

SSEN DISTRIBUTION

SHEPD Network Development Report

May 2022



Scottish & Southern
Electricity Networks

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1 Introduction

This is Scottish and Southern Electricity Networks (SSEN) Distribution's first Network Development Report and is part of a suite of new information that sets out our longer-term Network Development Plans for our distribution networks. It gives users access to information pertaining to our network plans for the next ten years in relation to our 11 kV networks and above, allowing all interested parties to better assess and identify the future opportunities to use and engage with us and the network. Specifically, it includes:

- a) A description of those parts of our distribution network that are most suited to new connections and distribution of further quantities of electricity;
- b) A description of those parts of our network where reinforcement may be required to connect new capacity and new loads;
- c) Information that supports the secure and efficient operation, coordination, development and interoperability of the interconnected system; and
- d) Flexibility or Energy Efficiency Services that we reasonably expect to need as an alternative to reinforcement.

This Report and our wider Network Development Plan build on existing publications, including our Long-Term Development Statements and Flexibility Services publications, which provide information on our nearer-term opportunities and our key focus areas as we continue to develop and improve our network to meet the changing needs and requirements of all stakeholders. These supporting documents can be found in the following links.

- a) [Long term development statements \(LTDS\) - SSEN](#)
- b) [Flexible Solutions - SSEN](#)

Whilst this Report relates to our distribution network in southern England (Southern Electric Power Distribution plc, or SEPD), please note that an equivalent Report is also available for our distribution network in the north of Scotland (Scottish Hydro Electric Power Distribution plc (SHEPD), this document can be found in the following link [Network Capacity Information - SSEN](#).

To aid users of this Report, we have worked with all Distribution Network Operators (DNOs) across GB to ensure consistency in reporting. This was achieved through the Energy Networks Association (ENA) and the development of a Form of Statement of Network Development Plans¹ through the ENA's Open Networks workstream 1B. As a result of this work, the Network Development Plan is split into 3 distinct reports, as illustrated in Figure 1; the red box highlights the part this document – the Network Development Report – represents.

¹ [ENA NDP Form of Statement Template and Process \(22 Dec 2021\)](#)

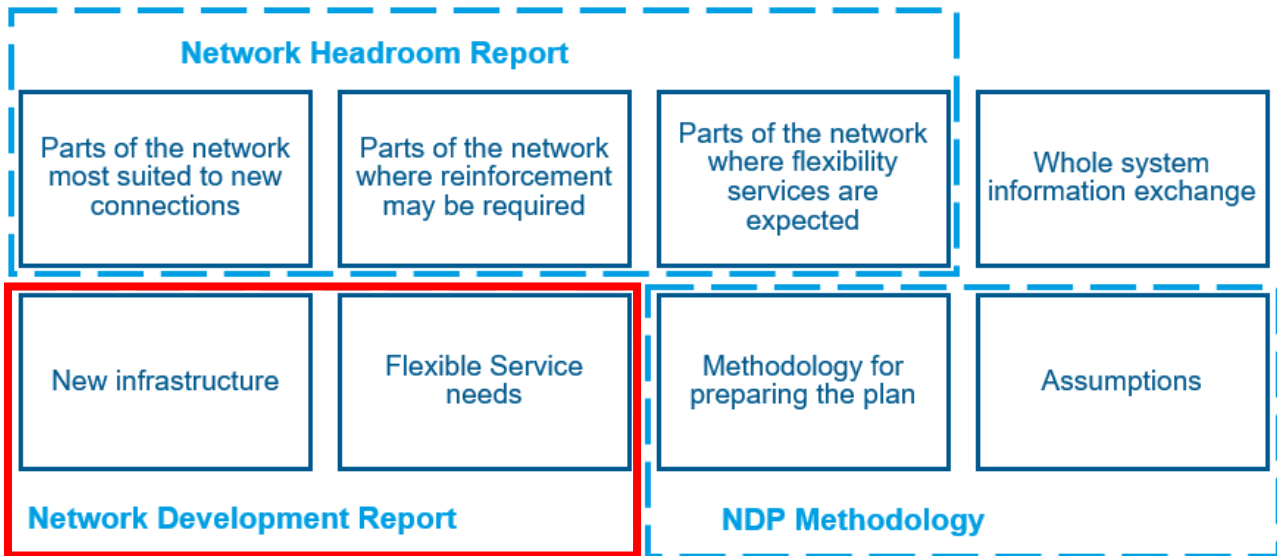


Figure 1 - NDP Reporting Structure

1.1 Network Development Report (NDR) Purpose

The NDR provides a comprehensive view of our network, bringing together our plans for the next price control period (RIIO-ED2, which runs from 2023-2028) and other key publications that set out the likely use and development of our network and the opportunities that this may present.

Using latest available energy scenarios at the time of publication and our RIIO-ED2 investment plans submitted to Ofgem in December 2021, the NDR sets out our proposed investments and likely areas for service requirements going forward. Together with the NDP Methodology, it also sets out the wider information used to inform this Report, which users of our network can call upon to inform their own plans and activities. Further, the information herein informs our Network Headroom Report (NHR), which indicates potential investment opportunities for flexibility services and new connections at a granular level across our network, and allows interested parties to clearly correlate proposed areas of investment with changes in network headroom capacity.

The NDR provides a list of high-level plans for network interventions and flexibility service requirements:

- For the years 5-10
- Location of the intervention
- Requirements for flexibility services or increasing existing asset capacity
- When the works are forecast for delivery

The purpose of the overall Network Development Plan (NDP), which the NDR forms part of, is to provide the following information:

- Future investments that release capacity on the network
- Highlight areas where investment may be required
- Increase visibility of current and future capacity constraints
- Illustrate areas where there is sufficient capacity to connect generation or demand

This information is to help aid decision making in the long-term and the proposed audience for this report may include industry stakeholders, developers, demand and generation customers connecting beyond the short-

term future, regional stakeholders, including Local Authorities looking to understand infrastructure needs to support long term decarbonisation, and innovators wanting to understand network issues to be resolved.

By linking short to long term plans, our NDP:

- provides better information, enabling developers to identify network areas that best meet their needs;
- supports and encourages flexibility markets to help manage constrained areas of the network; and
- assists local authorities to understand their associated network constraints as part of their policy decisions to drive investment in their local area.



2 Aligning Our Publications

SSEN Distribution's NDP is informed and supplemented by multiple data sources that are publicly available.

This section provides a high-level overview of these documents and provides the reader with an understanding of how each document can be used to provide a view of the network from today through to 2050.

2.1 Heat Maps (short term view)

SSEN Distribution regularly updates and publishes network Heat Maps for both Generation and Demand on its website². The purpose of the Heat Maps is to highlight areas of the network, through colour codes, that have available capacity (green), areas that have limited capacity (amber) and areas where there is no capacity (red). As a result, these Heat Maps can help inform larger-scale developments of potential areas of our network where connection without triggering significant reinforcement is most likely. The view presented via our Heat Maps is based on our connected and contracted background.

Please note that this view is subject to continual change as new connection offers are accepted and other connection agreements are cancelled. Further, the Heat Maps do not utilise future energy scenarios or consider small scale developments such as low carbon technologies. Notwithstanding this, these maps provide a good indicator of headroom capacity.

2.2 Long Term Development Statement (0 – 5 year view)

The purpose of the Long-Term Development Statement (LTDS)³ is to provide information for anyone connecting to our EHV (132kV, 66kV, 33kV and 22kV) distribution system including the HV (11kV and 6.6kV) busbar of primary substations. It is designed to help parties that might wish to use or connect to our system to identify and evaluate their opportunities for doing so. Our statements include the following:

- Network data;
- The likely development of our distribution system;
- Our plans for modifying our distribution system; and
- Identification of parts of our distribution system that are likely to reach their capacity limit in 0 – 5 years.

As part of our forecasts, particularly for the Network Headroom Report (NHR), the investments proposed in the latest LTDS for the short-term period of 0 – 5 years prior to publication of the NHR are reflected in the outputs of the NHR.

The LTDS is published annually in November and updated every May to reflect the latest peak demands. For the purposes of the NDP, we will align investments and demands to the latest LTDS. This means that the LTDS released in the November prior to the NDP publication will be used.

2.3 Distribution Future Energy Scenarios (DFES) (now – 2050 scenario view)

SSEN DFES⁴ analysis produces granular scenario projections for the increase (or reduction) in electricity distribution network connected capacity of electricity generation, storage and low carbon demand technologies.

² [SSEN Heatmaps](#)

³ [Long term development statements \(LTDS\) - SSEN](#)

⁴ [SHEPD Distribution Future Energy Scenarios 2021 – Results & Methodology Report \(Published 04 March 2022\)](#)

As a framework, the DFES uses a set of four national energy scenarios based on the Electricity System Operator's (ESO) latest Future Energy Scenarios (ESO FES) publication, each driven by different societal change and speed of decarbonisation. These are known as: Steady Progression (SP), Consumer Transformation (CT), System Transformation (ST) and Leading the Way (LW).

The DFES projections then draw upon input from local and regional stakeholders, including local authorities, regional growth factors and a detailed analysis of the pipeline of projects and developments within SSEN Distribution's licence areas. SSEN Distribution's DFES analysis includes, for example, projections for new housing growth and new commercial and industrial developments. As a result, the DFES provides a more granular and "bottom-up" assessment of the impact of changes to the energy system and the transition to net zero.

When developing scenario projections for a broad range of technologies and sources of demand, a number of uncertainties influence the assumptions that are made and the projection outcomes. This uncertainty can range by technology and over time.

In the near-term, DFES projections are heavily based upon the analysis of known pipeline projects and new developments. Projects are researched using SSEN Distribution's connection database, national and local planning portals, Capacity Market auction registers and through direct discussions with project developers, sector representatives and other stakeholders.

Over the medium and longer-term, projections tend to reflect the underlying scenario assumptions defined for each technology. This is also augmented by levels of certainty provided by, for example, regional and national policies. Some of the uncertainties in the DFES analysis include:

- The range of different outcomes assumed across the FES 2021 scenarios themselves;
- National government, devolved government, regional and local policy uncertainty;
- Commercial and financial uncertainty;
- Technology development and capability uncertainty;
- Consumer adoption and behaviour uncertainty;
- Local spatial distribution factors;
- Transmission vs distribution network connection uncertainty.

