

# Whole System Coordination Register

May 2025



# Whole System Coordination Register for 2024-25

Published May 2025

This register is published to demonstrate compliance by SSEN Transmission with the Whole System Electricity Licence condition.

It reports on compliance for the period from 1st April 2024 to 1st April 2025.

Whole electricity system outcomes arise from actions taken between two or more parties, at least one of whom holds an electricity transmission or distribution licence, that result in both:

- An investment in the transmission and distribution electricity networks representing best value for money; and
- Improving or, at a minimum, maintaining the services and benefits received by Customers of the electricity network.

<b>Part A</b>	The behaviour requirements (summarised)
<b>Clause 1</b>	The licensee must coordinate and cooperate with other Electricity Distributors and transmission licensees to identify actions and processes that advance the efficient and economical operation of the Total System.
<b>Clause 2</b>	The licensee must consider actions proposed by Distribution System Users/Transmission System Users which seek to advance the efficient and economical operation of its network.
<b>Clause 3</b>	The licensee must use all reasonable endeavours to implement actions and processes identified and proposed through coordination or user suggestions
<b>Part B</b>	that: (a) will not negatively impact its network; and (b) are in the interest of the efficient and economical operation of the Total System.

Demonstrating compliance (summarised)

This register details completed and in progress work which demonstrates compliance with the Whole System Electricity Licence Condition. The licensee must prepare and is required to publish on its website a coordination register demonstrating the steps it has taken to comply with Part A of this condition not later than 27 May 2025. The licensee must keep up to date and is required to publish its coordination register (as updated) on its website at least once every 12 months from the date of initial publication.

Further information on the Whole Electricity System Licence Condition and its purpose can be found on Ofgem’s website.  
[Decision to implement the Whole Electricity System Licence Condition D17/7A for Transmission Owners and Electricity Distributors | Ofgem](#)

					Relevant coordination and cooperation activities												Actions or Processes arising			
	"Unique identifier for each row of the sheet. xxxx/00n for an activity xxxx/00n/A0m for action xxxx refers to the publishing organisation or licence group; n and m refers to numbers"	Lead licensee for the action or activity (not licence group)	Licensees and other stakeholders with whom collaboration was/is being carried out.	What year was the activity added to the coordination register	Details of the activity (could be an activity from a project or an activity that is used in multiple projects) along with its objective. Only activities that improve the economy and efficient of the whole electricity system is to be considered. Register is of activities in progress or completed, not planned. Explanation of the activity takes precedence over the project description.	In progress, Not taken forward, Complete	Latest stage / Update since the last publication / comments	When was a decision made to act upon a challenge/need. This could include the date when analysis for options was initiated.	Details of why it is relevant to whole system.	Links to reports of the project or activity	Description of any data that was shared. Include the format of the data, if applicable, and highlight any data that cannot be widely shared due to commercial sensitivity.	Links to the data not the project/activity	A brief description of the impact of the activity on the whole system, mainly along the lines of positive, neutral or negative	A brief description of the impact of the activity on the licensee, mainly along the lines of positive, neutral or negative	What is the recommended next stage? Positively, this activity would result in actions/processes that will then move on to the 'actions from coordination' sheet. If it is not taken forward, add justification.	Justification for the decision. Even if the decision is not to take things forward, a brief explanation should be added to promote learning.	Details of the action and/or process	Rough date of initiation of the action/process	New, Improving, Mature, BaU	Reference to the activity in the register that resulted in this action/process (not to be confused with internal order or project numbers)
Type	Unique ID	Licensee	Collaborating licensees and other stakeholders	Year activity added	Description of the coordination/ cooperation activity	Status	Latest stage / Update /comments (if any)	Coordination activity initiation date (mm/yyyy)	Whole system relevance of the activity	External links to reports on the activity (If available)	Description of data (who shared the data) [widely shared/restricted sharing]	External links for data (if available)	Impact of the activity on the whole system	Impact of the activity on licensee	Recommended next stage of the activity	Justification for recommendation	Action or Process description	Action or process initiation date (mm/yyyy)	Status	Reference of the activity or user suggestion which resulted in this action/process
Coordination and cooperation activity	SSEN/069	NESO	SSEN-T, NGET, SPT, Ofgem, DESNZ	24/25	"Centralised Strategic Network Plan (CSNP) NESO are developing the methodology for the Centralised Strategic Network Plan (CSNP). This will be the enduring process which approves large-scale transmission infrastructure in GB. This has involved attending a series of workshops (estimated total workshop commitment: ~65 hours) as well as having senior representation on a steering group. SSEN Transmission's involvement has been to provide detailed information on how transmission licensees develop large capital projects, participate in discussions on methodology development, and challenge NESO thinking."	In progress	Ongoing	04/2024	This activity is determining the methodology which will approve all future electricity transmission infrastructure. This impacts the full electricity transmission system and has consequential impacts for other energy vectors, e.g. hydrogen, gas.	<a href="https://www.neso.energy/document/349136/download">https://www.neso.energy/document/349136/download</a>	"NESO have produced a large volume of packs to support this activity. These are restricted in access, only available on a NESO-controlled SharePoint. [Restricted sharing]"	Not available to share outwith restricted NESO platform.	This activity is determining the methodology which will approve all future electricity transmission infrastructure. This impacts the full electricity transmission system and has consequential impacts for other energy vectors, e.g. hydrogen, gas.	Positive. The CSNP will be an essential process for SSEN-T as a licensed TO, so being able to shape the methodology development is positive.	"Continue to engage in discussions with NESO. Next milestones: Draft methodology chapter reviews (May 2025). Formal methodology consultation (June 2025)."	We should continue to engage on the basis that it supports the development of a methodology which will have a significant impact on SSEN-T.				
Coordination and cooperation activity	SSEN/068	NESO	SSEN-T, SPT, NGET	24/25	"Electricity Transmission Design Principles (ETDP) SSEN Transmission participates in the work group set up by NESO in response to the Electricity Commissioner's recommendation to establish a set of Electricity Transmission Design Principles. The work group membership comprise NESO, the three onshore TOs and various other stakeholders. As well as joining and contributing to work group meetings we have attended two face-to-face workshops to discuss drafts of the proposed Strategic, Substation Design and Technology principles. We have also held joint meetings with the other TOs to coordinate comments and feed back on the draft principles to NESO. This activity is aimed at collaborating with the NESO to help them prepare proposed principles for consultation later in 2025."	In progress	'Live' testing of the Substation Design and Technology principles on three representative TO projects to identify potential issues, gaps or unintended consequences associated with adoption of the draft proposed ETDP	07/2024	This activity is partially aimed at achieving a consistent, endorsed approach with regard to transmission design that can be referred to by all TOs. This should give more weight to design decisions that have been arrived at through application of the ETDP and thus provide some defence against potential objections raised during the consenting process and, in turn, helping deliver transmission capacity in a more timely manner.	<a href="https://assets.publishing.service.gov.uk/media/64c8e96e19f5622360f3c0f0/electricity-net-works-commissioner-letter-to-desz-sec-retary.pdf">https://assets.publishing.service.gov.uk/media/64c8e96e19f5622360f3c0f0/electricity-net-works-commissioner-letter-to-desz-sec-retary.pdf</a>	"Information exchange has been narrative via NESO MS PowerPoint presentations and MS word documents setting out the draft principles at various stages of their evolution [Restricted sharing]"	N/A	Positive; the activity helped foster alignment among TOs with respect to Transmission early design. The transparency the activity will give to the design process used by the TOs and NESO will help bring efficiency in the delivery of transmission projects through the planning process.	Neutral; the activity will help highlight the reason we follow the existing methods we deploy in developing transmission projects and set this in the context of consistency of assumptions and approaches across GB TOs. This will be beneficial when engaged in dialogue with community and planning stakeholders.	Next Stage is completion of the joint TO testing of the draft principles followed by publication of the public consultation on the ETDPs. Towards the end of 2025/ start of 2026 it is expected that the ETDP will be granted final approval and then used as part of the development of Transmission Projects across all TO licence areas within GB.	This activity will deliver the Electricity Commissioner's recommendation aimed at streamlining and promoting consistency across GB network owners with respect to rapid delivery of critical strategic national transmission infrastructure.				
Related action	SSEN/068/A03	NESO	SSEN-T, SPT, NGET	24/25													SSEN Transmission provision of coordinated comments and feed back on draft ETDP to SPT and NGET for submission to NESO as a joint TO response.	04/2025	Improving	SSEN/068
Related action	SSEN/068/A02	NESO	SSEN-T, SPT, NGET	24/25													SSEN T attendance at face-to-face workshop to discuss revised strategic Design Principles and criteria for 'live' testing of the Substation and Technology detailed principles.	05/2025	Improving	SSEN/068

Related action	SSEN/068/A01	NESO	SSEN-T, SPT, NGET	24/25													SSEN T attendance at face-to-face workshop to discuss and engage in break out sessions aimed at commenting on early version of the ETDp and the reasoning behind the proposed draft principles	01/2025	Improving	SSEN/068
Coordination and cooperation activity	SSEN/067	Ofgem	SSEN-T, SSEN-D, NGET, SPEN, UKRI, Ofgem, SGN	24/25	"Ofgem Innovation RII03 working group initiated by Ofgem to assess the direction, change requirements and challenges related to the innovation funding mechanisms in T3. It is expected that this will improve the efficiency of innovation activities going into T3"	In progress	March 2026 working group assessed the requirements for SIF and potential deployment funding mechanism	12/2024	Efficiency of T3 innovation project processes through coordination with other Networks	N/A	"Plan and proposed processes [Some restricted and some widely shared]"	N/A	Positive - improved efficiency through collaboration and cooperation on activities by all Networks.	Positive impact as UK Innovation funding strategy can be better understood and influenced.	Agreement on T3 funding mechanism processes	This will help to enhance the process of T3 innovation funding requests and increase efficiency				
Related action	SSEN/067/A01	Ofgem	SSEN-T, SSEN-D, NGET, SPEN, UKRI, Ofgem, SGN	24/25													Continue engagement with T3 Ofgem working group	12/2024	New	SSEN/067
Coordination and cooperation activity	SSEN/066	SPD	SSEN-T, SSEN-D, University of Strathclyde, The National HVDC Centre	24/25	"BLADE The overarching aim of the project is to bring electricity system restoration from offshore wind to commercial reality by building the necessary cross-industry understanding including onshore transmission network owners, transmission system operators, offshore wind farm operators, and technology suppliers. This will improve economy and efficiency across the grid"	In progress	SIF Beta stage began September 2024	04/2023	The outputs from the project are expected to provide both economic and security improvements across the grid through involvement of offshore wind in restoration activities	<a href="https://smarter.energynetworks.org/projects/sif_blade_beta/">https://smarter.energynetworks.org/projects/sif_blade_beta/</a>	"Test data and some open network information [Restricted sharing]"	N/A	Positive - improves efficiency and ability to restore the networks.	Positive - improves efficiency.	Maintain involvement in project, providing input and reviewing outputs until project closes in October 2027.	By retaining involvement in the project we ensure that SSEN-T remains informed on the outputs.				
Related action	SSEN/066/A01	SSEN Transmission	SPEN	24/25													Maintain involvement in the project until closure in October 2027	09/2024	Improving	SSEN/066
Coordination and cooperation activity	SSEN/065	NGET	SSEN-T, SPT, NGET, DNV, University of Manchester	24/25	"SF6 Whole Life Strategy SIF Beta Project, led by NG to develop an economic, efficient, and holistic strategy for delivering an SF6-free electricity system that will support GB's ambition to deliver a net-zero, resilient energy system."	In progress	SIF Alpha phase completed April 24. SIF Beta project started November 2024	04/2023	Efficiency will be achieved as well as some cost savings due to reduction in SF6 leakage and use	<a href="https://smarter.energynetworks.org/projects/ukri10084569/">https://smarter.energynetworks.org/projects/ukri10084569/</a>	"Test data, SF6 volumes and other pertinent technical information. [Restricted sharing]"	N/A	Positive - reduces cost and improved efficiency	Positive - reduces cost and improvement of efficiency	Maintain involvement in the project	Continued engagement in the project ensures SSEN T receive outputs that they can use on their network as well as being able to influence the decision making.				
Related action	SSEN/065/A01	NGET	SSEN-T, SPT, NGET, DNV, University of Manchester	24/25													Maintaining engagement with the project and providing appropriate integral subject matter expertise to support the project progress.	11/2024	Improving	SSEN/065
Coordination and cooperation activity	SSEN/064	NESO	SSEN-D, NGET, SSEN-T, NESO	24/25	"Virtual Energy System Data Sharing Infrastructure NESO have initiated a Data Sharing project to create a common infrastructure to achieve an ecosystem of connected digital twins, as we transition to net zero. It is expected that this will create process efficiencies"	In progress	January 2025 the SSEN-T element of the project started	09/2024	Efficiencies will be achieved through coordination with the other Networks	<a href="https://smarter.energynetworks.org/projects/nia2_nge-so081/">https://smarter.energynetworks.org/projects/nia2_nge-so081/</a> <a href="https://smarter.energynetworks.org/projects/nia_shet_0053/">https://smarter.energynetworks.org/projects/nia_shet_0053/</a> "	"Test data in spreadsheets and direct input [Restricted sharing]"	N/A	Positive - improved collaboration and investment in safety, grid resilience, less error prone outage management, interoperability, reduction in data redundancy, delivery of open data	Positive - improved safety, grid resilience, less error prone outage management, interoperability, reduction in data redundancy, delivery of open data	Continue with standalone SSEN-T project that interacts with the overarching NESO project	This activity will provide benefits to the business, other networks and the consumer				
Related action	SSEN/064/A01	NESO	SSEN-D, NGET, SSEN-T, NESO	24/25													Perform all activities involved with standalone SSEN-T project (NIA_SHET_0053) and continued involvement in NESO project (NIA2_NGE-SO081)	09/2024	New	SSEN/064

