27	2027/28
Anstruther	0	0	0	0	0.154
Ayton	0.943	1.852	0.650	0	0
Bowhill	0	0	0	0	0.150
Calais	0	0.313	0.871	3.290	3.69
Castlandhill & Pitreavie	0	0	0.461	1.254	2.142
Castle	0	0	0.658	1.420	3.802
Coldstream	0	0	0.130	0.465	0.932
Commercial Road	0.287	0.708	1.195	0.150	0
Hamilton	0.300	0.300	0.300	0.200	1.628
Irvine	0.146	0.154	0.178	0.313	0.313
Kaimes	0.130	4.192	17.074	0.916	2.516
Kingsland	0	0	0	0.289	0.921
Larbert	0.421	0.100	0.100	0	0
Levenbank	0.903	1.167	1.267	1.377	0
Lower London / Lochend	1.023	1.273	1.512	1.533	1.573
Maybole	0	0	0	0	0.319
Mitchell Street	0.200	0.200	0.300	0.300	0.200
Monktonhall	0.743	1.661	3.314	0.200	0.100
New Moffat GSP	0	0	0.82	0	0
Portobello GSP	0	0	0	2.392	5.512
Portobello	0	0	0	1.852	2.929
St Andrews	0.669	1.242	3.303	3.316	0
St Ninians Cornhill	0	0.683	1.641	0	0
Thistle Court	0.100	0.200	0.200	0.200	0.200
Tranent	0.751	0.100	0.100	2.895	0
Troon	0	0.498	1.111	0.100	0.100
Warout Road	0.373	0.584	0.805	0	0