As discussed above, DFES scenario projections represent a range of potential outcomes. However, by completing annual reviews of the DFES, and through extensive stakeholder engagement, energy networks can build up a picture of how energy consumption, generation, and the uptake of new low carbon technologies is changing as the UK transitions to a net zero energy system. Figure 2 below demonstrates the scenarios and what specifically drives them:

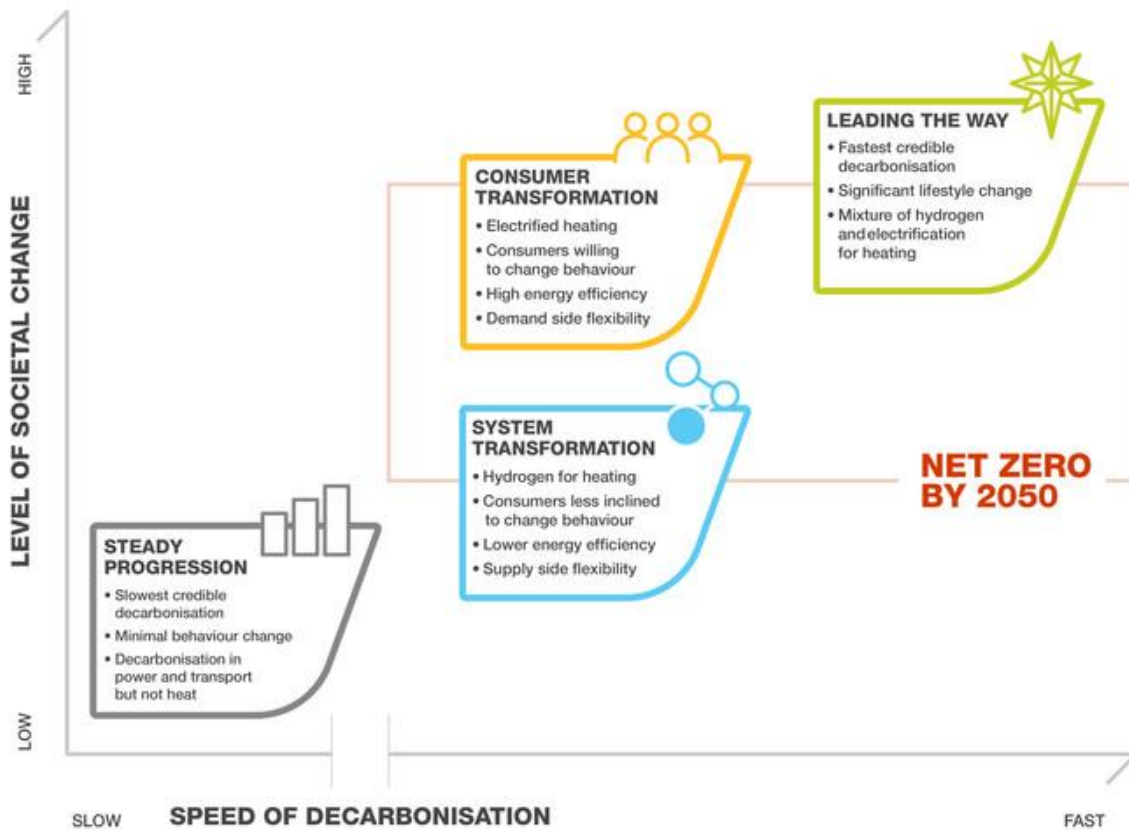


Figure 2 - National Grid ESO Future Energy Scenarios⁵

For the purposes of the NDP, we provide the forecast for all scenarios represented in Figure 2 within our NHR. When reading the NHR the following acronyms are used:

Table 1: DFES Acronyms Used in NHR

Scenario	Acronym
Steady Progression	SP
Consumer Transformation	CT
System Transformation	ST
Leading the Way	LW

SSEN Distribution regards the CT scenario as the current “best view” and most likely scenario outcome.

2.4 RIIO-ED2 Business Plan

In December 2021, we submitted our RIIO-ED2 Business Plan to Ofgem, which proposed investment across SHEPD from 1 April 2023 to 31 March 2028. As part of our ambitious plan, we proposed investments that will release capacity in specific areas of our network where constraints have been identified. This release of capacity may be through flexibility service providers offsetting the peak demand or generation, or through conventional reinforcement. Appendices 1 and 2 detail the schemes that we are proposing to target throughout the RIIO-ED2 period. These investments, and the capacity released or management of the constraint, are reflected in the NHR.

⁵ [Future Energy Scenarios 2021 | National Grid ESO](#)

It should be noted that the schemes proposed in our RIIO-ED2 Business Plan are subject to Ofgem approval and may therefore be subject to change. As such, it is important that the NHR is read in conjunction with this report and that users understand the interplay between the two. For example, should any of the proposed RIIO-ED2 reinforcement schemes in Appendices 2 and 3 be avoided or deferred through the procurement of flexibility (or vice versa), this could have an impact on the NHR. Similarly, readers should not assume that projects listed in Appendices 2 and 3 cannot be delivered through the procurement of flexibility services. The information contained within the Appendices is our best view based on the information available at the time. All proposed works will be fully assessed and tendered for nearer the time.

2.5 Long Term Investments (2029 – 2032)

Our NDP, through the NDR and NHR, presents our best view and three alternative scenarios of network capacity across our distribution system for the forthcoming 10-year period and beyond. It draws upon our plans for the RIIO-ED2 Price Control period (2023-2028) and other key publications to present a coordinated and comprehensive long-term view of network capacity across our network at a relatively granular level.

Clearly, further out, the level of uncertainty increases. We are still in the process of agreeing our plans with Ofgem for the RIIO-ED2 Price Control period and, for the period between 2029 – 2032, this will be agreed as part of the RIIO-ED3 Price Control process. As such, the constraints identified within the NHR during the period 2029 – 2032 will be monitored as part of our future investment plans and will be submitted to Ofgem under the next Price Control process. Notwithstanding this, interested parties can use our NHR to identify potential areas of spare or constrained capacity on our network to inform their plans and activities.

To make it clear where there is available capacity and where there is the potential for future constraints, our NHR highlights available capacity in GREEN and constraints in RED. This helps to clearly signpost the areas on our network where opportunities may exist going forward.

2.6 Data

The information presented within the NDP is accurate at the point of publication. Future forecasts under the DFES may differ over time as a consequence of government policy, a change in consumer habits and changes to generation portfolio through new connections, etc. In addition, our proposed investments may change because of changing forecasts and agreed allowances as set by Ofgem as part of each Distribution Price Control period.

3 Investment Decision Process

3.1 Flexibility Commitment

SSEN Distribution is committed to ensuring that any load-related investment considers procurement of flexibility services. Procuring flexibility services is a smart way to manage network capacity, allowing us to delay or avoid investment decisions to reinforce the network to meet demand, and reducing the risk of long-life stranded assets. Flexibility also enables us to improve the efficiency of the existing network through increased levels of utilisation.

3.1.1 Flexibility Service Contract Options

As part of our flexibility first approach, which means that, where possible, we seek to grow capacity through the use of flexibility services before investing in network reinforcement, SSEN Distribution actively procures flexibility services across four different flexibility service contracts, as detailed below.

Table 2: Flexibility Service Contracts

Service	Description
Sustain	The Network Operator procures, ahead of time, a pre-agreed change in input or output over a defined time period to prevent a network going beyond its firm capacity.
Secure	Network Operator procures, ahead of time, the ability to access a pre-agreed change in Service Provider input or output based on network conditions close to real-time.
Dynamic	The Network Operator procures, ahead of time, the ability of a Service Provider to deliver an agreed change in output following a network abnormality.
Restore	Following a loss of supply, the Network Operator instructs a provider to either remain off supply, or to reconnect with lower demand, or to reconnect and supply generation to support increased and faster load restoration under depleted network conditions.

Appendix 1 highlights where we are proposing to procure flexibility services and the type of services required.

3.2 Our Best View Scenario

SSEN Distribution's best view of the Future Energy Scenarios is the Consumer Transformation (CT) scenario, which offers a baseline scenario that enables us to drive near-term investment decisions and planning. In this scenario, the capacity requirement is driven by a rapid uptake of LCT with relatively high demand growth in the next 5 – 10 years.

SSEN Distribution will continue to contract flexibility services to capture significant option value if a low demand growth scenario outturns rather than CT. This strategy will allow for the rapid deployment of flexibility services, irrespective of which scenario outturns in future years.

3.3 Proposed ED2 Investments

As agreed with all DNOs, we use Ofgem's Cost Benefit Analysis tool to assess conventional reinforcement and we use the Common Evaluation Methodology, developed through the ENA's Open Networks Project, to determine the most viable flexibility service options. Using these tools, we can establish the most cost-effective solution to alleviate constraints on our network.

Our RIIO-ED2 Business Plan has used this agreed approach to provisionally assess viable options for flexibility services and conventional reinforcement. The list of proposed investments put forward in our RIIO-ED2 Business Plan, as submitted to Ofgem in December 2021, is set out in Appendix A. It is important to note that, at this stage, the information provided in Appendix A is an indicative list based on best available information at the time of our Business Plan submission. It is not based on actual tender information for that specific project. As such, projects provisionally allocated within Appendix A (i.e. reinforcement) may be delivered through the procurement of flexible services, and vice versa. These opportunities will be fully assessed and any opportunities to tender published in due course.

As such, in addition to the information contained within our NDP, we would encourage interested parties to consult our Flexibility Services Procurement Statement⁶. This sets out our process for engagement on flexibility services and current opportunities within our network.

⁶ [Flexibility Services Procurement Statement](#)

4 NDP Consultation

On 28 March 2022, we released our public consultation on our NDP and all associated documents. The consultation was open for a period of 28 days, ending on 24 April 2022. The aim of the consultation was to engage with stakeholders, developers, local authorities, and generators to understand how the NDP would be used by them and providing an opportunity to offer feedback on what improvements they would like to see. As part of the consultation, we uploaded all relevant documents to our website and included links for third parties to respond to the consultation.

We have also contacted more than 150 delegates that have been actively involved in our stakeholder engagement events held over the last 2 years. As part of our correspondence, we offered the opportunity for one to one engagement with our stakeholders, and we released our consultation information via LinkedIn to actively encourage interested parties that may not have been on our delegates list, to provide valuable feedback to us.

Our approach aimed to increase awareness of the NDP and how it fits in to the information that third parties can access and use to inform investment decisions. We asked stakeholders the following set of questions:

1. To help us understand how to help you, could you outline how you plan to use the information contained in this plan.
2. Does the Network Development Plan provide the information you need to understand our development plans for the network out to 2032/33? If not, what future improvements could be made?
3. Is the methodology and assumptions used to prepare this plan clear? If not, have you any feedback for future iterations?
4. Is the proposed format for the Network Headroom Report clear? Can you easily identify areas where there is capacity and where there are constraints?

The feedback that SHEPD received can be found in [Appendix B](#), along with our acknowledgement and response to this valuable feedback.

We will continue to engage with third parties to make them aware of the NDP and continue to seek stakeholder feedback prior to any major revision of the NDP, which is scheduled to take place every 2 years.

5 Getting in Touch

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

The following table sets out the key e-mail addresses, phone numbers and websites that can support you with your decision making:

Table 3: Key Contacts Information

Type of Enquiry	E-mail	Telephone	website
Flexibility Services	FlexibleServices@sse.com	N/A	Flexible Solutions
Load Connections	connections@sse.com	0800 0483516	New Supplies Existing Supplies
Generation Connections (>50kW)	mcc@sse.com	0345 0724319	Generation Connections

Further, if you have any feedback on this NDR, or any aspect of the NDP, which we can use to improve future publications, we would like to hear from you. Please get in touch through the following address stakeholder.engagement@sse.com. Please state “Network Development Plan Feedback” in the subject title.



NETWORK DEVELOPMENT REPORT SHEPD PROJECTS (2023 – 2028)





Appendix A - Our Proposed Investments (2023 – 2028)

As agreed with all DNOs, we use Ofgem’s Cost Benefit Analysis tool to assess conventional reinforcement and we use the Common Evaluation Methodology, developed through the ENA’s Open Networks Project, to determine the most viable flexibility service options. Using these tools, we can establish the most cost-effective solution to alleviate constraints on our network.

This Appendix provides the reader with further detail regarding our proposed future investments on the network to ensure that the network remains within our asset’s capabilities. As discussed within the NDR, we are proposing a mix of flexible and conventional reinforcement projects.

A1.1 Understanding our Proposed Investments

As part of the investment proposals, we are making it clear what the proposed solution is for each intervention.

To give the reader an appreciation of the area of work geographically and highlight the bounds of the network area where the investments are taking place, we are providing Grid Supply Point (GSP) maps in the format shown in figure 3 below. Please note, GSPs are owned by Scottish Hydro Electric Transmission Ltd, not SHEPD. All investments proposed are on the distribution network only.






Figure 3 – GSP Boundary Map & Associated Key



Table 4 below provides the reader with information relating to the symbols used for proposed investments and a description of what their intended investment entails.

Table 4: Flexibility Service Contracts

Symbol	Definition	Description
	Flexible Solutions	This signals where we are proposing to utilise flexibility services to manage and/or alleviate a forecasted constraint on the network
	Reinforcement (Asset Reinforcement)	This signals where we are proposing to reinforce existing assets with assets with greater thermal capability to ensure that the network can support the forecasted growth in demand & generation
	Reinforcement (New Assets)	This signals where we are proposing to install additional assets to increase thermal capacity to ensure that the network can support the forecasted growth in demand & generation

As part of the Investment proposals highlighted within this appendix, we also confirm the driver for the investment. Table 5 below confirms the drivers and a description with respect to what triggers the need for us to invest.