Coordination and cooperation activity	SSEN/063	SSEN Transmission	NESO	24/25	"North of Beauty DLR Planning and discussions with NESO related to communication of day ahead ratings calculated from DLR technology. This will enable the NESO to reduce curtailment of renewable energy on the network."	In progress	August 2024 discussion with NESO around expectations	02/2022	We expect that the activity will contribute to efficiency of power transmission across the relevant area of the network. Through coordination with NESO we hope to have a coherent plan for communication of the data	N/A	"None yet shared but discussions have indicated that day ahead rating will be communicated via standard rating sheet [Restricted sharing]"	N/A	Positive - reduced constraint costs as infrastructure used to its maximum efficiency	Neutral - we will learn how to communicate DLR to NESO and some additional benefits of monitoring on our network	Continue discussions and then initiate transfer of data with final action of NESO engaging the dynamic rating	Recommended to complete the planning and discussions as this will save the consumer considerable cost saving as well as monitoring of the lines				
Related action	SSEN/063/A01	SSEN Transmission	NESO	24/25													Coordinate the process of data transfer and plans for future iterations	11/2024	Improving	SSEN/063
Coordination and cooperation activity	SSEN/061	SSEN Transmission	SSEN-D	24/25	"Shetland ANM - Curtailment Assessment After determining our preferred design for the Shetland on-island transmission strategy (delivery date 2032), SSEN Transmission, utilising distribution/demand profile data provided by SSEN Distribution, undertook a generation curtailment assessment to understand the likely operation of the Shetland Active Network Management (ANM) scheme and to assess the future associated impact of the Shetland 2nd HVDC link and Shetland ScotWind connections on network access for small scale distributed connected projects (to inform their business case). The outcome of the curtailment assessment has been shared with SSEN Distribution for them to provide follow-on information to their customers directly, and to answer any queries. This work has also helped to identify the early operational philosophy of our transmission ANM scheme, and it's interaction with SSEN Distribution systems."	In progress	Latest update as of 01/02/2025	07/2024	This activity was important in order to provide distribution customers with a future outlook of network access on Shetland, to inform their business case for network connection. SSEN Distribution had many queries from multiple customers on the impact of the future transmission system (and associated Shetland ScotWind connection) on their network connection.	SSEN Transmission curtailment assessment report and associated data spreadsheet provided to SSEN Distribution (internal)	"SSEN Transmission curtailment assessment report and associated data spreadsheet provided to SSEN Distribution (internal) - curtailment assessment carried out (utilising SSEN Distribution generation/demand profiles, with SSEN Transmission generation profiles) against 5 different future scenarios to provide each distribution customer with an annual curtailment range from 2032 onwards. [Restricted sharing]"	N/A	Positive - SSEN Distribution and distribution customers are more informed about likely transmission network access before/after connection of Shetland ScotWind (which should encourage connection)	Positive - proactive engagement with SSEN Distribution to provide the information necessary for them to answer difficult customer queries on future network access.	SSEN Distribution have some further sensitivities that they want to explore in the curtailment assessment, and work will continue to address any further queries from SSEN Distribution and their customers.	This collaborative analysis with SSEN Distribution has helped to identify the early operational philosophy of our transmission ANM scheme on Shetland, and it's interaction with SSEN Distribution systems.				
Coordination and cooperation activity	SSEN/060	SSEN Transmission	SSEN-D, NESO	24/25	"Shetland on-island transmission network strategy SSEN Transmission collaborated with SSEN Distribution, the Shetland Island Council, the North Sea Transition Authority (NSTA), ScotWind developers, and other significant stakeholders to conduct a comprehensive optioneering exercise exploring various future energy pathways extending to 2045. This initiative has established our preferred strategy for a Shetland on-island transmission network, adhering to our Area System Planning (ASP) methodology. The chosen approach represents the most cost-effective and efficient solution, capable of accommodating all viable pathways through 2045, aligning with Scotland's net zero objectives, while also minimizing infrastructure to lessen the impact on the environment and local communities."	In progress	Final preferred strategy was presented to the Shetland Island Council (and other key stakeholders, including SSEN Distribution) on 10th Dec 2024	06/2023	Stakeholder inputs, including SSEN Distributions view on future GSP requirements on Shetland, were direct inputs into our optioneering approach, which helped us to determine a preferred approach which can accommodate all potential future and known requirements on Shetland for Net Zero.	The Shetland on-island transmission infrastructure project has been submitted to Ofgem as part of our CP2030 submission - to obtain approval for need and preferred option (Engineering Justification Paper has been provided)	"To inform our year round assessment of network requirements on Shetland, SSEN Distribution provided year round demand profiles for the Gremista GSP, and informed us of potential future plans on Shetland, which included the possibility of a GSP on Yell. [Restricted sharing]"	N/A	Positive - ensured our preferred approach considered future SSEN Distribution requirements out to 2045 (and beyond).	Positive - GSP demand profile information is beneficial for SSEN Transmission as it enables us to ensure that our transmission system is equipped to meet future demand while efficiently maintaining compliance with GSP standards.	The information shared by SSEN Distribution is now being used to inform GSP limits and generation curtailment projections (this is covered in the 'Shetland ANM - curtailment assessment' activity) to provide better information and certainty to islanded customers.	Working closely with SSEN Distribution has informed our preferred on-island transmission strategy for Shetland, and the learnings/data from this has been used to inform the Shetland ANM scheme and curtailment assessment exercise.				

Coordination and cooperation activity	SSEN/059	SSEN Transmission	SPEN, ICL	24/25	"GSP Modelling The impacts of distribution networks on power system behaviours are increasing due to the rapid reduction of system strength and the increase of distributed resources. The GB system has been using static ZIP (i.e., Z:impedance, I:current, P:power) models to represent distribution networks at the grid supply point (GSP), which may no longer be satisfactory for stability and fault studies. It is known that distribution networks may influence the damping of oscillations and induce delayed voltage recovery due to the transient overcurrent of induction motors. With the current limitation of the inverter-based resources, there is a risk that delayed voltage recovery may propagate wider into the system and evolve into a fault-induced voltage collapse. Distribution networks may also supply fault current back into the GSP and therefore affect the protection schemes at the transmission level. This project sets out to establish GB-wide composite load models as seen at GSPs and develop methodologies to verify such models in the field."	In progress	SSEN Transmission internal funding approvals were completed in December 2024, the project consortium is currently producing the necessary documentation in order to formally kick-off the project in March 2025.	08/2024	Developing more accurate GSP models will minimise any unforeseen power system oscillations or interruptions in electricity supply, which will ultimately benefit the power system as a whole by reducing electricity bills and unplanned outages.	N/A	Project scope documents have been shared within the project consortium, which includes transmission owners and academic institutions. [Restricted sharing]	N/A	This project will make a positive on the whole system by reducing any unforeseen outages or interruption in the supply of electricity, and consequently will reduce the electricity bill of the taxpayers.	This project will make a positive impact on SSEN Transmission assets. By developing more accurate GSP models, any unforeseen outages of assets owned by SSEN Transmission will be minimised.	The next stage of this project is the formal project kick-off in March 2025.	The recommendation for this project is to proceed to project kick-off as planned in March 2025.				
Related action	SSEN/059/A01	SSEN Transmission	SPEN, ICL	24/25													Detailed proposal drafting by Imperial College London completed. SPEN and NESO have also been invited to be part of the project.	01/2025	New	SSEN/059

Coordination and cooperation activity	SSEN/058	SSEN Transmission	NGET, UKPN, NPL, ICL	24/25	<p>"SYSMET Alpha Phase SYSMET Alpha phase provides a system strength measurement and estimation to enable detection and mitigation of weak system conditions and instability associated with increased connection of inverter-based resources (IBR). The overall objective of the Alpha Phase project is to enable implementation of online system strength monitoring based on frequency-dependent impedance measurement in the GB power system, by doing the following activities:</p> <ul style="list-style-type: none"><li>- Developing detailed standardised specifications for high-voltage injection equipment and measurement systems.</li><li>- Assessing the suitability of existing network assets against specifications.</li><li>- Identifying candidate implementation locations.</li><li>- Developing detailed standardised specifications for algorithms to evaluate impedance and system strength metrics from measurement data.</li><li>- Determining the required injection level considering real grid characteristics.</li><li>- Assessing integration with existing monitoring and modelling systems in terms of data flows, communications, and visualisation.</li><li>- Identifying technology partners for implementation of hardware and software requirements.</li><li>- Developing validation methods to verify the accuracy of new system strength monitoring solutions.</li><li>- Understanding governance processes for field implementation including network approvals, and compliance with grid codes and standards."</li></ul>	In progress	28-January-2025: Mid-point project review with UKRI	05/2024	SYSMET helps proactively identify potential oscillations or low stability margins in the network, thus avoiding a potential disconnection and loss of electricity supply to the end user. Therefore, SYSMET reduces the risk of unforeseen interruptions in the electricity supply and provides a lower cost of electricity bills to the taxpayer.	N/A	"The project consortium regularly has MS Teams meetings and in-person meetings. Several documents and a simulation computer model in PSCAD has been produced by the consortium and shared among consortium members. [Restricted sharing]"	N/A	SYSMET makes a positive impact on the whole system by reducing unforeseen interruptions in the supply of electricity to the end user.	SYSMET makes a positive impact to the assets owned by SSEN Transmission, by reducing the probability of equipment damages arising from sustained, growing oscillations in the power system.	The next stage for SYSMET is to continue to a SIF Beta phase application, in order to implement the methods proposed by the projects in a real-world installation, thus proving the potential benefits this will bring to the UK's power system in terms of stability and power quality.	SYSMET is key to ensuring the stability of the power system and to implement a smooth transition to a net-zero electrical power system in the UK.				
Related action	SSEN/058/A01	SSEN Transmission	NGET, UKPN, NPL, ICL	24/25													SSEN Transmission's SYSMET Alpha phase deliverables completed.	03/2025	Closed	SSEN/058

Coordination and cooperation activity	SSEN/057	SSEN Transmission	NGET, NESO, Manitoba Hydro International	24/25	"TOTEM2 This project is a continuation of NIA projects, NIA_SHET_0032 TOTEM and NIA_SHET_0035 TOTEM Extension. These projects provided a multi-party agreement that enables the GB Transmission Owners to work together to acquire and validate a new system model that will enhance, as well as de-risk the integration of new technologies. With the current configuration and capabilities of the TOTEM tool, two aspects currently lead to additional time and effort being required. Firstly, file format conversions are required. Currently, Power Factory model files need to be converted into PSS/E format before they can be uploaded into TOTEM adding additional time and computational effort. Secondly, simulation speeds are considered long taking approximately three hours per scenario. If these additional capabilities aren't implemented, then we are not maximising the benefits that this tool has the potential to provide. The build-up of knowledge of the impact of control interactions will be limited by the time taken to run a simulation and to convert file types to ensure compatibility. Knowledge of control interactions is vital as the potential for adverse interactions between control devices such as HVDC links and Flexible AC Transmission Systems (FACTS) devices is rising and needs careful consideration within the context of a potentially weaker GB system."	In progress	"The delivery of TOTEM 2 centres around 2 distinct work packages -  1. Re-Dispatch Tool Refinement - The contractor shall review and refine the existing model re-dispatch tool to enable direct use from Power Factory models, removing the need to convert to PSS/E format. The contractor shall create a comprehensive user manual to enable users to understand both how the tool functions and to apply the tool to re-dispatch network models.  The contractor has completed this work package and a final report is due to be submitted for review in February 2025.  2. Simulation Speed Improvement - The contractor shall review the simulation speed of the Scottish network model and make improvements. Optimisation of the model shall be carried out with the aim of simulation times of 10-15 minutes for a 30-second run on a high-performance computer (HPC). The contractor shall create a comprehensive user guide to demonstrate how the optimisation was carried out to enable users to optimise future network models.  The contractor has partially completed this work with full completion on track for March 2025."	05/2024	This project will facilitate the energy system transition and/or benefit consumers in vulnerable situations by developing an accurate modelling framework of the UK's power system. This will ultimately translate into lower energy bills for the taxpayer due to the reduction in unforeseen outages in the electrical power system.	<a href="https://smarter.energynetworks.org/projects/nia_shet_0045/?attempt=peaprojectpdf">https://smarter.energynetworks.org/projects/nia_shet_0045/?attempt=peaprojectpdf</a>	"Simulation models and documentation shared between SSEN Transmission and Manitoba Hydro International (MHI). [Restricted sharing]"	N/A	This project will make a positive impact on the whole system by accurately modelling any weaknesses that may arise from the interaction of power electronics interfaced devices connected to the grid. Ultimately, the outcomes of this project will make the whole system safer and smarter, thus reducing maintenance costs and electricity bills.	This project will make a positive impact on the assets owned by SSEN Transmission, by accurately modelling any weaknesses that may arise from the interaction of power electronics interfaced devices connected to the grid.	The recommended next stage is to complete this project and consider whether further developments are required in the modelling framework.	The benefits of accurately modelling the power system are very significant and power system modelling is key to understanding and predicting any underlying issues in the electrical power grid.				
	Related action	SSEN/057/A01	SSEN Transmission	NGET, NESO, Manitoba Hydro International	24/25												Purchase order to Manitoba Hydro International issued on September 20254 for simulation speed enhancement of TOTEM 2.	05/2024	Mature	SSEN/057