Table 5: Flexibility Service Contracts

Drivers	Description
Thermal	Our asset's thermal capability is forecast to be exceeded
Fault Level	Our asset's fault level capability is not exceeded based on our forecast
Other	Investment required for Engineering Recommendation P2 compliance or voltage compliance
Asset Health	Our asset's condition has been assessed as being poor and in need of intervention

Within this report we are only reporting asset health interventions where the reinforcement will increase capacity at a Primary substation.



A1.2 Flexibility Service Solutions

In this section we provide information on the substations that have been identified as potential opportunities for flexibility services due to their loading within the ED2 period (2023-28). These are identified using the symbols as defined above.

The information includes the service requirement, the anticipated year that we would go to market and the number of years the service is forecasted to be required. Further information is provided through our Flexibility Services Statement, which is an annual statement published on our website every April that sets out our Flexibility Service requirements for the forthcoming year, and the following SSEN Distribution web pages:

[Flexible Service Calls](#)

[Flexible Power](#)

A1.3 Reinforcement – Individual Substation Upgrades During ED2 Period (2023 – 2028)

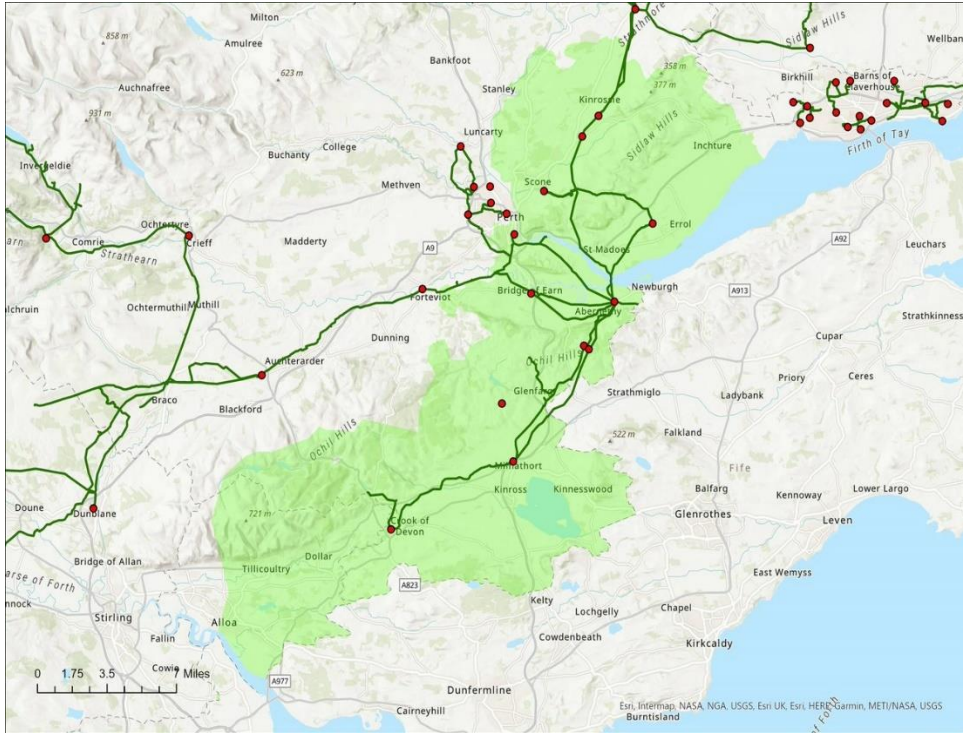
This section also provides information on individual substations that have planned reinforcement works associated with them due to their loading within the ED2 period (2023-28). The information includes the capacity to be released as well as the forecasted reinforcement completion date and this is reflected in the NHR. Please note that whilst these have been provisionally assessed as reinforcement projects, it does not preclude the management of these constraints through flexibility services.

A1.4 Reinforcement – Circuit Upgrades During ED2 Period (2023 – 2028)

In addition to the above, this section also provides information on the substation groups that have planned reinforcement works associated with them due to their loading within the ED2 period (2023-28) and the forecast capacity change is reflected in the NHR regarding upstream headroom capacity. Please note that whilst these have been provisionally assessed as reinforcement projects, it does not preclude the management of these constraints through flexibility services.



Abernethy GSP





Abernethy GSP

This GSP supplies the following Primaries

- Milnathort
- Scone
- Balbeggie
- Abernethy
- Glen Devon
- Perth Harbour
- Bridge of Earn
- Errol

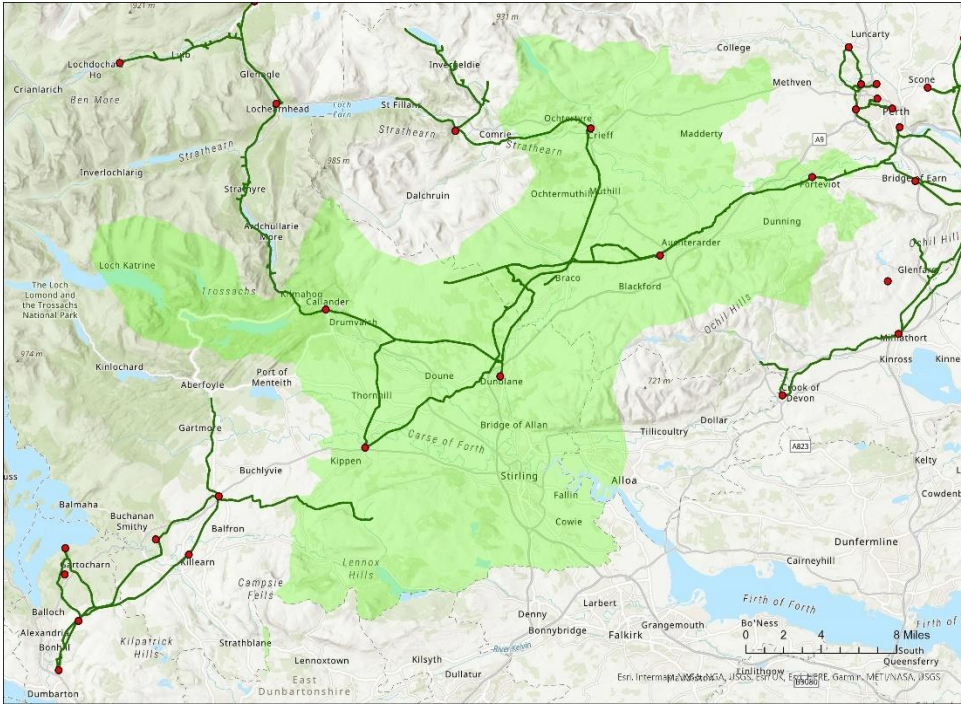
Abernethy GSP is located within the Tayside region of the SHEPD licence area and currently supplies more than 22,700 customers.

Table 6: Investments on the Abernethy GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Balbeggie Primary Substation	Asset Health		Replace the existing EHV transformer due to Asset Health and increase capacity by reinforcing with a 7.5/15MVA EHV transformer	N/A	1.6MVA 2024
Abernethy EHV Network	Thermal		Use flexible solutions for one year then reinforce 8.6km of EHV overhead line.	Sustain 0.71MVA 2025 – 2026	8.6MVA 2026



Braco West GSP




Braco West GSP

This GSP supplies the following Primaries

- Gleneagles
- Crieff
- Forteviot
- Kippen
- Callander
- Dunblane

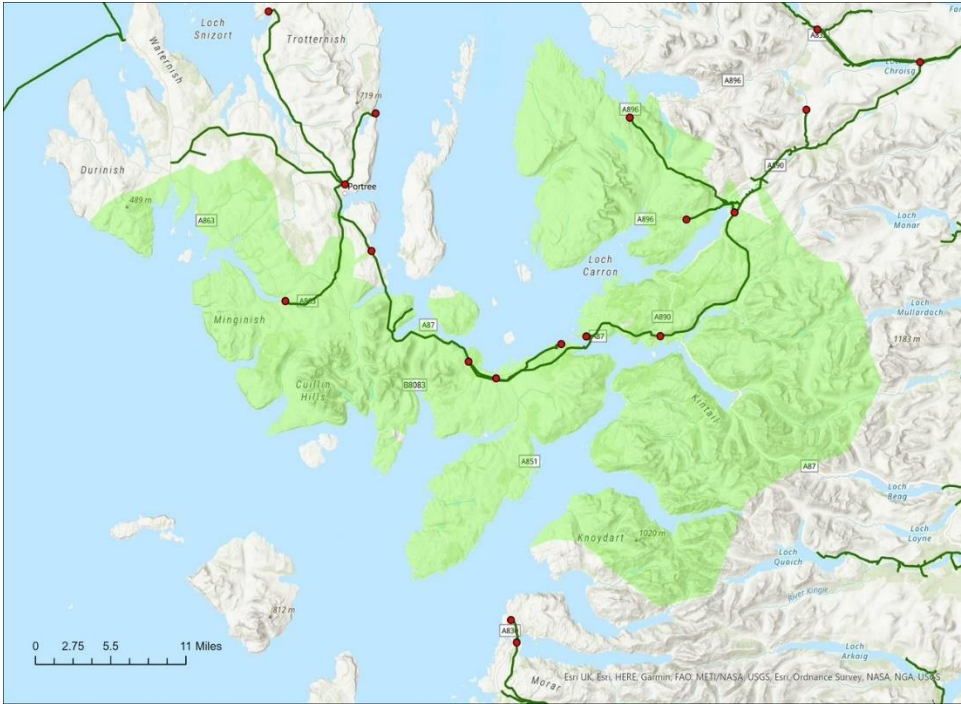
Braco GSP is supplies customers within the Perthshire & Stirlingshire region of the SHEPD licence area and currently supplies more than 20,300 customers.

Table 7: Investments on the Braco West GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Gleneagles Primary Substation	Asset Health		Replace the existing EHV transformers due to Asset Health and increase capacity by reinforcing with a 12/24MVA EHV transformers	N/A	8.8MVA 2025



Broadford GSP





Broadford GSP

This GSP supplies the following Primaries

- Drynoch
- Shieldaig
- Kishorn Hill
- Broadford
- Achintee
- Nostie Bridge
- Skulumus
- Kyle

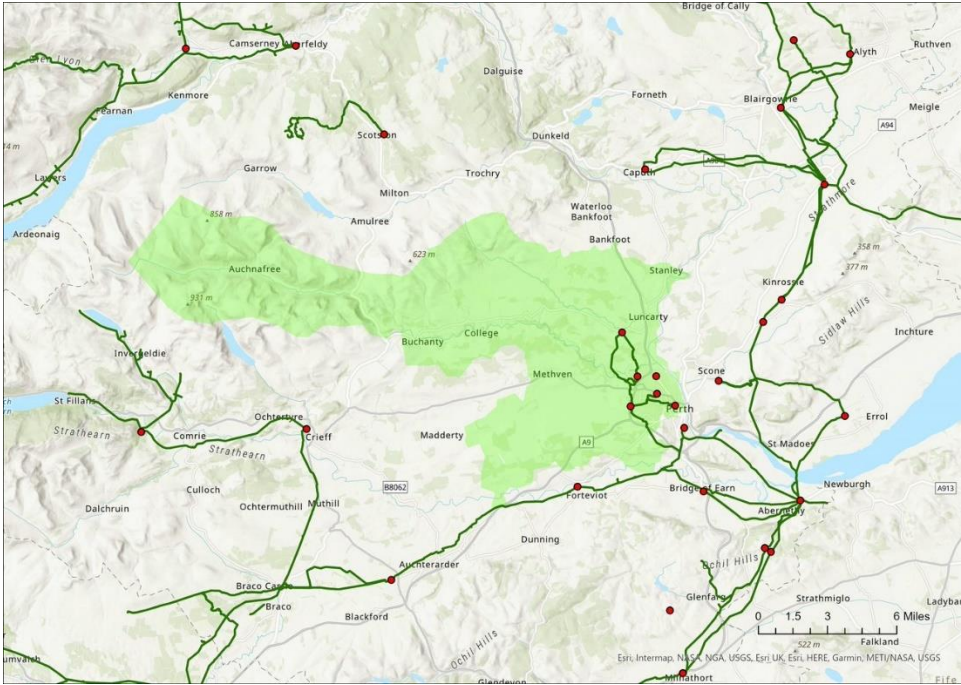
Broadford GSP is located on Skye within the SHEPD licence area and currently supplies more than 5,900 customers.

Table 8: Investments on the Broadford GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Shieldaig Primary Substation	Thermal		Reinforce existing EHV transformer with 1 x 4MVA EHV transformer	Not currently proposed but will be subject to further assessment.	3MVA 2024
Skulumus Primary Substation	Other (P2 Compliance)		Establish a new primary substation with 1 x 4MVA transformer and connect to the Skulumus HV network via c. 21km of HV Overhead line.	N/A	6MVA 2028



Burghmuir GSP



Burghmuir GSP

This GSP supplies the following Primaries

- Burghmuir
- Inveralmond
- Goodlyburn
- Redgorton
- Thimblertow

Burghmuir GSP is located in Perth within the SHEPD licence area and currently supplies more than 23,800 customers.

Table 9: Investments on the Burghmuir GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Burghmuir EHV Network	Thermal		Reinforce 0.1km of EHV overhead line	Not currently proposed but will be subject to further assessment.	11.5MVA 2026



Carradale GSP




Carradale GSP

This GSP supplies the following Primaries

- Brodick
- Campbeltown
- Balliekine
- Dippen
- Westpark Fergus
- Tarbert
- Ballure
- Claonaig
- Whiting Bay
- Machrie

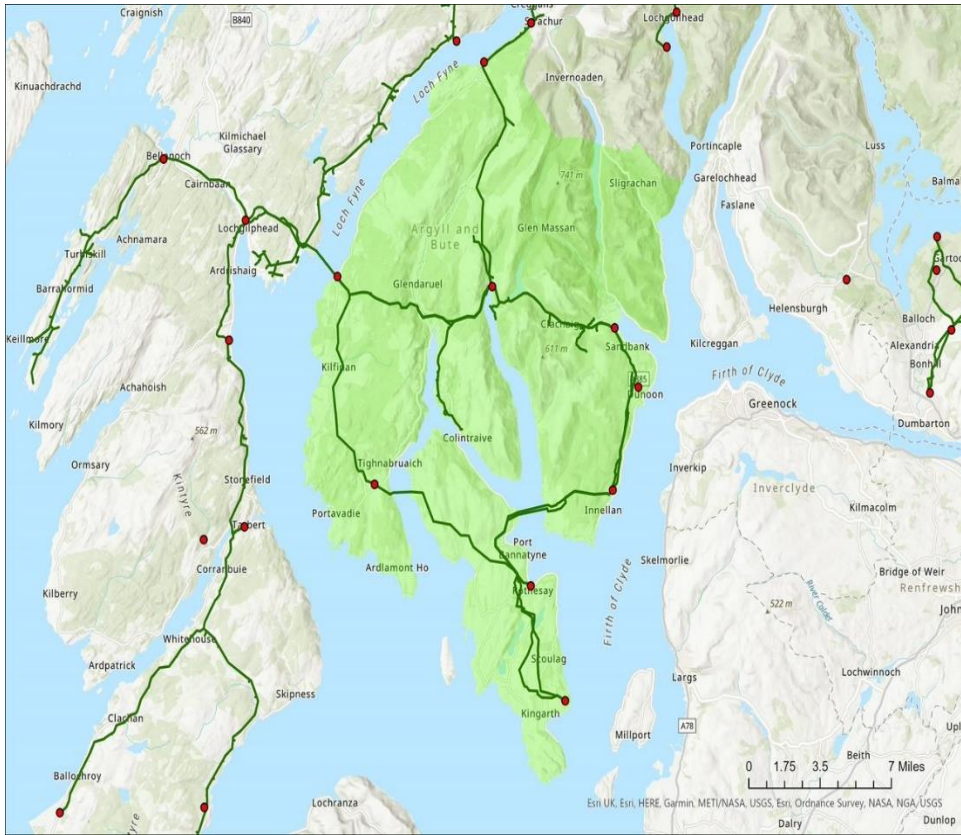
Carradale GSP is located on the Mull of Kintyre in the SHEPD licence area and currently supplies more than 8,800 customers.

Table 10: Investments on the Carradale GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Dippen Primary Substation	Asset Health		Replace the existing EHV transformer due to Asset Health and increase capacity by reinforcing with a 1.5MVA EHV transformer	N/A	0.59MVA 2024



Dunoon GSP



Dunoon GSP


This GSP is supplies the following Primaries

- Dunoon
- Kames
- Newton
- Otter Ferry
- Glendaruel
- Innellan
- Bruchag
- Rothesay

Plus, several other primaries.

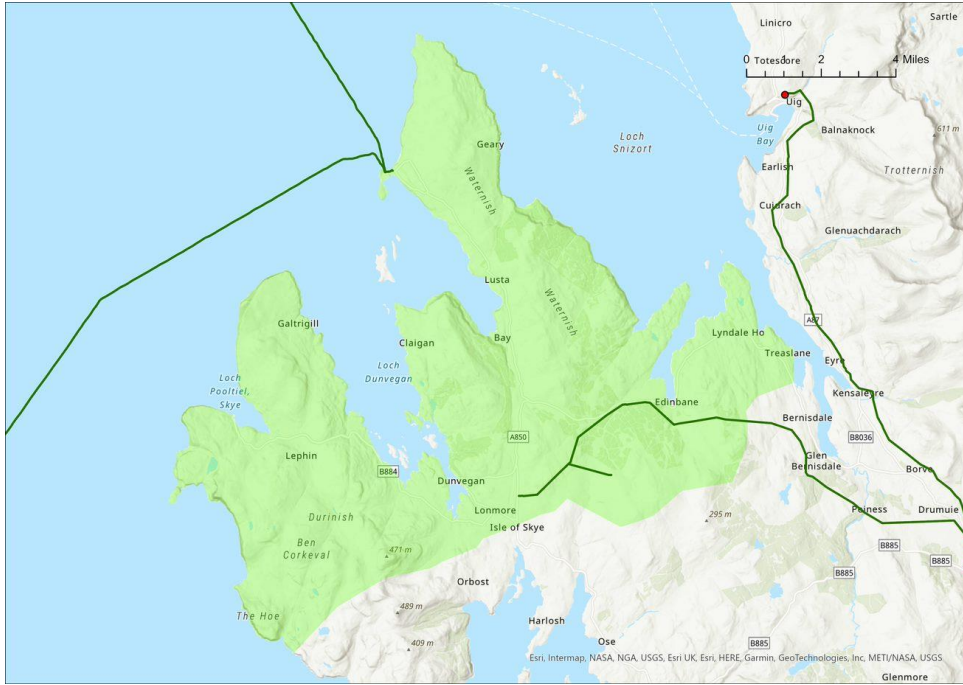
Dunoon GSP is located in the Argyll & West region within the SHEPD licence area and currently supplies more than 15,700 customers.

Table 11: Investments on the Dunoon GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Dunoon EHV Network	Thermal		Reinforce 4.7km of EHV overhead line.	Not currently proposed but will be subject to further assessment.	N/A 2024



Dunvegan GSP




Dunvegan GSP

This GSP supplies the following Primaries

- Dunvegan
- Portree
- Uig
- Drynoch

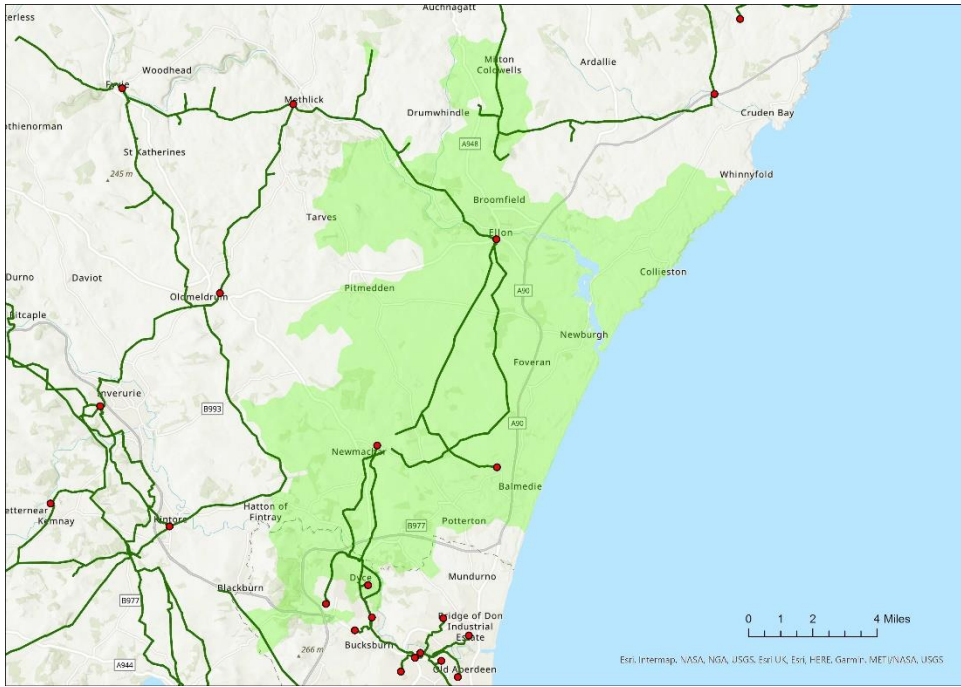
Dunvegan GSP is located on Skye within the SHEPD licence area and currently supplies more than 5,200 customers.

Table 12: Investments on the Dunvegan GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Dunvegan EHV Network	Thermal		Reinforce 0.1km of EHV underground cable	Not currently proposed but will be subject to further assessment.	5.8MVA 2024



Dyce GSP




Dyce GSP

This GSP supplies the following Primaries

- Ellon
- Kingseat
- Balmedie
- Dyce North
- Stoneywood
- Harvest Avenue
- AECC

Dyce GSP is located in Aberdeen within the SHEPD licence area and currently supplies more than 19,200 customers.

Table 13: Investments on the Dyce GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Ellon Primary Substation	Asset Health		Replace the existing EHV transformers due to Asset Health and increase capacity by reinforce with 2 x 24MVA EHV transformers	N/A	11.15MVA 2026



Elgin GSP






Elgin GSP

This GSP supplies the following BSPs

- Ashgorve
- Cumming Street
- Bilbohall
- Burghead
- Elgin
- Fochabers
- Kinloss
- Lhanbryde
- Lossiemouth

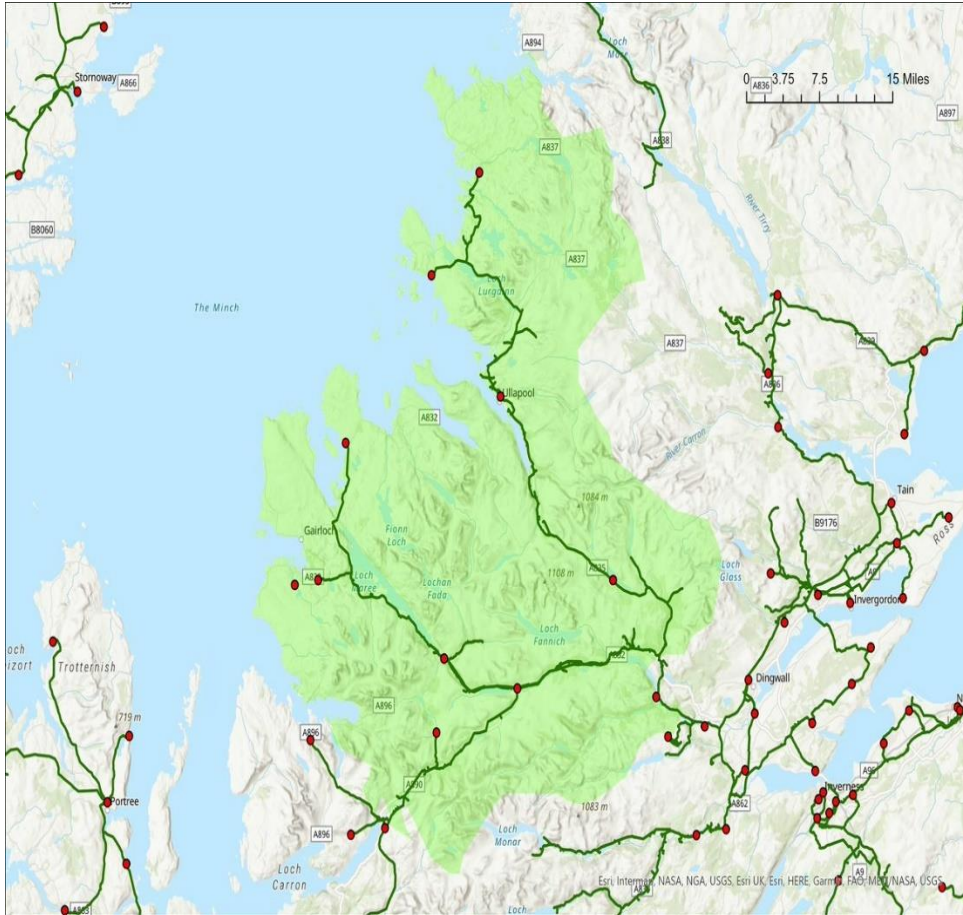
Elgin GSP is located in Elgin within the SHEPD licence area and currently supplies more than 25,900 customers.