Coordination and cooperation activity	SSEN/056	SSEN Transmission	SSEN-D	24/25	<p>"GSP Compliance Report Ongoing and continued collaboration and data exchange between SSEN-D and SSEN-T on GSP demand compliance. Assessment is carried out in line with the requirements set out in Grid Code PC.74. Whilst this requirement in the Grid Code strictly applies to NGET, SSEN-T have adopted a similar approach.</p> <p>SSEN-D issue Week24 data to SSEN-T via the NESO on an annual basis, containing schedule 11 (providing demand forecast at the GSPs) and schedule 5 (providing 33kV connectivity diagrams and equipment ratings).</p> <p>SSEN-T use the SSEN-D data to calculate current and future demand compliance at each GSP site, in accordance with SQSS section 3. The results are captured within a GSP Compliance Report which is issued back to SSEN-D, via the NESO.</p> <p>To support this process SSEN-T and SSEN-D are in regular and ongoing communication."</p>	In progress	SSEN-T's GSP Compliance Report ready for review - end of February 2025	01/2023	Ensuring compliance of GSP assets in line with predicted future demand growth. Recognising areas of potential future capacity constraints at GSPs and ensuring upgrades can be planned in a timely manner.	Reports are not openly published rather exchanged directly between SSEN-T, the NESO, and SSEN-D.	<p>"SSEN-D share the WEEK24 data on an annual bases with SSEN-T, via the NESO.</p> <p>The Week24 data contains:</p> <p>Schedule 11: One file for each GSP showing the current and forecasted demand (Year 0 - Year 8) at the given GSP during time of GSP peak demand, GB grid peak demand and GB grid min demand. Currently the submission does not contain demand for the Access Periods.</p> <p>Schedule 5: Worksheet detailing Nodes, Lines and Transformers as well as single line diagram showing 33kV network and connectivity between the GSPs [Restricted sharing]"</p>	Data is not openly published rather exchanged directly between SSEN-T, the NESO, and SSEN-D.	Positive - ensures that network / GSPs remain compliance for demand supply.	Positive - provides us with better understanding of GSP assets and ensures a regular review of emended demand growth takes place. Improved communication with SSEN-D around GSPs.	<p>"Continuation of the annual Week24 and GSP Compliance Reporting process and maintaining ongoing communication and relationship with SSEN-D and the NESO on this topic.</p> <p>Agree on GSP Access Groups and establish process for assessing GSP compliance during Access Periods.</p> <p>Create and issue Guidance Notes which document the data-exchange and responsibilities within this process between SSEN-T and SSEN-D and can be referenced by both parties. "</p>	<p>"Some open questions around GSP Access Groups, due to inconsistencies between the currently captured GSP access groups and the 33kV connectivity, as well as the lower transmission voltage levels in the NoS leading to fairly large Access Groups. SSEN-T and SSEN-D have discussed these questions and agreed to seek further input from the NESO.</p> <p>As this is a fairly new process for SSEN-T, the structure has evolved slightly to suit requirements over the last two years. Now that structure is more defined and established, capturing the steps and data requirements in a Guidance Note, which can also be shared with SSEN-D, would be beneficial."</p>				
Related action	SSEN/056/A03	SSEN Transmission	SSEN-D	24/25													Issuing 2024-25 GSP Compliance Report to SSEN-D	01/2025	Mature	SSEN/056
Related action	SSEN/056/A02	SSEN Transmission	SSEN-D	24/25													Processing of Year 2024 Week24 SSEN-D data.	07/2024	Closed	SSEN/056
Related action	SSEN/056/A01	SSEN Transmission	SSEN-D	24/25													Regular meetings with SSEN-D to discuss Week24 data and general demand status of GSPs as well as contents of GSP Compliance Assessment. This also extended to NESO/ SSEN-D/ SSEN Transmission discussion of Week 24 submission with respect to demand as an agenda item at the JSDL meeting held on 14/11/2024.	01/2024	Mature	SSEN/056
Coordination and cooperation activity	SSEN/055	SSEN Transmission	SSEN-D, NESO, SPEN	24/25	<p>"T/D Limits An initiative supported by the ENA involving all TOs and DNOs, that is looking to accelerate the connections of distributed customers where there is potentially unused capacity at a Grid Supply Point (GSP). This has involved weekly meetings and workshops to establish a technical limits calculation methodology and define the eligibility criteria for GSPs. With these technical limits agreed at individual GSPs, embedded customers connections can then be accelerated ahead of Transmission reinforcement works through implementation of a DNO owned, automated control scheme such as Active Network Management (ANM)."</p>	In progress	Technical limit connection offers for 42 GSPs produced and sent to NESO as of December 2024.	04/2023	<p>"Engaging with ENA, NESO, TOs and DNOs to agree on the calculation methodology used to establish technical limits at GSP.</p> <p>"</p>	<a href="https://www.energynetworks.org/publications/grid-supply-point-technical-limits-for-accelerated-non-firm-connections">https://www.energynetworks.org/publications/grid-supply-point-technical-limits-for-accelerated-non-firm-connections</a>	<p>"Distribution shared information with Transmission on the embedded customers connected and looking to connect behind the GSP. This information was used by Transmission to calculate technical limits and fault level headroom at GSPs which was shared back with Distribution through technical limits offers. [Some restricted and some widely shared]"</p>	N/A	Positive - Allows embedded customers an earlier connection and ability to export to the transmission network on a Non-Firm basis ahead of the completion of required transmission reinforcement works.	Positive - More efficient data sharing processes around embedded generation set up between SSEN Transmission and SSEN-D through appendix G process - which has been established as a pre-requisite for technical limits.	Transmission Owner Connection Offers (TO-COs) including technical limits for GSPs have been produced and are awaiting acceptance. Once these are accepted work can commence on the design of the DNO ANM schemes and offers can be made to customers allowing them to accelerate their connection.	A co-ordinated approach between Transmission and Distribution will provide accelerated connection dates to embedded customers.				

Related action	SSEN/055/A01	SSEN Transmission	SSEN-D, NESO, SPEN	24/25													Regular meetings with ENA lead, Strategic Connections Group consisting of NESO, TO's and DNO's to draft the Technical Limit Rule-book and compliance documentation.	04/2024	Mature	SSEN/055
Coordination and cooperation activity	SSEN/054	SSEN Transmission	NESO	24/25	"TIA Threshold Any embedded generator or storage site with a capacity greater than the Transmission Impact Assessment (TIA) threshold is required to undergo a Transmission Assessment. A review has taken place between SSEN Transmission and SSEN Distribution, SSEN-D, to determine whether the TIA threshold for the North of Scotland area could be increased. The Connections Action Plan (CAP) explicitly sets out an action for the TIA thresholds for each network area to be reviewed: "We would also like to see the ESO and DNOs assess and review the thresholds for TIAs; to accelerate connection timescales for distribution customers.""	In progress	In August 2024, SSEN Transmission published a news article on their website stating that the TIA threshold for SSEN Transmission's mainland operating area in the north of Scotland could be increased from 50kW to 200kW. SSEN-D have been sharing information with SSEN Transmission that allows the impact of the increase in the TIA Threshold to be monitored with a view to identifying any unintended consequences and also opportunities for further change in the TIA Threshold value.	03/2024	Engaging with SSEN-D to receive data on embedded applications that could be affected by a change in the TIA threshold. Joining SSEN-D in engagement with affected connection stakeholders to share the benefits and opportunities afforded by the change in the TIA Threshold.	<a href="https://www.ssen-transmission.co.uk/news/news-views/2024/8/ssen-transmission-takes-important-step-to-speed-up-new-connections-in-the-north-of-scotland/">https://www.ssen-transmission.co.uk/news/news-views/2024/8/ssen-transmission-takes-important-step-to-speed-up-new-connections-in-the-north-of-scotland/</a>	"Distribution shared information with Transmission on small embedded customers that have applied to them, so we could understand the impact that a change to the TIA threshold would have. [Some restricted and some widely shared]"	<a href="https://www.ssen.co.uk/our-services/tools-and-maps/embedded-capacity-register/">https://www.ssen.co.uk/our-services/tools-and-maps/embedded-capacity-register/</a>	Positive - By being able to raise the threshold this means accelerated connection timescales to small embedded customers that will no longer need to undergo a Transmission Impact Assessment	Positive - More efficient data sharing processes and visibility of embedded generation being set up between SSEN Transmission and SSEN-D as part of the ongoing review of the TIA threshold increase impact.	An ongoing review is taking place to understand the impact of the increase of the threshold to 200kW	Co-ordinated data sharing between Transmission and Distribution to allow an increase to the TIA threshold will provide accelerated connection timescales to small embedded customers.				
Related action	SSEN/054/A01	SSEN Transmission	NESO	24/25													Drafted TIA position paper with SPT and NGET to submit to Connections Process Advisory Group (CPAG).	10/2024	Closed	SSEN/054
Coordination and cooperation activity	SSEN/053	SSEN Transmission	SSEN-D	24/25	"SSEN-D Engagement on Nairn GSP Recurring monthly meetings held with SSEN-D, arranged by the project Customer Relationship Manager to ensure the customer (SSEN-D) remain up to date with the project progress."	In progress	01/03/2025	01/2025	Ensured the customer is kept up to date with the project progress and changes.	N/A	N/A	N/A	Improved communication, resulting in improved decision making.	Ensures our customers are kept up to date with the project development, cost and programme changes.	To continue to hold regular communications with SSEN-D	To minimise project misinformation and mitigate programme delays.				
Related action	SSEN/053/A01	SSEN Transmission	SSEN-D	24/25													Initiated recurring meetings with SSEN-D	01/2025	Business As Usual; Mature	SSEN/053
Coordination and cooperation activity	SSEN/052	SSEN Transmission	SSEN-D	23/24	"Using a whole system approach to support RIIO T3 submissions.  1. Dundee creation of regional development strategy which is driven by the asset life of a number of GSP locations across the Dundee area. The strategy seeks to address the drivers while considering other load, non-load and distribution requirements.  2. East Coast 132kV network - A similar approach has been taken to strategically plan that part of the transmission network recognising asset condition, customer connection and GSP interactions."	In progress	Latest update as of 01/03/2024	01/2022	Both activities rely on a coordinated approach both across Transmission (load and non-load) and with SSEN-D to develop a solution to future proof the network with a coordinated, economic and efficient design.	N/A	Emails, Teams meetings, workshop	N/A	This has a positive impact on whole system by continuing to demonstrate our ability to coordinate internally and externally and develop a solution to future proof the network aligning with growth in generation to help meet net zero targets	Assure alignment and no-regret in development of solution	Engineering Justification Papers will be produced for both Dundee and East Coast strategies which will then be submitted with the T3 business plan	The primary driver for both EJP's will be asset health and must be accounted for in our next business plan submission ensuring that we deliver a solution which meets our future load requirements				
Related action	SSEN/052/A01	SSEN Transmission	SSEN-D	23/24													Submission of EJPs for RIIO T3	01/2024	Business As Usual	SSEN/052

Coordination and cooperation activity	SSEN/051	SSEN Transmission	SSEN-D	23/24	"(HOWSUM) Steering Group The Hebrides and Orkney Whole System Uncertainty Mechanism (HOW-SUM) Steering Group is comprised of both SSEN Distribution and Transmission colleagues to arrive at the optimal whole system solution accounting for future demand and generation, subsea cable asset condition, island resilience and decarbonisation."	In progress	Latest update as of 01/03/2024	01/2022	This group establishes working relationships between SSEN Transmission and SSEN-D. This also supports consistent engagement with local councils and communities.	N/A	Knowledge sharing through emails, Microsoft Teams and face-to-face meetings	N/A	Allows for future coordination with local council, communities and developers to ensure efficient and effective solutions are put forward to benefit the islands	Positive impact with the population of the islands by building better relationships to tackle future problems, improve network security of supply and decarbonise the islands.	Continued collaboration to progress reports. HOWSUM 2024 has been submitted with costs to follow. Work towards HOWSUM 2025 submission, exploring T&D options and determining the most efficient and economic solution to be progressed.	Collaboration will be crucial to deliver the efficient and economic solutions while accounting for the or future demand and generation, subsea cable asset condition, island resilience and decarbonisation				
Related action	SSEN/051/A01	SSEN Transmission	SSEN-D	23/24													Continued engagement with SSEN-D to support Transmission input on the 2025 HOWSUM submission. This will include attending the steering group and Director level workshop	01/2024	Business As Usual	SSEN/051
Coordination and cooperation activity	SSEN/050	SSEN Transmission	SSEN-D	23/24	"Shetland Strategy meetings Fortnightly meetings on the Shetland Strategy which includes involvement from SSEN-D on what we at Transmission are looking to progress, and what information we need from SSEN-D/what impact this may have on SSEN-D infrastructure and current contracted customers."	Complete	Latest update as of Feb 2025	01/2023	We are taking a holistic view of the current distribution network on Shetland, and how the newly created transmission infrastructure interacts.	N/A	N/A	N/A	Positive - will provide a more holistic view	Positive - shows we are thinking out the box and shows our understanding that dealings on Shetland are very different to the mainland	Preferred outcome of the strategy to be finalised and communicated to contracted customers, Ofgem, ESO and then wider through a webinar for various stakeholders. Needs cases will need to be submitted to Ofgem on the back of this.	This is the view across the internal business of next steps/following procedures.				
Related action	SSEN/050/A01	SSEN Transmission	SSEN-D	23/24													"Stakeholder webinar to be held in June which will ultimately be used to support Ofgem submissions later in the year. 2025 update: All stakeholders have been made aware of strategy outputs and impacts "	01/2024	Business As Usual	SSEN/050

Coordination and cooperation activity	SSEN/049	SSEN Transmission	SSEN-D, Scottish Enterprise,	23/24	"Data Demand Centres SSEN Transmission were invited to attend a call with Scottish Enterprise to discuss the connection of data demand centres throughout our network area. With significant wind resource and pipeline of contracted Scot Wind generation, Scotland has rightly been chosen as a destination where demand is generally seen as a positive. The challenges to connection are around bay availability and space within substation, rather than network reinforcements to cater for the demand. The call was followed up with an introductory face-to-face meeting with Scottish Enterprise and one of their clients, who were looking to build out a data demand centre somewhere in Scotland. Scottish Enterprise had identified 10-15 sites around Scotland that they believed could be used for these centres, however, a grid connection did not make up part of their thinking, so most of the sites earmarked, would prove very challenging to connect to the grid. There was one site identified at Edzell Woods, which we discussed with the developer as being the most logical from a grid perspective. We explained that any Transmission connection would likely have a 6-7 year programme to build out from our substation to their site, as well as limitations on where we could physically connect their project, due to a shortage of connection bays. At this point, we introduced the possibility of their initial phase 1 50MW demand connecting via the distribution network and when their ramp up to circa 500MW was required, Transmission infrastructure would potentially be ready for them. SSEN-D attended a call to discuss some of the GSPs nearby, discussing headroom left on the transformers, as well as how the physical connection would look. The conversations to date have been very valuable and have given the customer the most efficient way to connect their scheme, in the most timely manner for them. We are now awaiting a potential grid application for the data demand centre. This co-ordination between T and D could get the customer connected earlier to the system and bring 10's of Millions of pounds investment to the Scottish economy."	Complete	Latest update as of Feb 2025	01/2023	SSEN Transmission and Distribution working collaboratively to find an optimal solution for the connection of new technology to the GB Network.	N/A	N/A	N/A	Positive - Earlier connection to the grid and large investment in local economy.	Positive reputation following co-ordinated approach, finding solutions on how to connect the customer earlier by involving SSEN-D colleagues.	Waiting for grid connection application to formally move the project forward.	We have provided all information asked of us. The decision is now with the developer to submit an application, so we can work on issuing a connection offer with anticipated connection dates and associated costs.				
	Related action	SSEN/049/A01	SSEN Transmission	SSEN-D, Scottish Enterprise	23/24											Continue to engage with Scottish Enterprise, Developers and SSEN-D to support future requests from similar technologies	01/2024	Business As Usual	SSEN/049	
Coordination and cooperation activity	SSEN/048	SSEN Transmission	SPEN, NGET, NGESO	23/24	"Joint Planning Committee Modelling Group Quarterly meeting with TOs and ESO across GB to discuss network modelling activities and issues"	In progress	Latest update as of 01/03/2024	01/2023	Work with other TOs and the ESO to resolve any issues on network modelling or discuss other modelling activities	N/A	"This is a face to face meeting to discuss issues/ concerns regarding network modelling and this sub group reports to the overall JPC group. [Restricted sharing]"	N/A	Enables TOs and ESO to review modelling assumptions or address issues with regards to network modelling with a level of consistency across parties.	Allows us to raise modelling issues and engage with other parties in GB, to ensure effective coordination of network plans.	Continue to meet as a sub group to address ongoing and new issues	This is necessary to continue improvement on the modelling of the GB network.				

Related action	SSEN/048/A01	SSEN Transmission	SPEN, NGET, NGESO	23/24													Actions continue and any recommendations or processes that come out of it will be actioned upon as required. Outcomes relate to all system modelling work on the GB network.	01/2023	Business As Usual	SSEN/048
Coordination and cooperation activity	SSEN/047	SSEN Transmission	SPEN, NGET, NGESO	23/24	"Electricity Ten Year Statement Work to develop GB network models for future years, and providing technical data as required for publishing in the report."	Complete	Latest update as of 01/03/2024	01/2023	Working with the other TOs across GB, as well as the ESO, to develop whole GB network transmission models for current and future years.	<a href="https://www.nationalgrideso.com/research-and-publications/electricity-ten-year-statement-etys">https://www.nationalgrideso.com/research-and-publications/electricity-ten-year-statement-etys</a>	"Data shared is network modelling data. We share our network models (PSSE) and then share modelling data for publishing as part of the ETYS. [Some restricted and some widely shared]"	N/A	Coordinated work with other TOs and the ESO to develop whole GB transmission network models for all TOs and the ESO. Models are used in the system planning of the GB grid.	This results in us having updated Transmission Network master GB models for undertaking all system analysis studies. This enables the planning of the network to be undertaken at a GB level, ensuring coordination.	This is an annual process and will continue next year (ETYS 2024 has kicked off already).	This is a licence obligation to continue				
Related action	SSEN/047/A01	SSEN Transmission	SPEN, NGET, NGESO	23/24													"Progress next ETYS cycle starting with model builds.  Network modelling work feeds directly into the production of the ETYS as well as the tCSNP/NOA "	08/2024	Business As Usual	SSEN/047
Coordination and cooperation activity	SSEN/046	SSEN Transmission	SSEN-D, NGESO	23/24	"Connections Reform Work undertaken to consider how connections reform will align with requirements of a more strategically planned networks and recommend any changes as a result"	In progress	Latest update as of 22/05/2024: a TIA threshold workgroup has been set up and plans are in place to set up a Joint Implementation Group	01/2023	Requires input and collaboration across T/ D and T/ESO	N/A	"No specific data exchanged other than worked examples of the connections process under TMO4 and an explanation of the TO's role in a more strategically planned network. [Widely shared]"	N/A	Positive - a proposed solution will provide direction and more certainty towards developers in the queue	Positive - provides better alignment between SSEP and connections process	Seek industry endorsement and move to code modification to implement solution	This is essential if we are to realise the benefits of both strategic network planning and a reformed connections process				
Related action	SSEN/046/A01	SSEN Transmission	SSEN-D, NGESO	23/24													Further co-ordination activity to assess trial status	04/2024	Improving	SSEN/046
Coordination and cooperation activity	SSEN/045	SSEN Transmission	NGESO, SSEN-D	23/24	"T/D limits methodology Work undertaken to provide methodology for setting T/D limits at GSPs. Currently Some processes already in place in England."	Complete	Latest update as of 01/12/2023	01/2023	Involved co-ordination across T & D in setting methodologies for dealing with setting capacity.	<a href="https://www.ssen.co.uk/our-services/tools-and-maps/eoi-form/">https://www.ssen.co.uk/our-services/tools-and-maps/eoi-form/</a>	"Data exchanged between T and D was Mvar of capacity available at selected GSP's via Appendix G. [Some restricted and some widely shared]"	N/A	Positive - T + D have worked together on the dealing with limits at T/D boundary to enable more generation to connect within the scope of the work	Positive - Greater Liaison with D counterparts.	The process has already been rolled out to trial sites.	The project aimed to trial the process once the details had been agreed.				
Related action	SSEN/045/A01	SSEN Transmission	NGESO, SSEN-D	23/24													There are follow-on activities across trial sites. The process has been accepted within the company.	12/2023	New	SSEN/045
Coordination and cooperation activity	SSEN/044	SSEN Transmission	SSEN-D, NGESO	23/24	"Centralised Flexible Connections Solution A whole system solution to deploy a centralised flexible connections solution to provide quicker network access to renewable generation in a manner that minimises costs to the GB consumer and removes barrier to entry for small scale renewable generation"	In progress	Latest update as of 01/02/2024	08/2024	Quicker network access to renewable generation in a manner that minimises costs to the GB consumer, removes barrier to entry for small scale renewable generation and accelerating our contribution to net zero.	N/A	"Connection application information including customer data, High level options being considered [Restricted sharing]"	N/A	This is ongoing but is expected to be positive as it will provide quicker network access to renewable generation in a manner that minimises costs to the GB consumer, removes barrier to entry for small scale renewable generation and accelerates our contribution to net zero	This is ongoing but it is expected to be positive as it will provide quicker network access to renewable generation and accelerate our contribution to net zero	Define functional and nonfunctional requirements and get agreement with the ESO to deploy the scheme in line with STCP 26.1 – Active Network Management.	This will provide quicker network access to renewable generation in a manner that minimises costs to the GB consumer, removes barrier to entry for small scale renewable generation and accelerates our contribution to net zero				
Related action	SSEN/044/A01	SSEN Transmission	SSEN-D, NGESO	23/24													Define functional and non-functional requirements and get agreement with the ESO to deploy the scheme.	09/2024	New	SSEN/044

Coordination and cooperation activity	SSEN/043	SSEN Transmission	SSEN-D, NGESO, University of Strathclyde, NSTA/SIC/ Statkraft/Offshore developers	23/24	"Shetland Strategy As part of Shetland strategy, planning the future transmission network on Shetland, a close engagement with SSEN-D as the distribution network owner and operator on Shetland was necessary. At the beginning of the project we reached out to SSEN-D to understand their future plans in terms of GSPs and their corresponding capacities and how this can fit into the whole system solution for Shetland. This has helped assigning potential distribution customers to the closest potential GSP to help optimise the 33kV network. Then, we engaged with SSEN-D to get their distribution energy profiles, those have been considered along the transmission energy profiles to assess the operation of the system throughout one typical year of operation. We have also worked closely with SSEN-D on their fault ride through solution and how the future transmission strategy impacts on it. We have regular workshops with SSEN-D to review the proposed network options and prepare relevant maps to show the paths that both transmission and distribution networks will take considering the planned transmission substations and customer connections offered by SSEN-D."	Complete	Latest update as of March 2025	06/2023	The whole system solution is to help optimise the required system operability assets, identify and reduce or suppress potential costs of rebuild, and assess opportunities for common use of land to build electrical assets for the whole system solution namely substations.	N/A	"Minutes of the last two meetings held with SSEN-D and also a link to the distribution profiles shared.  Files shared by SSEN-D as part of the whole system solution.  [Restricted sharing]"	N/A	Overall positive. However, there are some challenges related to changing projects impacting contracted customers either from SSEN Transmission or SSEN-D side.	Positive. This enables us to plan an economic and efficient whole system solution in a coordinated manner.	Continue work to achieve the most from the whole system solution	Work in progress, not yet concluded.				
Related action	SSEN/043/A01	SSEN Transmission	SSEN-D, NGESO, University of Strathclyde, NSTA/SIC/ Statkraft/Offshore developers	23/24													"Continue coordination with stakeholders.  This feeds directly into the Needs Case for the Shetland Whole System solution for submission to Ofgem during 2024  2025 update: an EJP was submitted to Ofgem as part of T3."	03/2024	Business As Usual	SSEN/043

Coordination and cooperation activity	SSEN/042	SSEN Transmission	NGESO, SPEN, NGET, National HVDC Centre	23/24	"HND, HNDFUE & tCSNP2 1) HND: The Network Planning team is extensively working with the ESO, NGET, Offshore Developers and the HVDC centre to identify an economic, efficient and deliverable solution as per of the HND offshore coordinated network. 2) HNDFUE: As part of next step to HND exercise over the 2023-24 period , we extensively worked with the ESO, NGET, SPEN and others to identify the most suitable offshore coordinated network that will help us to deliver the network to facilitate Net Zero targets by 2035. 3) tCSNP2: The Network Planning team collaboratively worked with the ESO, NGET, Developers and HVDC centre to identify economic, efficient and deliverable onshore network reinforcement options to support HND-FUE offshore coordinated network that will enable us to meet our commitments to achieve decarbonisation of Grid."	In progress	"Latest update as of Feb 2025: 1) HND: The Network Planning team is extensively working with the NESO, NGET and Offshore Developers to identify an economic, efficient and deliverable solution as per of the HND offshore coordinated network. The work is ongoing.  2) HNDFUE: As part of next step to HND exercise over the 2023-24 period, we expansively worked with the NESO, NGET, SPEN and others to identify the most suitable offshore coordinated network that will help us to deliver the network to facilitate Net Zero targets by 2035. There is extensive engagement with developers and NESO through Detail Network Design clusters to progress on finalise deliverable offshore network design. The work is ongoing.  3) tCSNP2: The Network Planning team collaboratively worked with the NESO, NGET and OFGEM to identify economic, efficient and deliverable onshore network reinforcement options to support HNDFUE offshore coordinated network that will enable us to meet our commitments to achieve decarbonisation of Grid. This output of this process was confirmed by NESO via Beyond 2030 report which was published in March 2024."	09/2023	All the activities listed above needs collaborative working with all the players from GB energy industry including but not limited to OFGEM, ESO, NGET, SPEN etc.	N/A	[Restricted sharing]	N/A	These are critical activities which enable the ESO to identify economic and efficient options for development onshore and offshore to support the development of a coordinated GB network.	Deliver the most economical, efficient and deliverable network with due regard to environmental and societal considerations.	None	None				
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Related action	SSEN/042/A01	SSEN Trans-mission	NGESO, SPEN, NGET, National HVDC Centre	23/24													"GB wide publication by ESO of the Pathway to 2030 and the Beyond 2030 reports with investment recommendations for both onshore & offshore network design choices.  Feb 2025 update: GB wide publication by ESO of the Pathway to 2030 and the Beyond 2030 reports with investment recommendations for both onshore & offshore network design choices. SSEN-T is working towards delivery and development of schemes which had received appropriate recommendations as part of Pathway to 2030 and Beyond 2030 reports. SSEN-T Planning and Regulations teams are engaging with NESO and OFGEM to progress on tCSNP2 outputs. "	03/2024	Improving	SSEN/042
Coordination and cooperation activity	SSEN/041	SSEN Trans-mission	SSEN-D, ES Catapult, Regen	23/24	"RESP We are undertaking a study on Regional Energy System Plans (RESP) relating to our work on system planning and how strategic area plans might impact the network. We have had discussions with SSEN Distribution, ES Catapult and Regen to provided greater understanding of the current status of RESPS and local area planning."	Complete	Latest update as of March 2025	01/2024	Strategic planning of the network such as RESPs includes considering aspects on connections, planning, charging, markets.	N/A	"Project still gathering knowledge based information. [Some restricted and some widely shared]"	N/A	Positive - provides greater insight into how future regional and strategic plans might be aligned.	Positive - provides greater insight into how future regional and strategic plans might be aligned.	Ongoing engagement; write up report, disseminate to appropriate areas of the business	Initial investigations have already proved inciteful and raised further questions.				
Related action	SSEN/041/A01	SSEN Trans-mission	SSEN-D, ES Catapult, Regen	23/24													Information fed to sections of business involved in strategic planning.	01/2024	Mature	SSEN/041
Coordination and cooperation activity	SSEN/040	SSEN Trans-mission	Dundee City Council	23/24	"Dundee City Strategy Having regular meetings with the Climate, Economic and Planning teams in Dundee City Council to introduce SSEN-T and discuss the Dundee City Strategy, areas for collaboration and input from their LAEP and LHESS"	In progress	Latest update as of 01/02/2024	08/2023	Regular quarterly meetings with Dundee City Council is creating a good relationship with the council and provides a forum to update on the progress of their LAEP and LHESS which can feed into the city strategy. It also helps to flag any issues or risks we need to be aware and explores areas of opportunity which may feed in to the strategy.	None	"An overview of Dundee City Network Development Strategy developed by SSEN-T. [Restricted Sharing]"	N/A	Effective stakeholder engagement with local authorities, SSEN-D and SSEN-T to increase awareness of strategy and approach to create a positive working relationship	Creating positive relationships with stakeholders	Continued engagement with the next meeting taking place on 23 April 2024	Important to maintain the relationship and continue with the effective engagement that has a value to all parties.				
Related action	SSEN/040/A01	SSEN Trans-mission	Dundee City Council	23/24													Next meeting organised for 23 April 2024	04/2024	Improving	SSEN/040