Table 14: Investments on the Elgin GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Ashgrove Primary Substation	Thermal		Reinforce existing EHV transformer with 2 x 24MV EHV transformers with associated switchgear and 1.69km of EHV underground cable	Not currently proposed but will be subject to further assessment.	5MVA 2024
Bilbohall Primary Substation	Thermal		Install an additional 1 x 24MVA EHV transformer, associated switchgear and 2.72km of EHV underground cable	Not currently proposed but will be subject to further assessment.	11.6MVA 2024
Elgin GSP to Lossiemouth Primary Substation	Thermal		Reinforce 4.8km of EHV overhead line	Not currently proposed but will be subject to further assessment.	4.7MVA 2028



Grudie Bridge GSP



Grudie Bridge GSP



This GSP supplies the following Primaries

- Grudie Bridge
- Inverbroom
- Ullapool
- Drumrunie
- Aultbea
- Kerry Falls
- Letterewe
- Kinlochewe
- Loch Carron



Plus, several other primaries.

Grudie Bridge GSP is located within the Highland region within the SHEPD licence area and currently supplies more than 5,300 customers.

Table 15: Investments on the Grudie Bridge GSP Network

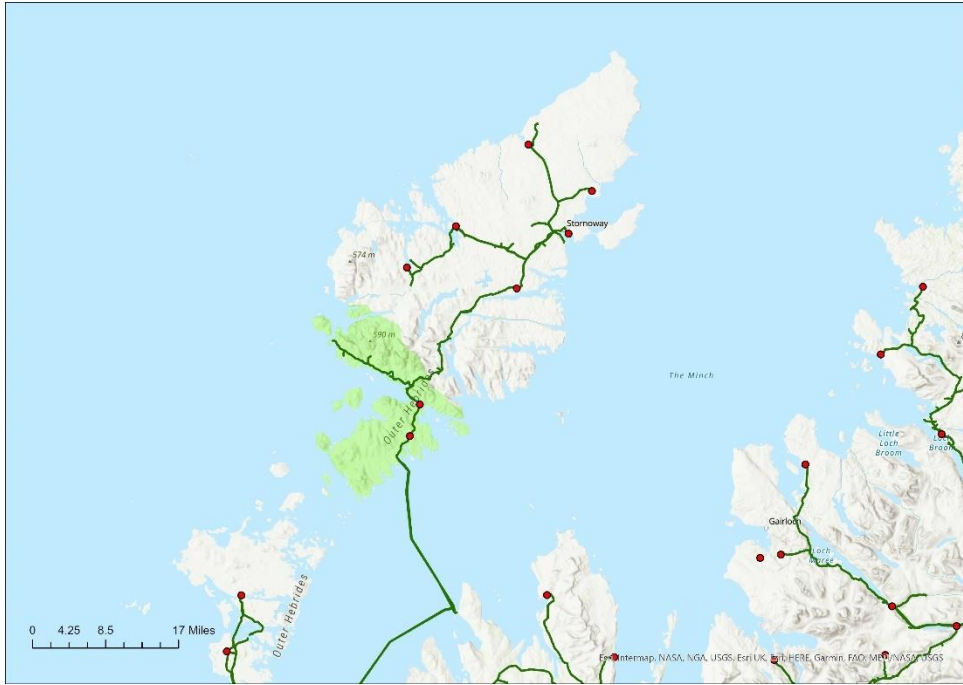
Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Drumrunie Primary Substation	Thermal		Use flexible solutions for one year then reinforce the existing pole mounted EHV transformer with 1 x 1.5MVA ground mounted EHV transformer	Sustain 0.13MVA 2024 – 2025	1.3MVA 2024
Achnasheen Voltage Regulator	Thermal		Reinforce the existing voltage regulator with 1 x 20MVA voltage regulator	Not currently proposed but will be subject to further assessment.	5MVA 2024



Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Grudie Bridge Primary	Fault Level		Reinforce 3 x HV circuit breakers	N/A	9kA Break 22.5kA Make 2024
Inverbroom Primary Substation	Thermal		Use flexible solutions for one year then reinforce the existing EHV transformer with 1 x 0.315MVA ground mounted EHV transformer	Sustain 0.01MVA 2025 – 2026	0.115MVA 2027



Harris GSP




Harris GSP

This GSP supplies the following Primaries

- Stockinish
- Tarbert

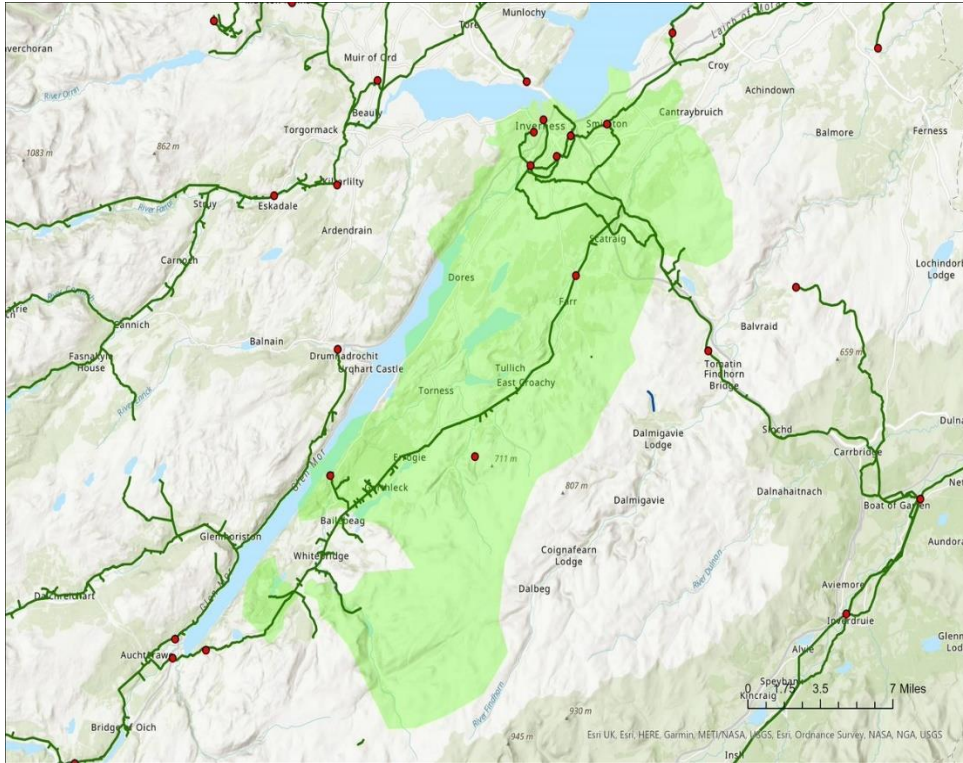
Harris GSP is located on the Western Isles within the SHEPD licence area and currently supplies more than 1,400 customers.

Table 16: Investments on the Harris GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Harris EHV Network	Thermal		Increase the operating temperature of the existing EHV overhead line	Not currently proposed but will be subject to further assessment.	7.7MVA 2024



Inverness GSP





Inverness GSP

This GSP supplies the following Primaries

- Inverness
- Waterloo Place
- Dalneigh
- Raigmore
- Culloden
- Inverarnie
- Dumnaglass
- Foyers
- Errogie
- Hilton

Inverness GSP is located in Inverness within the SHEPD licence area and currently supplies more than 36,300 customers.

Table 17: Investments on the Inverness GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Culloden Primary Substation	Thermal		Reinforce existing EHV transformers with 2 x 24MVA EHV transformers	Not currently proposed but will be subject to further assessment.	9MVA 2026
Inverness EHV Network	Thermal		Reinforce 2km of EHV overhead line and 0.3km of EHV cable.	Not currently proposed but will be subject to further assessment.	6.6MVA 2024



Keith GSP






Keith GSP

This GSP supplies the following Primaries

- Buckie
- Cullen
- Fochabers
- Aberlour
- Rothes
- Marnoch
- Limehillocks
- Insch
- Huntly
- Keith
- Dufftown

Keith GSP is located within the Northeast region of the SHEPD licence area and currently supplies more than 26,000 customers.

Table 18: Investments on the Keith GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Insch Primary Substation	Thermal		Reinforce the existing EHV transformers with 2 x 15MVA EHV transformers	Not currently proposed but will be subject to further assessment.	8MVA 2024
Keith EHV Network 303 & 304	Thermal		Use flexible solutions for four years then reinforce 34km of EHV overhead line. Also increase the operating temperature of the existing EHV overhead line.	Sustain 12.75MVA 2024 – 2028	10.6MVA 2028
Keith EHV Network 307	Thermal		Increase the operating temperature of the existing EHV overhead line	Not currently proposed but will be subject to further assessment.	N/A 2028



Killin GSP




Killin GSP

This GSP supplies the following Primaries

- Cashlie
- Chaorach
- Killin Town
- Lochearnhead
- Loch Lubnaig

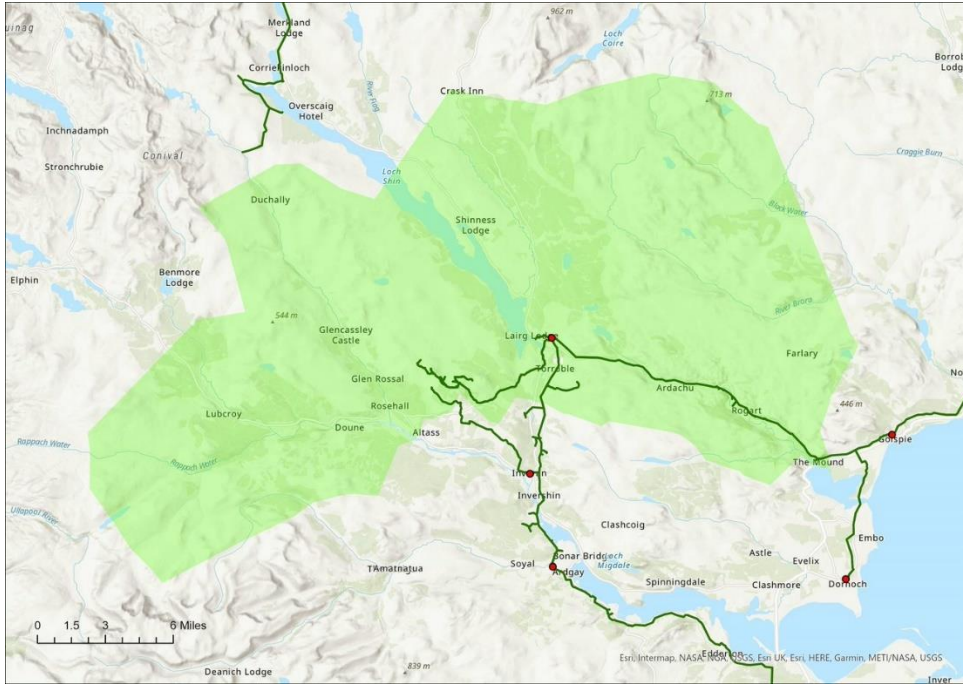
Killin GSP is located within Perthshire in the SHEPD licence area and currently supplies more than 1,700 customers.

Table 19: Investments on the Killin GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Cashlie Primary Substation	Thermal		Reinforce existing EHV transformer with 1 x 2.5MVA EHV transformer	Not currently proposed but will be subject to further assessment.	1.5MVA 2024



Lairg GSP




Lairg GSP

This GSP supplies the following Primaries

- Lairg
- Tressady
- Torboll

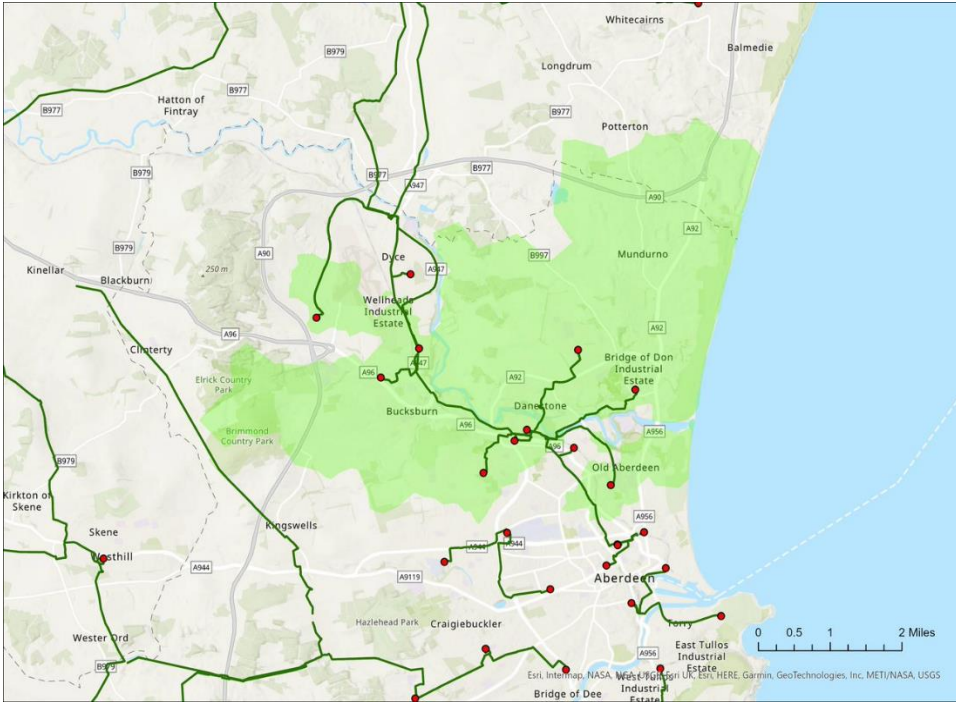
Lairg GSP is located within the region of Sutherland in the SHEPD licence area and currently supplies more than 1,100 customers.

Table 20: Investments on the Lairg GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Tressady Primary Substation	Thermal		Use flexible solutions for two years then reinforce the existing EHV transformer with 1 x 1MVA EHV transformer	Sustain 0.1MVA 2025 - 2026	0.5MVA 2027



Persley GSP



Persley GSP


This GSP supplies the following Primaries

- Haudagain
- Bridge of Don
- St Machar
- Whitestripes
- Stoneywood

Plus, several other primaries.

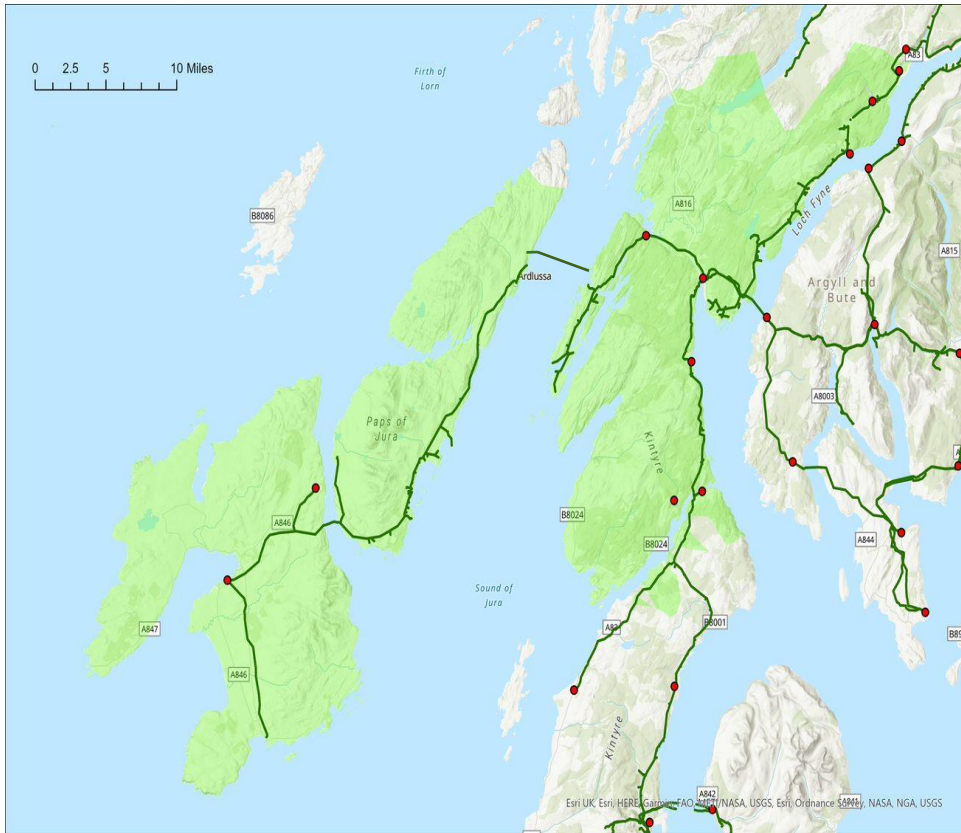
Persley GSP is located in Aberdeen region of the SHEPD licence area and currently supplies more than 28,100 customers.

Table 21: Investments on the Persley GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Bridge of Don Primary Substation	Thermal		Reinforce the existing EHV transformers with 2 x 40MVA	Not currently proposed but will be subject to further assessment.	16MVA 2025



Port Ann GSP



Port Ann GSP

This GSP supplies the following Primaries

- Tarbert Jura
- Crinan
- Furnace Quarry
- Lochgilphead
- Tarbert Loch Fyne
- Port Ellen
- Port Askaig
- Bowmore

Plus, several other primaries.

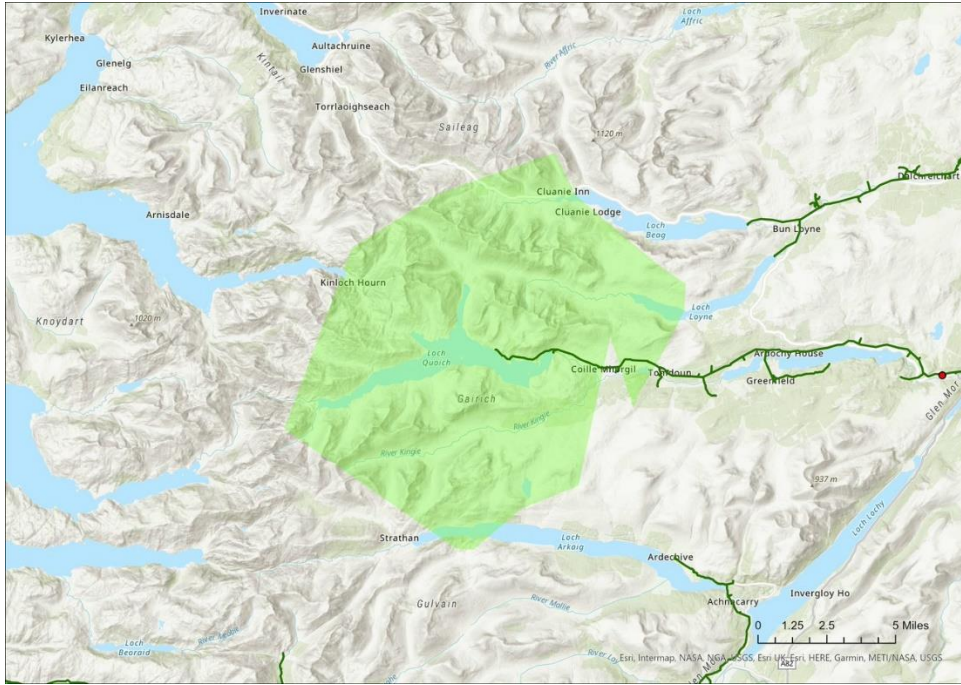
Port Ann GSP is located within the Argyll & Bute region of the SHEPD licence area and currently supplies more than 8,600 customers.

Table 22: Investments on the Port Ann GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Port Ann EHV Circuit 306	Thermal		Use flexible solution for one year then reinforce 6.5km of Cable.	Sustain 0.5MVA 2025 - 2026	13.4MVA 2026
Port Ann EHV Circuit 307	Thermal		Reinforce 6.3km of EHV OHL with underground cable.	Not currently proposed but will be subject to further assessment.	5MVA 2024
Port Ann EHV Circuit 302	Thermal		Operate the existing overhead line at a higher temperature and reinforce 1.4km of EHV OHL.	Not currently proposed but will be subject to further assessment.	N/A 2024



Quoich GSP




Quoich GSP

This GSP supplies the following Primaries

- Quoich

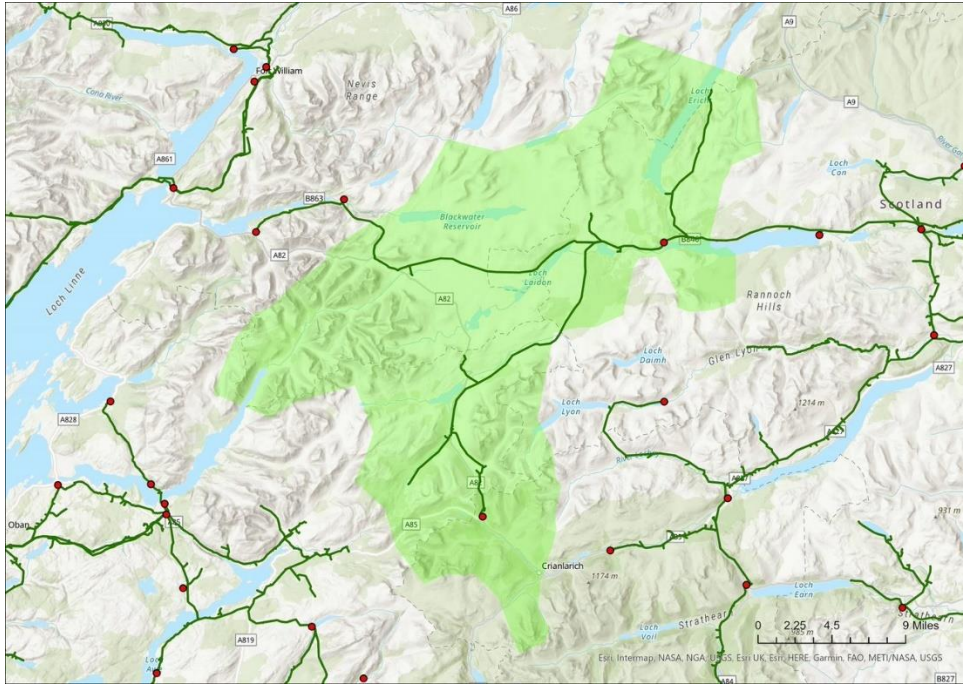
Quoich GSP is located West Highland region of the SHEPD licence area and currently supplies 18 customers; the majority of which are generation customers.