Coordination and cooperation activity	SSEN/039	SSEN Transmission	NGET, The University of Dundee	23/24	"OHL Foundation uplift project Work on the OHL Foundation uplift project to investigate improved foundation designs. Through collaboration with NGET, University of Dundee and University of Bristol the new foundation design will improve efficiency for project timeframes as well as cost savings."	In progress	Latest update as of 01/02/2024	11/2022	The new design will be used throughout the industry to reduce the time taken to build foundations as well as the amount of material needed for foundation builds	<a href="https://smarter.energynetworks.org/projects/nia_shet_0039/">https://smarter.energynetworks.org/projects/nia_shet_0039/</a>	"Project reports and lessons learned are shared with the University to allow them to design the new foundation. The new models and designs are shared with the partners to allow for corroboration. [Widely shared] "	N/A	This activity will have a positive impact on the whole system in allowing for more cost effective, quicker construction of the networks allowing more renewable to connect to the network quicker and for less cost. This will benefit consumers in the long term.	The impact on SHET will be positive in that it is expected that the new foundation design will allow for quicker and cheaper construction.	Project to be completed and results assessed by NGET and SHET. Further work may involve additional testing of larger structures.	Project has the potential to reduce the time taken to construct overhead line circuits as well as reduce the carbon footprint.				
Related action	SSEN/039/A01	SSEN Transmission	NGET, The University of Dundee	23/24													Coordinate further testing and introduction into BaU	03/2024	Mature	SSEN/039
Coordination and cooperation activity	SSEN/038	SSEN Transmission	National HVDC Centre, NGESO, The University of Edinburgh, The Carbon Trust, Super Grid Institute	23/24	<p>"Network-DC The UK government has set targets to increase offshore wind to 50GW by 2030. The method for connecting offshore wind farms to the grid is to connect each wind farm to an alternating current (AC) converter station with an AC circuit breaker between the converter station and the rest of the onshore AC network, to protect the electricity grid from faults on the offshore direct current (DC) network. This method results in stand-alone assets connected directly to the transmission grid, increasing the total number of required AC converter stations. As the number of wind farms increases, the number of AC convertor stations increases. Without innovative solutions, the growing network of High Voltage Direct Current (HVDC) connections around GB will be less flexible and responsive, resulting in higher assets and system operating costs.</p> <p>DC circuit breakers (DC-CBs) are more than likely to be required to deliver a multi- terminal HVDC hub serving multiple offshore wind generation sites, GB transmission links, and international interconnections.</p> <p>Network-DC will investigate and demonstrate the use of DCCB, an innovative technology untested in the UK and European markets. DCCBs will allow us to bring multiple wind farms into a DC system, containing the impact of any single failure safely and securely.</p> <p>This Project brings together international partners to accelerate the readiness of DCCBs for installation into the design of the UK HVDC Network, and outline a clear pathway for the installation of the UK's first DCCB."</p>	In progress	Latest update as of Feb 2025 - still in progress	01/2022	A DCCB hub will reduce the need for AC infrastructure and effectively isolate faults in offshore network components. This project will build confidence in DCCBs allowing utilisation across the network. Enables more economic connection of offshore wind to UK mainland grid.	<p>"<a href="https://smarter.energynetworks.org/projects/10020383/">https://smarter.energynetworks.org/projects/10020383/</a></p> <p><a href="https://smarter.energynetworks.org/projects/10036946/">https://smarter.energynetworks.org/projects/10036946/</a></p> <p><a href="https://smarter.energynetworks.org/projects/10067854/">https://smarter.energynetworks.org/projects/10067854/</a> "</p>	"ENA Public website [Widely shared]"	N/A	Reduces the total amount of infrastructure.	Build expertise in design and commissioning of DC-Circuit breakers. Reduces future connection time. Simplify the operation of the network.	Progress BETA phase work with recommendations for specification of DC Breaker on UK network.	BETA phase is fully funded and is progressing.				
Related action	SSEN/038/A01	SSEN Transmission	National HVDC Centre, NGESO, The University of Edinburgh, The Carbon Trust, Super Grid Institute	23/24													Continue to deliver the Beta phase work packages.	01/2023	Improving	SSEN/038

Coordination and cooperation activity	SSEN/037	SSEN Transmission	National HVDC Centre, NGESO, University of Strathclyde, The Carbon Trust	23/24	<p>"INCENTIVE will investigate and demonstrate how offshore wind farms (OWF) can provide inertia to the onshore networks. This will provide grid stability and reliability at a lower cost, and reduce the need for additional infrastructure by co-developing and co-locating inertia services with OWFs. OWFs providing inertia to the onshore network is not an incremental innovation, but a step-change in thinking that could be replicated globally.</p> <p>INCENTIVE will investigate OWFs with:</p> <p>1. STATCOM with supercapacitor energy storage and grid forming converter.</p> <p>2. Battery energy storage system (BESS) with overrated grid forming converter.</p> <p>3. Synchronous condenser with flywheel.</p> <p>These solutions have never been trialled in conjunction with an offshore wind farm before making this a first-of-its-kind project. The Project brings together OWF developers, technology suppliers, NGESO, and Ofgem, to help build a cross-industry understanding of the INCENTIVE solutions."</p>	Not taken forward	Feb 2025 - Project cancelled after Beta phase.	01/2022	<p>"The energy contained in generators at power stations and industrial facilities provides inertia as they rotate at the same frequency as the electricity grid. Inertia in the GB electricity network is falling.</p> <p>Without novel solutions, adding additional renewable generation capacity will become increasingly challenging and could increase the operating cost of the GB network system and consumer bills. Historically, renewable generators have not treated system inertia as their problem as it has been high. However, we are already seeing renewable generation curtailed due to low system inertia."</p>	<p>"https://smarter.energynetworks.org/projects/10067856/"</p> <p>https://smarter.energynetworks.org/projects/10037143/"</p> <p>https://smarter.energynetworks.org/projects/10024879/"</p>	"ENA Public website [Widely shared]"	N/A	<p>"INCENTIVE will deliver benefits over and above those achievable through existing programmes (i.e. The Stability Pathfinder). These include:</p> <p>(1) Introduction of design alterations to requisite or already-planned assets to provide inertia.</p> <p>(2) Capturing cost savings by building inertia provision alongside building OWFs. For example, sharing network, access, and planning considerations.</p> <p>(3) Accelerating the connection of renewable assets by proactively addressing inertia at the outset.</p> <p>(4) Driving down market prices by creating a liquid market for inertia services"</p>	Benefits consumer and ancillary service providers, impact on SSEN-T is largely neutral as SSEN-T cannot take part in the ancillary services market.	Completion of the Beta Phase 1 and approval to move to Beta Phase 2.	Completion of Beta Phase 1 shows a positive outcome in terms of benefits.				
	Related action	SSEN/037/A01	SSEN Transmission	National HVDC Centre, NGESO, University of Strathclyde, The Carbon Trust	23/24												"Feb 2025 update - Project was cancelled after Beta Phase. 2024 update - Conclude Beta Phase 1 of project and disseminate knowledge."	01/2024	Mature	SSEN/037

Coordination and cooperation activity	SSEN/036	SSEN Transmission	NGET, Icebreaker One, Southern Gas Networks, OLWG LTD, Mapstand LTD	23/24	"REACT (Rapid Evaluation Areal Connection Tool) REACT aims to create a geographical planning tool providing users with the ability to view electricity grid connection requests in real-time using an interactive visualisation map. Users will be able to identify the best possible locations to connect to the network, based on dynamic geospatial and network information, as well as a view of future demand and generation requests. This will streamline the connection process where limited pre-application information impacts formal applications. Optimising the location of demand and generation will increase the efficient use of existing assets and the effective roll-out of new infrastructure."	Not taken forward	Latest update as of Feb-25 - Project didn't get funding for Beta phased so is now an NIA project (purely SSEN).	01/2023	"REACT is addressing the challenges in the connection request process by providing an early dynamic view of all forecasted connection requests to highlight optimal locations and other key parameters. The main focus is the H2 use case explored in Discovery"	"https://smarter-energynetworks.org/projects/ukri10058535/"  https://smarter-energynetworks.org/projects/ukri10079052/"	"Reports published on the ENA portal [Widely shared]"	https://smarter-energynetworks.org/projects/ukri10058535/	"REACT will deliver the following net benefits to consumers: Financial - Cost savings for users of network services Significant interest to connect hydrogen electrolysis sites to the SSEN-T Network has resulted in multi-million-pound connection offers being made to developers due to the capacity requested and limited availability on the network. These requests would require costly reinforcement of the network, which would slow down the energy transition and increase consumers bills. Offering the tool to developers before they submit requests could deliver large savings by providing alternative locations to site their project on the existing network with more capacity. REACT will also save time and resource by eliminating the need for developer pre-application calls by providing them with all the information they need prior to the application. These calls cost approximately £6.3Kpa and will increase as connection requests rise. We'll review the savings on project development, pre-application costs and Transmission Network Use of System charges throughout the Project.  Environmental - Direct CO2 savings p.a against a business-as-usual counterfactual REACT will reduce the carbon emissions of building new infrastructure which would be required for the increase in connection requests. By utilising the existing network where possible, REACT will deliver direct environmental benefits. Environmental - Indirect CO2 savings p.a against a BaU counterfactual Carbon reductions will be investigated to identify the amount saved through reducing the delivery delays of hydrogen projects, while taking into consideration the ESO's and SSEN-T's North of Scotland future energy scenarios."	Improved systems planning and line of site of system needs.	Completion of Alpha Phase and submission of a Beta Application.	The project had a live demonstrator and we are now looking to move to BAU.				
	Related action	SSEN/036/A01	SSEN Transmission	NGET, Icebreaker One, Southern Gas Networks, OLWG LTD, Mapstand LTD	23/24												"Agreement on the Beta Application for funding with the project partners  Feb 2025 - Didn't get funding for Beta phase, now an NIA (purely SSEN) project."	07/2024	Mature	SSEN/036
Coordination and cooperation activity	SSEN/035	SSEN Transmission	NGESO, The Carbon Trust	23/24	"SIF Project Blueprint SIF Project Blueprint will develop solutions that facilitate the connection of new low-carbon energy to already-constrained areas of the GB network (such as northern Scotland in SSEN-T's network area) as quickly as possible, and to maximise energy export once connected by avoiding constraint-driven curtailment."	Not taken forward	Latest update as of Feb-25 - Project not taken forward	01/2023	"Blueprint addresses the 'Whole system planning for faster asset rollout' SIF Challenge. Discovery brings together TOs, ESO, and OWF developers to develop an improved, collaborative understanding of the key risks of developing behind constraint. This will improve whole systems cross-industry planning. It will also improve understanding of how innovative solutions can accelerate the development of the HND network and optimise the use of the existing network, and hence accelerate OWF rollout in currently constrained areas."	N/A	"UKRI Application for funding [Widely shared]"	N/A	The project will understand how novel, collaborative approaches to data and commercial arrangements can be used to deliver the HND and mitigate the risks in its delivery, fully aligned with SIF's Innovation Challenge focus Theme 2. The project is also relevant to Theme 3, as novel, collaborative, flexible arrangements between demand and generation will be considered as a possible solution for mitigating the risks in delivering the HND. Linked to Theme 4, hydrogen generation will be considered as a possible solution.	Delivery of whole system thinking to the business.	Start delivery of the Discovery Phase project.	Project has confirmed funding from the UKRI				

Related action	SSEN/035/A01	SSEN Trans-mission	NGESO, The Carbon Trust	23/24													"Start of the delivery of Discovery Phase project.  Feb 2025 - Project cancelled following Discovery phase."	01/2024	Mature	SSEN/035
Coordination and cooperation activity	SSEN/034	SSEN Trans-mission	NGET, NGESO, University of Strathclyde, Met Office, Gilytics, Energy Line	23/24	"REVISE REVISE is primarily focused on revisiting the current methodology for assigning overhead line ratings. The calculation process uses historical environmental data captured in the 1980s that is applied uniformly across the UK disregarding local/regional climate variations. The existing transmission network is increasingly constrained by system capacity limits exacerbated by rapidly increasing renewable integration. Improving understanding of line ratings, using latest generation high-resolution weather topographic data combined with the latest techniques for system modelling, will allow for improved targeted investment to ensure we meet demand for the connection of new renewables to the network, securing a safer and greener future."	In progress	Latest update as of 01/02/2025	01/2023	Provides additional capacity from existing assets to accelerate the connection of new assets, generators, services.	N/A	"Summary of UKRI application for funding. [Widely shared]"	<a href="https://smarter.energynetworks.org/projects/10130442/">https://smarter.energynetworks.org/projects/10130442/</a>	"REVISE offers the following: (1) Alleviating the constraint on renewable generation reduces the partial reliance on gas/diesel generation used to offset the difference. (2) Circuit rating achieved with no physical works and the associated embedded carbon involved. (3) May enable smaller renewable schemes to connect without the need to wait for further infrastructure works, helping to progress the connection queue. (4) May remove the need to upgrade/replace circuits following a connection request"	Provides additional capacity and speeds up connection times.	Delivery of the Discovery Phase projects, and recommendation for progress.	The Discovery Phase is funded.				
Related action	SSEN/034/A01	SSEN Trans-mission	NGET, NGESO, University of Strathclyde, Met Office, Gilytics, Energy Line,	23/24													"Feb 2025 - Out of discovery phase - now in Alpha phase. Looking to prepare an application for Beta phase.  2024 - Initiation of the Discovery Phase project and signing of the collaboration agreements. -	01/2024	Improving	SSEN/034
Coordination and cooperation activity	SSEN/033	SSEN Trans-mission	NGET, SPT, NGESO	22/23	"HND, HND FUE and tCSNP2 process. The Holistic Network Design (HND) is coordinated by the ESO and involves all three TO's in Great Britain. The HND process provided a set of recommendations to facilitate the connection of 50GW of offshore wind by 2030, taking account of four Network Design Objectives: economic and efficient, deliverable and operable, environmental impact and community impact. The HND Follow Up Exercise (FUE) is providing a follow-up recommendation for the offshore system design for the connection of further offshore wind (i.e. all ScotWind) beyond 2030, and the tCSNP2 process is providing the corresponding onshore reinforcement strategy (similar to the previous NOA process). The HND, HND FUE and tCSNP2 processes have required strong cooperation and collaboration with the ESO and other TO's (NGET and SPEN). Further, detailed network design of both the HND offshore East Coast coordinated network and HND FUE offshore coordinated network has begun (requiring strong cooperation and collaboration from offshore wind farm developers as well as NGET and the ESO)."	In progress	Latest update as of 01/03/2024	09/2022	The HND FUE and tCSNP2 processes will further support the Government's previously stated government targets for offshore wind and net zero; facilitating an economic, efficient, operable, and coordinated National Electricity Transmission System (NETS) (including offshore and associated onshore assets required to connect in scope projects). The detailed design activities for both the HND and HND FUE coordinated offshore systems are critical to realise the connection of significant offshore wind and minimise environmental/community impact onshore (fulfilling the aims of the HND and HND FUE processes).	N/A	" Mainly collaboration through work groups and delivery groups.  [Some restricted and some widely shared]  [External] Published ESO reports "	"https://www.nationalgrideso.com/document/270851/download  tCSNP2 publication (which covers HND FUE) is due mid-March"	"The HND FUE will identify the most efficient, economic and effective approach to connect over 50GW of offshore wind across Great Britain - minimising environmental and community impact."	This will ensure that SSEN-T and the other TO's within Great Britain can accommodate offshore wind connections in an efficient, economic and effective way.	HND FUE / tCSNP2 publication by ESO is expected in March 2024. Detailed network design of the offshore and onshore strategic network reinforcements - requiring strong cooperation and collaboration with NGET, the ESO, and offshore windfarm developers.	"This work will help inform connection of offshore wind critical to delivering Net Zero."				

Related action	SSEN/033/A01	SSEN Transmission	NGET, SPT, NGESO	22/23													"Incorporate published outputs into BaU  HND and HND FUE Infrastructure delivery forums - leading to identification of the final preferred design for the offshore systems. Detailed network design of both the offshore and onshore system (following on from the recommendations of the HND FUE / tCSNP2 publication), developing our projects towards construction."	02/2023	New; Improving; Business as Usual	SSEN/033
Coordination and cooperation activity	SSEN/030	SSEN Transmission	SSEN-D, local councils, communities and developers	22/23	"Western Isles Whole System Study Working with SSEN Distribution to produce whole system report on infrastructure recommendations for the isles of Harris and Lewis. This involves discussing with SSEN Distribution the best method to integrate the Western Isles HVDC with the local network to provide demand security and secure connection of renewable generation to the grid."	In progress	Latest update as of 01/05/2023	01/2023	Enhanced demand security for local communities, environmental benefits due to reduction in use of backup diesel generation.	N/A	Data shared with SSEN Distribution on potential options, current and projected demand and generation on Western Isles.	N/A	Reduce dependence on diesel generation. Enhanced security of supply to communities and connection of renewable generation to the grid required to meet net zero.	Positive. SSEN Transmission develops network solutions that contribute to emissions reduction	Continued stakeholder engagement, energy scenario planning, and the assessment of options to determine the most efficient and economic whole system solution.	To provide security of supply to local communities and reduction in carbon emissions from using diesel generation in an optimal manner.				
Related action	SSEN/030/A01	SSEN Transmission	SSEN-D, local councils, communities and developers	22/23													Align all related projects on the Western Isles to determine the optimal whole system option(s).	01/2023	Improving	SSEN/030
Coordination and cooperation activity	SSEN/029	SSEN Transmission	SSEN-D, local councils, communities and developers	22/23	"Shetland Whole System Study Working with SSEN Distribution, developers and local authorities to develop a whole system network development plan on Shetland."	In progress	Latest update as of 01/05/2023	12/2022	Potential cost savings on infrastructure costs, minimises environmental and social impact	N/A	"Terms of references and work plans shared with SSEN Distribution [Restricted Sharing]"	N/A	Minimises social and environmental impact by building less across transmission and distribution, Enhances security of supply for consumers, Reduction in overall connection costs, Enables connection of renewable energy require to meet net zero in an efficient and economic manner	Positive, cost savings across transmission and distribution	Recommend continuing whole system development plans for Shetland, identifying funding mechanisms for the project/s arising from this work, and engaging with Ofgem and stakeholders	Potential to provide costs savings to all parties involved.				
Related action	SSEN/029/A01	SSEN Transmission	SSEN-D, local councils, communities and developers	22/23													Develop a whole system network for Shetland, identify funding mechanisms for the project/s arising from this work, engage with Ofgem and stakeholders	01/2023	Improving	SSEN/029
Coordination and cooperation activity	SSEN/028	SSEN Transmission	SSEN-D, local councils	22/23	"Dundee and Aberdeen City Network Development Strategies Worked with internal (System Planning, Asset Management, etc.) and external (SSEN Distribution) stakeholders to identify the load and non-load drivers for network investment in the Eastern cities of Dundee and Aberdeen.  We have also undertaken stakeholder profiling and mapping exercise, as a first step, for each of the cities to identify key stakeholders and strategies of engagement and how the feedback will inform the project design"	In progress	Latest update as of 01/02/2022	01/2023	A more holistic and cost-effective approach to network investment was achieved by simultaneously considering load and non-load drivers as well as the local plans for the cities, and by actively engaging the stakeholders.	N/A	"Technical reports with identified load and non-load drivers, along with a stakeholder engagement strategy [Restricted Sharing]. "	N/A	Increased consideration of a higher number of factors influencing network investment, potentially increasing the ability to make investment decisions that will result in a reduced cost to customers and consumers	Positive impact - Cost savings for network licensees.	Recommend ongoing co-ordination with SSEN Distribution and local councils to ensure that all drivers have been successfully identified.	Potential to provide costs savings to all parties involved.				

Related action	SSEN/028/A01	SSEN Transmission	SSEN-D, local councils	22/23													Engage with stakeholders and provide justifications for the investments.	01/2023	New	SSEN/028
Coordination and cooperation activity	SSEN/027	SSEN Transmission	SSEN-D, local council, communities and developers	22/23	"Orkney Whole System Study Coordinating with SSEN Distribution and developers to determine the optimal option of connecting renewable energy generation on Orkney."	Complete	Latest update as of 01/01/2023	01/2022	Establishing working relationships with SSEN Distribution, local council and communities to improve infrastructure and connections on the islands surrounding Scotland. Allowing for improved security of supply and additional infrastructure in the future to help towards net zero	N/A	"Knowledge sharing through emails, Microsoft Teams and face-to-face meetings.  Technical reports and presentations with cost data and alternative solutions shared (SSEN Transmission) [RESTRICTED SHARING]. SSEN Distribution provided indicative costs data for distributions options (SSEN Distribution) [Restricted Sharing]. "	N/A	"Minimises social and environmental impact by building less across transmission and distribution, Enhances security of supply for consumers, Reduction in overall connection costs, Enables connection of renewable energy require to meet net zero in an efficient and economic manner  Allows for future coordination with local council, communities and developers to ensure efficient and effective solutions are put forward to benefit the islands"	Positive impact - Cost savings for network licensees and developers	Recommend ongoing co-ordination with SSEN Distribution and customers to progress with the recommended whole system solution	Potential to provide costs savings to all parties involved.				
Related action	SSEN/027/A01	SSEN Transmission	SSEN-D, local council, communities and developers	22/23													Progress with the recommended whole system option. This will involve SSEN Distribution applying for a new GSP at Eday.	01/2023	New	SSEN/027
Coordination and cooperation activity	SSEN/026	SSEN Transmission	SSEN-D, All DNOs and TO's, NGESO, ENA	22/23	DSO implementation plan and interactive road map	Complete	Latest update as of 01/12/2022		As part of the ENA Open Network Project there was an objective to create an implementation plan and interactive roadmap for stakeholders showing the DNOs transitioning to DSOs. This was fed into and agreed by all DNOs, ESO and TO with the ENA coordinating. This looked at all functions of the DSO including system operation, markets, coordination, planning, flexibility services etc. SSEN Transmission fed into this by providing evidence on what we are doing to support the implementation of DSO and fed into the work to ensure that the appropriate data exchange and coordination practices are in place to avoid any unintended consequences.	Open Networks: developing the smart grid - Energy Networks Association	Coordination with the ESO and DSO, system operation including restoration, network planning	<a href="https://www.energynetworks.org/creating-tomorrows-networks/open-networks/">https://www.energynetworks.org/creating-tomorrows-networks/open-networks/</a>	Our work in this area allowed coordination across the whole electricity system to ensure that the implementation of DSO functions were coordinated effectively and that any concerns or unintended consequences were avoided	Positive impact on stakeholder collaboration and ensuring the safe reliable and economic operation of the transmission network as the use and operation of the whole system changes	Work within the ENA has now been completed. This work is moving internally through collaborating regularly with SSEN Distribution on their progress of implementing DSO functions and services	Important to monitor and feed into any changes that may affect the safe, reliable and economic operation of the transmission network.				
Related action	SSEN/026/A01	SSEN Transmission	SSEN-D, All DNOs and TO's, NGESO, ENA	22/23													Organise regular engagements with SSEN Distribution	01/2023	Business As Usual	SSEN/026

Coordination and cooperation activity	SSEN/025	SSEN Transmission	SSEN-D, NGET, SPEN, Users, Ofgem, NGESO ENA, Trade bodies, Generators	22/23	"Electricity Restoration Standard Developing the markets and fundings arrangements for the Electricity Restoration Standard directed by BEIS in 2021. Representing SSEN Transmission on industry wide work group forums and code modifications to introduce the new standard effectively."	Complete	Latest update as of March 2025	01/2022	As part of the new standard, it is identifying new innovative ways to restoration, this includes utilising distributed restart and DG of restoration services. It is important that this is coordinated across the whole system to ensure effective data sharing and operational practices in place and the market and funding mechanisms for such services to avoid any unintended consequences	Electricity System Restoration Standard   National Grid ESO	Mainly collaboration through work groups and delivery groups. The ESO shared their views and industry including SSEN Transmission provided input	Electricity System Restoration Standard   National Grid ESO	Will allow more efficient, coordinated restoration of the system. Introducing new requirements that GB should be restored to 100% within 5 days and 60% within 24 hours	Positive impact as this ensures that the safety, reliability and economic operation of the transmission network is at the forefront of this work.	Work moved into Grid code modifications, continuing to monitor its progress. SMEs also providing input and support where appropriate	Important to monitor and feed into any changes that may affect the safe, reliable and economic operation of the transmission network.				
Related action	SSEN/025/A01	SSEN Transmission	SSEN-D, NGET, SPEN, Users, Ofgem, NGESO ENA, Trade bodies, Generators	22/23													Monitor the modifications made to the Grid Code.	01/2023	Business As Usual	SSEN/025
Coordination and cooperation activity	SSEN/024	SSEN Transmission	SSEN-D, NGET, SPEN, Users, Ofgem, NGESO, ENA, Trade bodies	22/23	"Market design arrangements Representing SSEN Transmission in market design arrangements prevalent across industry currently, ensuring whole system decarbonisation is considered when changing market arrangements."	In progress	Latest update as of 01/12/2022	01/2021	Our evidence based work on this area monitors and tracks the effect that changing market signals, for those connecting to our network can have on the operation of both distribution and transmission networks. A key part of this work is also considering the impact on consumers and ensure society reaches net zero efficiently at least cost.	<a href="https://www.ssen-transmission.co.uk/information-centre/energy-markets-hub/">https://www.ssen-transmission.co.uk/information-centre/energy-markets-hub/</a>	Collaboration with industry bodies and wider stakeholders.	<a href="https://www.ssen-transmission.co.uk/information-centre/energy-markets-hub/">https://www.ssen-transmission.co.uk/information-centre/energy-markets-hub/</a>	Our work in this area has led us to be trusted source of information that stakeholders rely on. We have responded to key government consultations such as BEIS REMA consultation and Ofgem's Call for Input.	Positive impact on SSEN Transmission in particular around enhancing our stakeholder engagement. Our engagement on market reform has ensured that our future network planning is considered by key organisation stakeholders such as BEIS and Ofgem	Continue to contribute to key consultations that consider market arrangements and ensuring their impact on transmission is accounted for.	Grid charging, access and markets play a vital part of ensuring that we can deliver our business plan efficiently. It is important for us to continue to monitor change in this area and advocate where appropriate the requirements for our business, stakeholders and wider society.				
Related action	SSEN/024/A01	SSEN Transmission	SSEN-D, NGET, SPEN, Users, Ofgem, NGESO, ENA, Trade bodies	22/23													Contribute to consultations and monitor their impact on the transmission system.	01/2023	New	SSEN/024
Coordination and cooperation activity	SSEN/023	SSEN Transmission	SPT, NGET, SSEN-D, Users, Code Administrators, SSE Renewables, SSE Business Services	22/23	Co-ordination activities and insight sharing on BEIS and Ofgem Energy Code Reform proposals in Energy Security Bill	Complete	Latest update as of March 2025	01/2022	Enables cross vector and cross fuel learning to ensure BEIS benefits case realised (Impact Assessment states benefit £1.6m p/a efficiency saving for industry through reforms)	N/A	N/A	N/A	Positive impact - seeks to take learnings from current code governance and to apply to reforms and maximise whole system opportunity of reforms	Positive impact - seeks to take learnings from current code governance and to apply to reforms and maximise whole system opportunity of reforms	Continue SSEN-T's Stakeholder Engagement Plan for ECR	Plan to date has brought value and insight through bi-lateral meetings				
Related action	SSEN/023/A01	SSEN Transmission	SPT, NGET, SSEN-D, Users, Code Administrators, SSE Renewables, SSE Business Services	22/23													Maintain activities and utilise learnings to inform SSEN/022 - Energy Code Modification management	01/2023	Business As Usual	SSEN/023
Coordination and cooperation activity	SSEN/022	SSEN Transmission	NGET, SPT, ENA, Users	22/23	"Code modifications Co-ordination activities to further code modifications in CUSC, STC, SQSS, Grid Code that meet the code objectives of safe and reliable system and consumer benefit etc., and overarching goal of net zero"	Complete	Latest update as of March 2025	01/2022	Enables co-ordinated whole system approach to code modifications, aligned positions, to fulfil the relevant code objectives and efficient code governance procedures	<a href="https://www.energynetworks.org/creating-tomorrows-networks/open-networks/">https://www.energynetworks.org/creating-tomorrows-networks/open-networks/</a>	ENA Open Networks monthly publication of Steering Group Report - Annex of code modifications	N/A	Positive impact to enable fulfilment of the relevant code objectives and efficient code governance procedures	Positive enables alignment and learning from TO's and users, and assessment of code modifications against the code objectives and objectives of ENA Open Network project	Maintain activities and utilise learnings to inform SEN/023 - Energy Code Reform	Ensure learnings from current code governance and the opportunities and limitations inform advocacy position for Energy Code Reform				
Related action	SSEN/022/A01	SSEN Transmission	NGET, SPT, ENA, Users	22/23													Maintain activities and utilise learnings to inform SSEN/023 - Energy Code Reform	01/2023	Business As Usual	SSEN/022