Table 23: Investments on the Quoich GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Quoich Primary Substation	Thermal		Reinforce the existing EHV transformer with 1 x 6.3MVA EHV transformer	Not currently proposed but will be subject to further assessment.	2.3MVA 2024



Rannoch GSP






Rannoch GSP

This GSP supplies the following Primaries

- Bridge of Gaur
- Blackmount
- Glenetive
- Tyndrum

Rannoch GSP is located within the Perthshire region in the SHEPD licence area and currently supplies more than 500 customers.

Table 24: Investments on the Rannoch GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Rannoch EHV Network (Glenetive)	Thermal		Reinforce 0.63km of EHV overhead line	Not currently proposed but will be subject to further assessment.	3.2MVA 2024
Rannoch EHV Network (Gaur)	Thermal		Reinforce 7.15km of EHV overhead line	Not currently proposed but will be subject to further assessment.	9.4MVA 2024
Rannoch EHV Network (Dunan)	Thermal		Reinforce 2.06km of EHV overhead line	Not currently proposed but will be subject to further assessment.	0.9MVA 2024



Shetland Isles





Shetland

Shetland is not a GSP, but a completely islanded network that supports the following Primaries

- Scalloway
- Setter Sandwick
- Sumburgh
- Tumblin
- Voe
- Firth
- Mid Yell
- Unst
- Gutcher

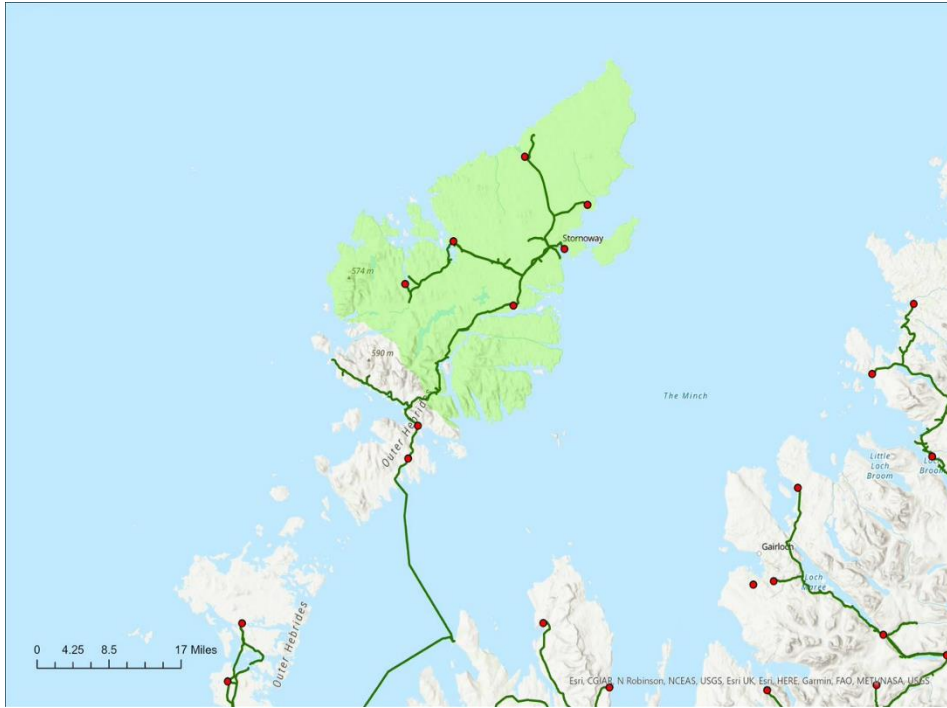
Shetland is an island group that is within the SHEPD licence area and there are currently more than 13,200 customers.

Table 25: Investments on the Shetland Isles Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Shetland EHV Network	Other (Standby)		Install 3.1km of new EHV underground cable and six new 33kV circuit breakers.	N/A	1MVA 2025
Firth Primary Substation	Asset Health		Replace the existing EHV transformer due to Asset Health and increase capacity by reinforcing with a 7.5/15MVA EHV transformer	N/A	0.42MVA 2025



Stornoway GSP





Stornoway GSP

This GSP supplies the following Primaries

- Arnish
- Battery Point
- Barvas
- Coll
- Gisla
- Laxay
- Maaruig

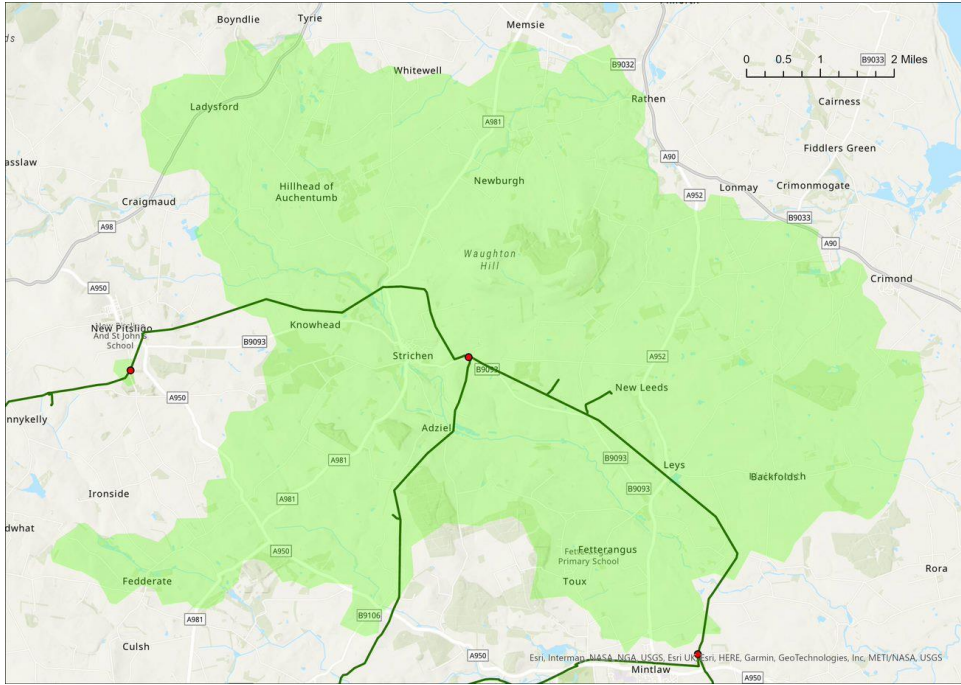
Stornoway GSP is located on the Western Isles within the SHEPD licence area and currently supplies more than 10,800 customers.

Table 26: Investments on the Stornoway GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year (MVA)
Gisla Primary Substation	Thermal		Reinforce the existing EHV transformer with 1 x 2.5MVA EHV transformer	Not currently proposed but will be subject to further assessment.	1.5MVA 2024
Stornoway 305 EHV Network	Other (Voltage)		Install a new 5MVA Voltage Regulator on the EHV network	N/A	5MVA 2024



Strichen GSP





Strichen GSP

This GSP supplies the following Primaries

- Strichen
- Mintlaw
- Hatton
- Maud
- New Pitsligo
- Stoneyhill
- Boddam

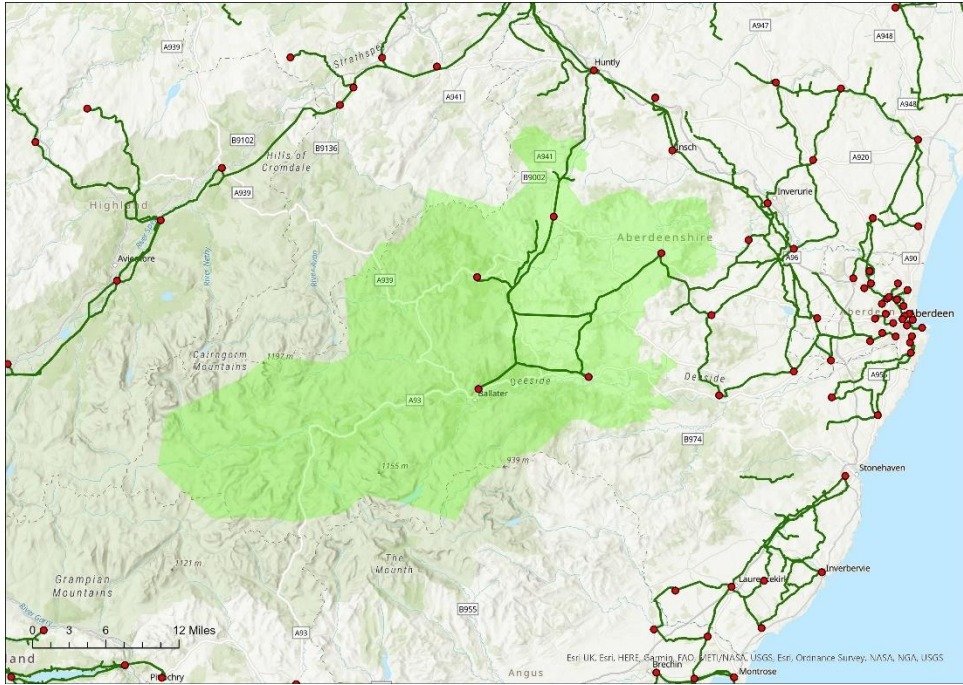
Strichen GSP is located within the Aberdeenshire region in the SHEPD licence area and currently supplies more than 10,600 customers.

Table 27: Investments on the Strichen GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year (MVA)
New Pitsligo Primary Substation	Thermal		Reinforce existing EHV transformers with 2 x 6.3MVA EHV transformers	Not currently proposed but will be subject to further assessment.	3.8MVA 2024
Strichen – Mintlaw – Maud EHV Network	Thermal		Reinforce 9.7km of EHV overhead line and 0.1km of EHV underground cable	Not currently proposed but will be subject to further assessment.	7.2MVA 2024



Tarland GSP




Tarland GSP

This GSP supplies the following Primaries

- Aboyne
- Ballater
- Strathdon
- Mossat
- Whitehouse

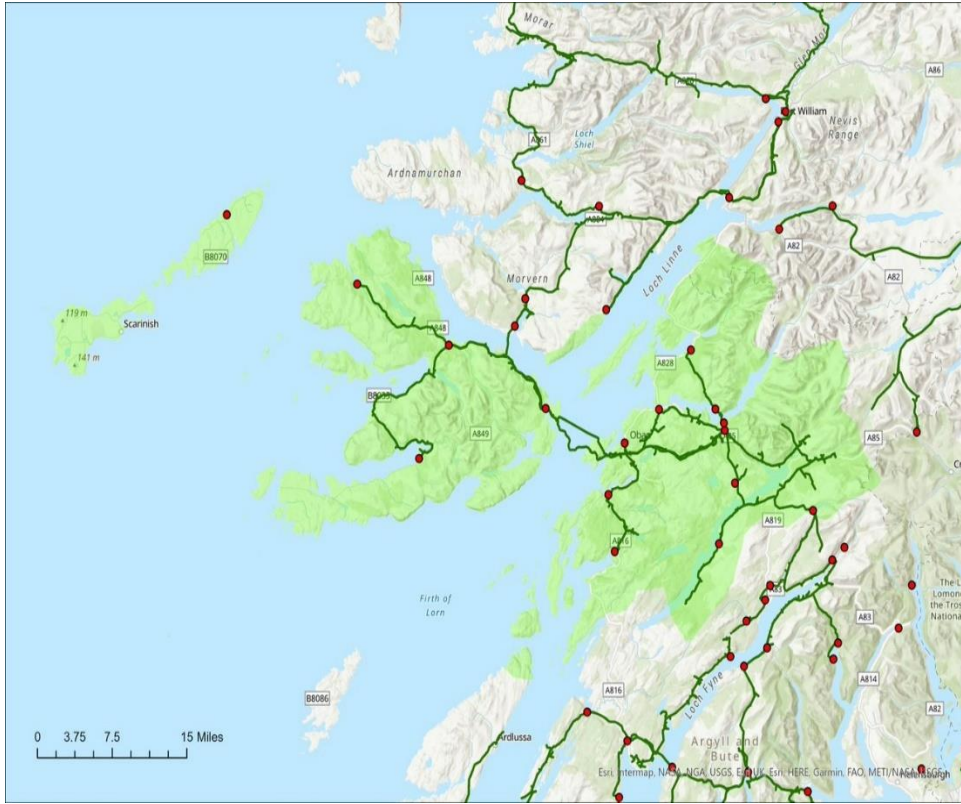
Tarland GSP is located within the Aberdeenshire region in the SHEPD licence area and currently supplies more than 9,900 customers.