Coordination and cooperation activity	SSEN/021	SSEN Transmission	SPEN, NGET	22/23	"Project waste reporting - working group A working group has been set up between the three GB TO's to collaborate and standardise project waste reporting (where possible). The aim of the group is to promote data collection consistency and to reduce administrative efforts for our supply chain partners."	In progress	Latest update as of 01/11/2022	01/2022	Through this working group, the GB TO's are sharing knowledge on existing reporting requirements as well as discussing potential new requirements which could be explored further.	N/A	Knowledge sharing has occurred over MS Teams meetings. Waste reporting templates for each TO have also been shared under restrictive access.	N/A	This will ensure a coordinated approach is applied amongst the three TO's.	Positive impact - improved co-ordination and standardisation.	The next step is for all TO's to collaborate on a shared file in which we can review our reporting requirements.	These activities are necessary to allow a co-ordinated approach to waste reporting.				
Related action	SSEN/021/A01	SSEN Transmission	SPEN, NGET	22/23													Review reporting requirements	01/2022	Improving	SSEN/021
Coordination and cooperation activity	SSEN/020	SSEN Transmission	SPEN, NGET	22/23	"Substation Energy Consumption - working group A working group has been set up between the three GB TOs to collaborate and share knowledge on substation energy consumption. The aim of the group is to improve the accuracy of substation energy consumption data which is required to calculate part of our operational emissions."	Complete	Latest update as of Feb 2025	01/2022	Through this working group, the GB TO's are applying a joint approach to methodology development by sharing knowledge on existing methods as well as discussing potential new methods which could be explored further.	N/A	Knowledge sharing has occurred over MS Teams meetings, no data has been shared yet.	N/A	This will allow for more accurate reporting on operational emissions across the transmission system and will ensure a coordinated approach is applied amongst the three TO's.	Knowledge sharing from the working groups has given us a sense of the accuracy of our current methodology and has provided us with potential alternative methods which can be further explored.	The next step is for SPEN to provide us with a detailed description of the new methodology they are currently exploring in the format of a presentation.	These activities are necessary to allow a coordinated approach to substation energy consumption emissions reporting.				
Related action	SSEN/020/A01	SSEN Transmission	SPEN, NGET	22/23													Exchange data and idea on methodologies with other stakeholders	01/2023	Improving	SSEN/020
Coordination and cooperation activity	SSEN/019	SSEN Transmission	SPEN, NGET	22/23	"CAT Database Working Group A working group has been set up between the three GB TOs to develop a master Carbon Asset (CAT) Database which contains greenhouse gas intensity factors for specific assets to allow for more accurate reporting on embodied carbon emissions."	Complete	Latest update as of Feb 2025	01/2019	As a result of this work the three transmission network licensees will have a consistent methodology for calculating embodied carbon emissions in transmission projects. The CAT database will be regularly updated with any new emission factors received by the supply chain and these updates will be shared between all TOs.	N/A	Shared database between the three TOs	N/A	This ensures a consistent methodology is applied across all TOs and the regular updates will allow opportunities to share learnings. This group helps improve carbon reporting across the transmission system. It also provides a consistent database for the supply chain to use when providing transmission related embodied carbon data.	This database has provided us with the necessary data to start reporting on project level embodied carbon. The continued shared learning will ensure we stay aligned with other TO's whilst improving the accuracy of our carbon reporting.	The key next step is to determine the governance of the Cat Database i.e. where it will be stored, who will be responsible for updating etc. and consider how each TO will utilise the database.	These activities are necessary to allow a co-ordinated approach to embodied carbon emissions reporting.				
Related action	SSEN/019/A01	SSEN Transmission	SPEN, NGET	22/23													Share add-ins to the master database	01/2022	Business As Usual	SSEN/019
Coordination and cooperation activity	SSEN/018	SSEN Transmission	NGESO	22/23	"TOTEM Extension Continuation of NIA_SHET_0032 TOTEM project to complete the development and associated validation of a full-scale model of the GB Transmission System in EMT PSCAD (Power System Computer Aided Design) simulation software.  TOTEM (Transmission Owner Tools for EMT (Electromagnetic Transient) Modelling) is focused on the development of innovative tools and resources for power system modelling and analysis. It will produce a model that can mimic large volume power electronics and enable formulation of mitigation measures to future proof the GB network associated with the energy transition. The end product will be a valuable modelling tool which will require validation and improvement through studying actual system disturbances."	Complete	Latest update as of 01/07/2023	05/2022	"Deliver tools for PSCAD model manipulation for the whole GB network and analysis that will support the TOs in their use of the GB model."  -	<a href="https://smarter.energynetworks.org/projects/nia_shet_0035/">https://smarter.energynetworks.org/projects/nia_shet_0035/</a>	"Network models [Widely shared]"	N/A	Positive impact. To be able to actively model the current and future GB network. All TO's will be able to use the tools and Distribution Network Owner (DNO) will be able to see the results of the project and gain learning.	Positive impact. To be able to actively model the current and future SSEN Transmission network	"The end product will be a valuable modelling tool, however it will need to be validated and improved through studying actual system disturbances.  [23/24 UPDATE] Project has completed and tool to be used in BaU. Continued dialogue with other network users on the suitability of the TOTEM tool as well as areas of improvement"	"Enable future proofing of the network.  [23/24 UPDATE] Tool to be employed in a BaU environment to prove the worth of the project"				

Related action	SSEN/018/A01	SSEN Trans-mission	NGESO	22/23													"Ensure the recommend- ed next stage activity (model val- idation and improvement through study of actual system disturbances) is performed and the results distrib- uted  [23/24 UPDATE] The tool is to be used to investigate system dis- turbances"	02/2024	Business As Usual	SSEN/018
Coordination and cooperation activity	SSEN/017	SSEN Trans-mission	University of Strathclyde, National HVDC Centre	22/23	"PSL-FC Preferred Solutions to perform for Lower levels of Fault Current on AC networks (PSL-FC). To simulate a future electrical network where the fault current spike is marginal but prolonged and evaluate how present P&C products function and respond. Based upon the findings it will determine if a Protection and Control (P&C) solution can be further developed to address the potential future network issues.  This project aims to investigate how effective and reliable current P&C equipment is on a future electricity network, which has even more renewable generation and power electronic equipment, via a combination of network simulation and open-loop device trials. It is also the aspiration to determine new tests and validation processes for the P&C equipment in the future transmission system environment of low fault currents. Research would also be conducted into the shape and structure of new P&C operating processes and protocols to help accommodate the transition of the network towards net-zero."	In progress	Latest update as of 01/02/2024	06/2022	By understanding the protection and control requirements needed for the network to operate with the increase in renewable generation sources will reduce the potential for disruption to the electrical energy supply.	<a href="https://smarter.energynetworks.org/projects/nia_shet_0033/">https://smarter.energynetworks.org/projects/nia_shet_0033/</a>	Data shared with University of Strathclyde and National HVDC Centre. All results of the project will be disseminated via ENA Smarter Networks portal and CIGRE P&C conferences and papers	N/A	Positive impact. Reducing the potential for protection and control issues to affect the electrical energy supply to the UK. This would impact both Generation, Transmission and Distribution as well as knock on effect to Gas operators	Positive impact as understanding the future protection & control needs for the network allows for better planning.	Installation of equipment into the field to allow for comparison with the lab data	Evidence that the simulated lab results are confirmed by the field data will provide confidence that the technology can be applied to the future network.				
Related action	SSEN/017/A01	SSEN Trans-mission	University of Strathclyde, National HVDC Centre	22/23													Ensure the results of the project are moved into BaU operation	03/2026	Mature	SSEN/017
Coordination and cooperation activity	SSEN/016	SSEN Trans-mission	SPEN, NGESO, Venders/manufacturers	22/23	"Power quality issues Coordination activities with NGESO and SPEN on system power quality issues following unusually high levels of harmonic distortion observed in the South West region. In particular, understanding the causes of the harmonic distortion and how to reduce them."	In progress	Latest update as of Feb 2025	01/2022	Through the coordination activities with other network licensees as well as the system operator, a holistic approach is being taken to resolve these power quality issues which will benefit the operability of the total electricity system	N/A	"Received harmonic data from SPEN [Restricted sharing]"	N/A	This has a positive impact as the solutions to these power quality issues will ensure the operability of the total electricity system	The knowledge sharing from these coordination activities has helped us to come up with the most efficient and economic solutions to resolve these emerging system power quality issues.	"SSEN Transmission has submitted a project to Ofgem which will mitigate the impact of these system power quality issues. SSEN Transmission are progressing with a project which will mitigate the impact of these system power quality issues. Coordination with NGESO [and SPT will be maintained as an affected TO]."	To maintain the operability of the electricity system				

Related action	SSEN/016/A01	SSEN Transmission	SPEN, NGESO, Venders/manufacturers	22/23												"Initiate project to resolve power quality issues in the south west of Scotland following approval from Ofgem. Progress the project to resolve power quality issues in the south west of Scotland.  2025 update: Continuing to work with NESO and SPEN to maintain system power quality levels. Progressing with a project to build a filter to resolve power quality issues and investigating other mitigation methods until the filter the build and in operation."	01/2024	Improving	SSEN/016
Coordination and cooperation activity	SSEN/015	SSEN Transmission	NGET, National HVDC Centre	22/23	<p>"Project Aquila Coordination activities with NGET on HVDC multi-vendor interoperability development and demonstration. Currently HVDC converters between different manufactures cannot work with each other. This has been recognised by BEIS as a pathfinder project in July 2022. A new control model is being developed by the HVDC centre to work as an "adapter" to allow a control over converters by different manufactures.</p> <p>Updated March 2025: This was initially recognised by BEIS as a pathfinder project in July 2022. Coordination activities with NGET on HVDC multi-vendor interoperability development and demonstration. Coordination with DESNZ and major suppliers related to proving interoperability in the lab environment at NHVDC centre.</p> <p>Due to descope activities in March 24, the project now concentrates on proving interoperability in supplier replica models with the physical demonstration at Peterhead placed on hold."</p>	In progress	<p>Latest update as of March 2025: Project Aquila was rescoped in March 2024 with the physical demonstration element removed. The project has continued to evidence interoperability using NHVDC models as well as investigate the commercial readiness of the technology introduction. It is expected that this body of work will be completed in 2025.</p>	01/2022	Through the engagement activities from GB Interoperability Workgroup with other network licensees, SSEN Transmission, through HVDC Centre, is able to share its knowledge and experience in its approach to whole system and in return it gets feedback that it can use to make relevant changes to its design which will benefit the total system.	<a href="https://www.hvdc-centre.com/our-projects/aquila-interoperability-package/">https://www.hvdc-centre.com/our-projects/aquila-interoperability-package/</a>	"Models and project learning is continuously shared with NGET [Restricted sharing]"	N/A	Once multi-vendor interoperability is proven, this can be deployed to HVDC transmission projects in the future.	This would potentially reduce the number of HVDC convertor stations required by connecting HVDC links to a multi-terminal switching stations.	SSEN Transmission to continue engagement and move towards Project Assessment	This project is important as it will enable interoperability development and benefit the delivery of the offshore transmission network by potentially reducing the connection to huge volumes of offshore wind required to meet net zero.			
Related action	SSEN/015/A01	SSEN Transmission	NGET, National HVDC Centre	22/23												"Coordinate with the HVDC centre on the design and simulation of a feasible controller.  2025 update: Coordinate with DESNZ on future opportunities for physical demonstration."	01/2023	Improving	SSEN/015

Coordination and cooperation activity	SSEN/014	SSEN Transmission	SPEN, NGESO, Venders/manufacturers	21/22	"System operability issues Coordination activities with NGESO and SPEN on system operability issues following a number of system disturbances in Scotland. In particular, understanding the causes of sub synchronous oscillations and how to resolve them"	In progress	Latest update as of Feb 2025	01/2021	Through the coordination activities with other network licensees as well as the system operator, a holistic approach is being taken to resolve these operability issues which will benefit the security of the total electricity system	N/A	"Shared models and technical reports with ESO [Restricted sharing]"	N/A	This has positive impact as the solutions to these operability issues will ensure the security of the total electricity system	The knowledge sharing from these coordination activities has helped us to come up with the most efficient and economic solutions to resolve these emerging system operability issues.	"SSEN Transmission has submitted a number of projects to Ofgem which will mitigate the impact of these system operability issues. SSEN Transmission are continuing to work with NGESO on coordination activities on system operability issues. The System Performance team have two standing calls per week to discuss the system studies both partners are undertaking to maintain an understanding with regards to previous system operability issues."	To maintain the security of the electricity system				
Related action	SSEN/014/A01	SSEN Transmission	SPEN, NGESO, Venders/manufacturers	21/22													"Initiate projects to resolve operability issues in the north of Scotland following approval from Ofgem. The action is to continue with the coordination activities with NGESO on the previous system operability issues.  2025 update: Continuing to resolve operability issues with coordination activities with NESO and SPEN in an evolving network. "	01/2024	Business As Usual	SSEN/014
Coordination and cooperation activity	SSEN/013	SSEN Transmission	SSEN-D, NGET, SPEN, SGN, NGESO, BEIS, Ofgem, Local Authorities	21/22	"Whole System Strategy & Annual Report Coordination activities with SSEN Distribution, NGET, SPEN and other stakeholders in the development of our whole system strategy and annual report."	Complete	The latest update on this work as of March 2025	01/2021	This is relevant to whole system because by working with other network licensees and stakeholders, SSE Transmission is able to share its knowledge and experience in its approach to whole system and in return it gets feedback that it can use to make relevant changes to its approach to whole system which will benefit the total system.	<a href="https://www.ssen-transmission.co.uk/about-us/whole_system_hub/">https://www.ssen-transmission.co.uk/about-us/whole_system_hub/</a>	"SSEN Transmission has shared presentation slides of its whole system strategy and annual report [Widely shared]"	N/A	Positive impact on whole system as other network licensees and stakeholders learn from SSEN Transmission on how we are embedding whole system thinking within our business with the aim of making it a BaU activity.	By interacting with stakeholders and other network licensees on our whole system strategy and annual report, we show leadership in the industry but we also get the feedback we need to improve our whole system approach to investment decision making.	The next stage is to publish the revised whole system strategy and our first whole system annual report this year.	These activities are necessary to ensure coordinated, efficient and economic whole system investment decision making.				
Related action	SSEN/013/A01	SSEN Transmission	SSEN-D, NGET, SPEN, SGN, NGESO, BEIS, Ofgem, Local Authorities	21/22													A quarterly meeting group has been established by Whole System managers from SSE, SP, NGT and some DNOs		Business As Usual	SSEN/013