Table 28: Investments on the Taynuilt GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Aboyne – Ballater EHV Network	Other (Voltage)		Install a new primary substation between Aboyne and Ballater with 1 x 8MVA transformer in connect to the EHV and HV overhead line networks.	N/A	17.4MVA 2024



Taynuilt GSP



Taynuilt GSP


This GSP supplies the following Primaries

- Dalmally
- Oban
- Kinloch
- Kilninver
- Dervaig
- Lochdonhead
- Kilmelford

Plus, several other primaries.

Taynuilt GSP is located within the Argyll & Bute region in the SHEPD licence area and currently supplies more than 14,900 customers.

Table 29: Investments on the Taynuilt GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Tulloch Switching Station to Kilninver	Other (P2 Compliance)		Install a new EHV circuit c. 10km from Tulloch Switching Station to Kilninver, install a new transformers and associate switchgear in Kilninver primary and a new HV underground cable c. 11km.	N/A	2.5MVA 2028



Thurso South GSP



Thurso South GSP



This GSP supplies the following Primaries

- Mount Pleasant
- Hastigrow
- Halkirk
- Kirkwall
- Rousay
- St Marys
- Shapinsay




Plus, several other primaries.

Thurso South GSP is located within the Caithness region in the SHEPD licence area and currently supplies more than 22,700 customers.

Table 30: Investments on the Thurso South GSP Network

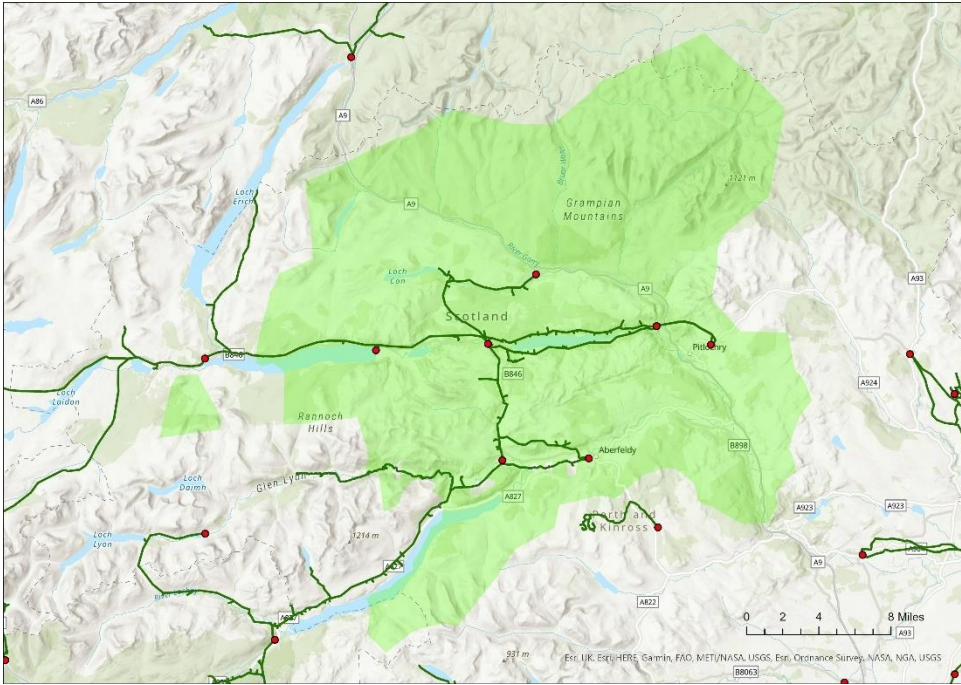
Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Sanday Primary Substation	Asset Health		Replace the existing EHV transformer due to Asset Health and increase capacity by reinforcing with a 1.5MVA EHV transformer.	N/A	0.59MVA 2025
Lyness Primary Substation	Asset Health		Replace the existing EHV transformer due to Asset Health and increase capacity by reinforcing with a 1.5MVA EHV transformer.	N/A	0.59MVA 2026



Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
St Mary's (Orkney)EHV network	Other (P2 Compliance)		Install a new circuit with 10km of EHV Overhead (OHL) line, 9km of HV OHL 5km of HV underground cable and a new transformer.	N/A	4 MVA 2027
Halkirk Primary Substation	Thermal		Use flexible solutions for three years then install an additional 2.5MVA EHV transformer and associated switchgear.	Sustain 0.3MVA 2025 - 2027	2.5MVA 2028
Scorradale EHV Network	Thermal		Increase the operating temperature of the existing EHV overhead line and install new EHV regulator. Flexible Solution used to defer reinforcement out of ED2.	Sustain 0.1MVA 2028-ED3	6.5MVA 2026



Tummel GSP




Tummel GSP

This GSP supplies the following Primaries

- Calvine
- Tummel
- Kinloch Rannoch
- Aberfeldy
- Pitlochry
- Coshieville
- Bonskeid
- Fincastle

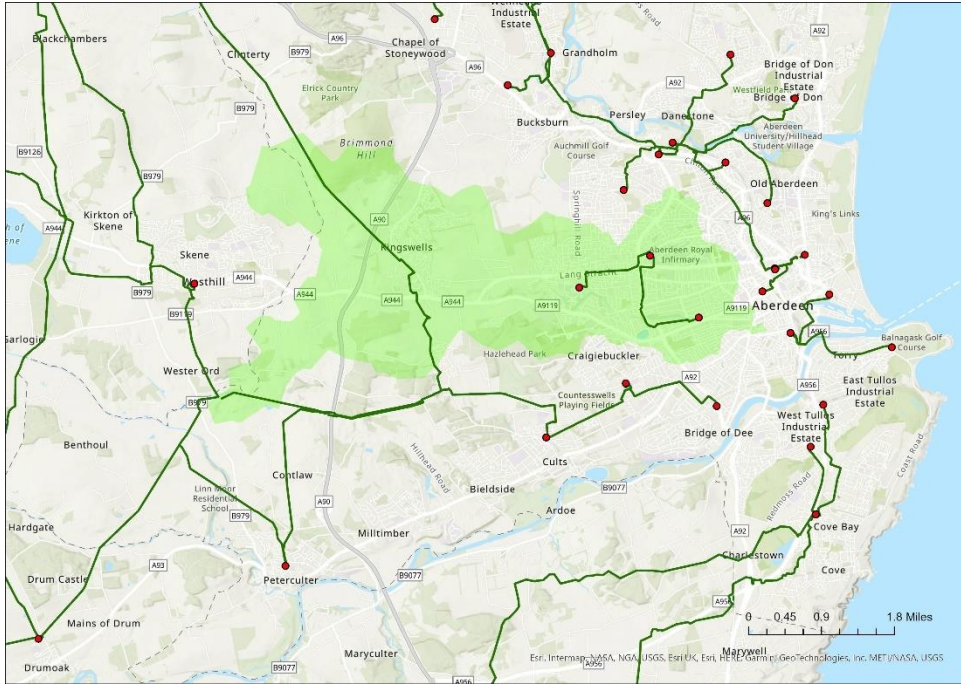
Tummel GSP is located within Perthshire in the SHEPD licence area and currently supplies more than 6,600 customers.

Table 31: Investments on the Tummel GSP Network

Investment Requirements						
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year	
Pitlochry Primary Substation	Asset Health		Replace the existing EHV transformers due to Asset Health and increase capacity by reinforcing with a 6.3MVA EHV transformers	N/A	2.13MVA 2028	



Woodhill GSP




Woodhill GSP

This GSP supplies the following Primaries

- Springhill
- Queens Lane North
- Woodhill Lane

Woodhill GSP is located within Aberdeen in the SHEPD licence area and currently supplies more than 28,400 customers.

Table 32: Investments on the Woodhill GSP Network

Investment Requirements					
Location	Driver	Asset Intervention	Proposal	Flexible Service, Capacity & Year(s)	Reinforcement Released Capacity & Year
Springhill Primary Substation	Asset Health		Replace the existing EHV transformers due to Asset Health and increase capacity by reinforcing with a 30MVA EHV transformers	N/A	8.73MVA 2025



SHEPD CONSULTATION FEEDBACK

28 MARCH 2022 – 24 APRIL 2022



Scottish & Southern
Electricity Networks



Appendix B – SHEPD CONSULTATION FEEDBACK

The table below highlights the questions we asked our stakeholders, local authorities, developers and generators to gain valuable insight into how the NPD data will be used and to understand where improvements can be made.

Table 33: Consultation Questions, Feedback and SHEPD Response

SHEPD Questions	To help us understand how to help you, could you outline how you plan to use the information contained in this plan	Does the Network Development Plan provide the information you need to understand our development plans for the network out to 2032/33? If not, what future improvements could be made?	Is the methodology and assumptions used to prepare this plan clear? If not, have you any feedback for future iterations.	Is the proposed format for the Network Headroom Report clear? Can you easily identify areas where there is capacity and where there are constraints?
Consultee Feedback	To look for development opportunities for renewable generators.	As 132/33kV s/s are classed as GSPs in Scotland, there is no information on GSPs and 33kV feeders from these GSPs. Most generators > 4MW in Scotland are connected to the 33kV network. Therefore, it is difficult to look for development opportunities.	Fairly clear.	Not really. 9 decimal places is too many, 3 is enough. There should be a plan with the report, showing the green areas which is what developers are looking for.
SHEPD Response	N/A	We have included a new column within the Network Headroom Report to advise if there are any upstream constraints; this will highlight EHV circuit and GSP constraints as per the Heatmaps.	N/A	We have amended the information in the NHR to now reflect 2 decimal places. This is consistent with our other reports i.e. LTDS. We will review what additional information could be provided in future iterations of this report to aid further clarity, whilst maintaining the interactivity between scenarios and ensuring that all potential opportunities for stakeholders are visible.
Consultee Feedback	The information from the Network Development Plan will be used to increase the number, quality and scale of local energy projects being delivered in local authority areas	We welcome the publication of the final Network Development Plan, and the data of your most up to date forecast scenarios, investments and headroom capacity Our initial observations, which may well have been considered, include: 1) Ability to filter data by specific LEP 2) Data in Appendix 1-3 to include postcode and county 3) A “read this first” / exec summary document to assist public sector engagement	No response on this occasion.	Yes. However, to improve our ability to identify areas we would also welcome the innovation that SSEN Distribution regularly update and publishes network information via your Heat Maps (on your website). We would also make the suggestion that you continue to use colour codes to help inform our public sector stakeholders of areas of capacity and constraints.
SHEPD Response	N/A	In response to the individual points: 1) We have now added a new tab within the NHR that aligns GSPs and primary substations to confirm the Local Authorities that these sites operate in and support. 2) We have updated our appendices to show detailed maps of the areas where investment will take place. As our investments aren’t necessarily in a specific postcode area, as they can span multiple postcodes, we believe that the inclusion of maps will better aid the readers to identify the areas where investments will occur. 3) We have added a Key Information tab as part of the Network Headroom Report. This provides additional detail to assist the reader with how to interpret the data being provided.	N/A	We will continue to update our Heatmaps on a regular basis and our Long Term Development Statement and NDP in line with our obligations. We have kept the proposed colour coding system of GREEN and RED text and cells to draw attention to potential areas of capacity or constraint. We hope this continues to be of use to you and other users of the NDP.