Coordination and cooperation activity	SSEN/012	SSEN Transmission	SSEN-D, NGESO	21/22	"Shetland, Orkney and Western Isles transmission projects Coordination activities with SSEN Distribution and ESO on the Shetland, Orkney and Western Isles transmission projects"	In progress	Latest update as of March 2025	01/2012	This is relevant to whole system because apart from connecting renewable generation from the Islands to the mainland, SSEN Transmission is working with SSEN Distribution to ensure that these projects contribute to security of supply, decarbonisation of the islands and resolving local electricity asset condition issues.	<a href="https://www.ssen-transmission.co.uk/projects/shetland/">https://www.ssen-transmission.co.uk/projects/shetland/</a>	"SSEN Transmission has shared with SSEN Distribution and ESO technical reports and costs [Restricted sharing]"	N/A	Positive impact for both transmission and distribution networks to fulfil their licence obligations and connection of renewable generation to the grid is critical to meeting net zero	Positive impact on SSEN Transmission as the coordinated approach results in an efficient and economic investment on the network.	Continue with the coordination activities between SSEN Transmission and SSEN Distribution in supporting economic development in the Scottish Islands through connection of renewable generation to the grid and improving demand security	These activities are necessary to ensure coordinated efficient and economic whole system investment decision making.				
Related action	SSEN/012/A01	SSEN Transmission	SSEN-D, NGESO	21/22													The action is to continue with the coordination activities in prioritising, scheduling and sequencing of activities as the projects progress into delivery. .	01/2020	Business As Usual	SSEN/012
Coordination and cooperation activity	SSEN/011	SSEN Transmission	SSEN-D	21/22	"Glasvaar wind farm Discussions with SSEN Distribution on options to minimise network reinforcement costs for connecting Glasvaar wind farm to the network"	In progress	Latest update as of 01/03/2021	03/2021	SSEN Distribution involvement could drastically reduce network reinforcement costs	N/A	"SSEN Transmission has shared with SSEN Distribution the location, transmission entry capacity and costs [Restricted sharing]"	N/A	Positive impact on whole system as a combined transmission and distribution solution will result in cost savings	Positive impact on SSEN Transmission as a combined transmission and distribution solution will result in reduced network reinforcement costs thereby supporting connection of renewable generation to the network and contributing to net zero	Discussions with the customer on the potential options and associated benefits.	The next stage will depend on the customer's decision as to which option to progress with.				
Coordination and cooperation activity	SSEN/010	SSEN Distribution	SSEN-D	21/22	"RaaS Discussions with SSEN Distribution on how their Resilient as a Service project would benefit the transmission network in system restart and relieving network constraints."	In progress	Latest update as of 01/02/2021	01/2021	If successfully implemented and scaled up this activity can help to reduce network constraints as well as support system restart.	<a href="https://ssen-innovation.co.uk/raas/">https://ssen-innovation.co.uk/raas/</a>	"SSEN Distribution has shared with SSEN Transmission project conceptual designs [Widely shared]"	N/A	Overall this activity will have positive impacts as it will help to relieve constraints on the network, provide support to system restart and potentially allow for connection of more renewable energy sources	If scaled up, this activity will support the overall resilience of the network	Continue to cooperate and support SSEN Distribution on this activity in terms of data sharing to ensure that cross operational impacts are properly addressed.	We are a network for net zero and will support initiatives that promote increase in connection of renewable generation to the network and enhancing network resilience.				
Coordination and cooperation activity	SSEN/009	SSEN Transmission	SSEN-D	21/22	"Renewable generation in Argyll Discussions with SSEN Distribution on a whole system solution between transmission and distribution to support connection of renewable generation in Argyll"	Complete	Latest update as of March 2025	01/2021	A combined Transmission and Distribution solution will result in an efficient and economical solution that minimises costs to consumers	N/A	"Options and costs used for cost benefit analysis [Restricted sharing]"	N/A	Positive impact on whole system as the combined transmission and distribution solution provides an efficient and economical solution	Discussions about cost recovery options for the distribution works are underway since SSEN Distribution does not have allowance for the project.	The activity will be implemented as part of the wider Argyll project. The outcome of cost recovery of distribution works will inform future working on projects of this nature.	The activity has been adopted as part of the wider Argyll project because it's the right thing to do as it results in efficient and economic whole system solution.				
Related action	SSEN/009/A01	SSEN Transmission	SSEN-D	21/22													A clear process of dealing with projects that support a combined transmission and distribution whole system solution addressing issues of who should deliver the distribution works, how should they be funded and ownership	01/2021	Business As Usual	SSEN/009

Coordination and cooperation activity	SSEN/008	NGESO	SPEN, NGET, BEIS	21/22	"ENA workstreams SSEN Transmission has taken an active role in different workstreams facilitated by the Energy Network Association. The work has included the development of tools like whole system cost benefit analysis required to enable a consistent approach to whole system."	Complete	Latest update as of March 2025		The work-streams are essential to enable a consistent approach to whole system across network licensees.	<a href="https://www.energynetworks.org/creating-tomorrows-networks/open-networks/">https://www.energynetworks.org/creating-tomorrows-networks/open-networks/</a>	The work-streams are working on what is required to enable efficient data sharing between network licensees.	N/A	This has a positive impact in that it will ensure consistency in the whole system approach to the development and operation of the network.	SSEN Transmission will benefit from knowledge, data and information sharing with other network licensees around whole system.	SSEN Transmission will continue to be actively involved in the workstreams and facilitate implementation of processes and tools required to enable whole system working.	ENA workstreams are important as they provide a platform to develop processes and tools which will ensure a consistency in taking whole system approach and coordination activities across network licensees.				
Coordination and cooperation activity	SSEN/007	NGESO	SPEN, NGET, BEIS	21/22	"Offshore Transmission Network Review SSEN Transmission has been actively involved in the Offshore Transmission Network Review initiated by the UK Government. Our aim is to drive policy position and ensure an efficient holistic network design."	Complete	Latest update as of March 2025		A holistic whole system approach to offshore network design is critical to address the barriers that the current regime presents to connection of high volumes of wind required to meet net zero	<a href="https://www.nationalgrideso.com/document/239466/download">https://www.nationalgrideso.com/document/239466/download</a>	"Interface location points and cost data shared (NGESO) [Restricted sharing]"	N/A	This project will have a positive impact on the whole system as it will ensure an efficient coordinated development and delivery of the offshore transmission network across Great Britain	The project has a positive impact on SSEN Transmission, in that it will enable us to connect huge volumes of offshore wind to the network in an efficient and economic manner.	The ESO to publish the outcomes from the working group.	This project is important as it will ensure efficient development and delivery of the offshore transmission network which is essential to enable the connection of huge volumes of offshore wind required to meet net zero.				
Coordination and cooperation activity	SSEN/006	NGESO	SPEN, NGET	21/22	SSEN Transmission has provided its views on the NGESO's consultation on simplification, digitalisation and consolidation of technical codes (Grid Code and Distribution code)	In progress	Latest update as of March 2025	01/2021	This project is important as it supports the Energy Code Review and addresses some of the challenges of the existing codes to enable whole system thinking.	N/A	"Responded to the questionnaire on a number of issues and things that should be done to enable the simplification and consolidation of technical codes to benefit the total system. (NGESO) [Restricted sharing]"	N/A	We expect a positive impact on whole system	Positive impact on SSEN Transmission particularly around enhancing stakeholder engagement on issues that impact us and our stakeholders	We have nominated representatives from different parts of the business to participate in working groups to help in defining the scope and implementing the changes	Technical codes will play a critical role in how we develop and operate the network for net zero. We are keen to be actively involved in the simplification and consolidation of technical codes to ensure that its done in a manner that benefits whole system.				
Coordination and cooperation activity	SSEN/005	SSEN Transmission	SPEN, NGET, SSEN-D, Users, Ofgem, ENA, Trade bodies	21/22	"TNUoS charging reform Advocating for reform to Transmission Network Use of System (TNUoS) charges to remove barriers to renewable generation development in the north of Scotland whilst ensuring charges do not hinder the progression of our business objectives and the transition to net zero. This includes representing SSEN Transmission on industry forums including Ofgem's Access and Forward looking Significant Code Review."	Complete	Latest update as of March 2025	01/2020	Our evidence based work on this area, monitors and tracks the effect that TNUoS has on users and how TNUoS impacts system investment and operation at both Distribution and transmission. This includes advocating for reform not only for transmission connected generation but also at distribution (Ofgem's Access SCR minded to position). A key part of this work is also considering the impact on consumers and ensure society reaches net zero efficiently at least cost.	<a href="https://www.ssen-transmission.co.uk/information-centre/tnuos/">https://www.ssen-transmission.co.uk/information-centre/tnuos/</a>	Shared data analysis (developers and SSEN Distribution) [widely shared]. Collaboration with industry bodies and wider stakeholders.	<a href="https://www.ssen-transmission.co.uk/information-centre/tnuos/">https://www.ssen-transmission.co.uk/information-centre/tnuos/</a>	Our work in this area has led us to be trusted source of information that stakeholders rely on. We have seen a positive change in direction by Ofgem publishing a call for evidence on TNUoS reform and it is expected that a wide ranging review will take place.	Positive impact on SSEN Transmission in particular around enhancing our stakeholder engagement and our corporate image. Working to stabilise the cost of using the network will also provide further investment certainty for both developers and the required network construction.	Recognition from Ofgem on issues with TNUoS indicates that reform will take place, we will continue our work and advocacy on this area. Through our work on this we have also identified that there are other facets of the electricity markets that directly effect TNUoS, we plan to further explore and analyse the electricity market in further detail.	Grid charging, access and markets play a vital part of ensuring that we can deliver our business plan efficiently. It is important for us to continue to monitor change in this area and advocate where appropriate the requirements for our business, stakeholders and wider society.				
Coordination and cooperation activity	SSEN/004	SSEN Transmission	SPEN	21/22	"Cross-boundary asset intervention plans Preliminary meeting to agree future meetings to ensure we align our cross-boundary asset intervention plans for the T3 period"	Complete	None	10/2021	If we coordinate our planned activities at cross-boundary circuits, we can ensure the most efficient delivery process that will achieve the outputs at the lowest cost to the consumer.	N/A	No data shared at this preliminary meeting	N/A	The impact is neutral at this time, but we expect the eventual outcome to be positive, once cross-boundary projects have been identified and coordinated	The impact is neutral at this time, but we expect the eventual outcome to be positive, once cross-boundary projects have been identified and coordinated	Establish quarterly coordination meetings, once development of the T3 business plans commence	Having coordination meetings with other network licensees like SPEN will ensure efficient project planning delivery across our network boundaries.				

Related action	SSEN/004/A01	SSEN Transmission	SPEN	21/22													"Establish a quarterly coordination meeting between SSEN Transmission & SPEN to discuss the development of our T3 non-load business plans to establish any cross-boundary activities.  2025 update: ceased meetings when it became clear that the T3 period would not involve any major non-load cross-boundary activities. "	01/2021	Mature	SSEN/004
Coordination and cooperation activity	SSEN/003	SSEN Transmission	SPT, NGESO, SPD, SSEN-D	21/22	"Regional Development Program Under the Regional Development Program approach, completed a coordinated review of proposed transmission investment works to accommodate new battery customer connections at Abernethy and Burghmuir. This required a risk based/ probabilistic approach to better understand the risk of constraints recognising the unique operating philosophy of battery system storage technology."	In progress	Latest update as of Feb 2025	01/2019	Review of options across transmission and distribution networks to resolve potential transmission constraints.	N/A	"Power system analysis results for 132kV transmission OHL loading (SSEN Transmission) [Restricted sharing] Future Generation and Demand scenarios for relevant GSPs (SSEN Distribution) [Restricted sharing] "	N/A	Positive - broad assessment of all Transmission and Distribution related options, resulting in the most cost effective outcome.	Positive as it supports timely investment decision making and customer connected in line with contracted dates.	Develop Regional Development Plan (RDP) to accommodate local growth and coordinate with asset replacement plans.	It is expected that a pro-active approach through the RDP will identify efficient solutions for customer connections in the region ahead of transmission infrastructure investment.				
Related action	SSEN/003/A01	SSEN Transmission	SPT, NGESO, SPD, SSEN-D	21/22													"Updated Feb 2025: The assessment of the requirement for this reinforcement under probabilistic CPAs will be conducted as a part of G2tWQ re-assessment (connection reforms). In RIIO-T3, as a part of CP2030 submissions, a paper is being put forward to Ofgem to indicate that a derogation may be required in T3 if a scheme with firm connection security still requires the reinforcement as enabling works post G2tWQ re-assessment. For non-firm access, the network is proposed to be managed using an Active Network Management (ANM Scheme).  Updated 2022: Further development of probabilistic planning methodology and exploring how this approach can be applied to other parts of the network where there is value to whole system in doing so."	01/2020	Improving	SSEN/003

Coordination and cooperation activity	SSEN/002	SSEN Transmission	SSEN-D, NGESO	21/22	"Conflict resolution on T/D route corridors Discussions with SSEN Distribution and ESO on procedure to move customers from Dunvegan to Edinbane to resolve conflict on distribution and transmission route corridors. This was to achieve cost efficiency in the connection arrangement."	Complete	Latest update as of 01/12/2021	01/2021	Cost effectiveness to customers and distribution network operator	N/A	"Technical Report with cost data and alternative solutions shared (SSEN Transmission) [Restricted sharing]. SSEN Distribution provided indicative costs data on distributions options (SSEN Distribution) [Restricted sharing]."	N/A	Positive reduction on Customer works which in turn translates to lower cost of connection.	Positive, avoided costs in Transmission infrastructure.	Consider potential GSP relocation for future embedded generators that trigger significant works at existing GSP sites.	Potential to provide costs savings for all parties involved.				
Related action	SSEN/002/A01	SSEN Transmission	SSEN-D, NGESO	21/22													The action is to offer SSEN Distribution a new GSP at Edinbane so that they can connect customers to the new site.	01/2021	New	SSEN/002
Coordination and cooperation activity	SSEN/001	SSEN Transmission	SSEN-D	21/22	"Transformer uprating Joint discussions with SSEN Distribution to capture their need to uprate transformer capability on sites with planned transmission network reinforcements to enable a coordinate network development as demonstrated in East Coast 132kV Upgrade (LT225)"	In progress	Latest update as of 01/12/2021	01/2021	Ensures better coordination and better utilisation of resources resulting in overall whole electricity system benefits.	N/A	"Business case with technical information (SSEN Transmission) [Restricted sharing]"	N/A	The impact on the whole system is positive as a coordinated approach results in efficient capacity sizing of assets and also better overall resource efficiency.	The impact on the licensee is positive as a coordinated approach results in resource efficiency.	Recommend ongoing co-ordination with SSEN Distribution for planned transmission reinforcements at GSP sites which impact SSEN Distribution.	This decision would enable better utilisation of resources and achieve more efficient outcomes.			ongoing co-	
Related action	SSEN/001/A01	SSEN Transmission	SSEN-D	21/22													New Business Case template incorporating the need to explore whole system options. This will inform future working with other network licensees as a BaU activity.	01/2021	New	SSEN/001

We encourage stakeholders to provide their proposals on the following link which is also available on our Whole System Hub.  
<https://www.ssen-transmission.co.uk/information-centre/whole-system-hub/>

