SP Energy Networks

Transmission Owner Reinforcement Instruction (TORI)
Quarterly Update Report
July 2020 – September 2020

View of the 275kV WA Overhead Line between Coylton and New Cumnock substations

SP ENERGY NETWORKS

Please note below in relation to all Transmission Owner Reinforcement Instruction projects.

In light of the present COVID-19 pandemic, we are continuing to assess all projects to ensure where staff can safely work in compliance with government guidelines, they are so doing. Any impact on timescales will be communicated once information is known and confirmed.

SPT-RI-001(a) V1.5	Beauly Denny 400kV Reinforcement
OVERVIEW OF WORKS Construction of a 400,000 volt double circuit overhead transmission line from Denny North to the SP Transmission/SHE Transmission boundary, forming part of a Supergrid connection from Denny North substation in the SP Transmission area to Beauly substation in the SHE Transmission area (via Braco, Errochty, Fort Augustus and Fasnakyle). One circuit on the new overhead line will operate at 400,000 volts, while the other will operate at 275,000 volts. This connection will replace that part of the existing Bonnybridge to Braco 132kV double circuit overhead line within the SP Transmission area Construction of Denny North 400,000/ 275,000/ 132,000 volt substation.	
Programme	Completion: - July 2016 DENN-BONN 132kV infeed Beauly to Denny 275kV/400kV circuit energised Nov 2015 132kV wirescape rationalisation works completion planned for December 2019. Visual mitigation works planned for completion March 2021.
Progress	Design & Consenting Complete Detailed Engineering Complete Tendering Complete Construction SGT3 circuit energised August 2016. 1st phase of visual mitigation concluded. 2nd Phase now concluded. 3rd Phase tender now complete – Works to begin Jan 2021 – completing July 2021. 132kV Wirescape cable civil ducting works complete. Both cable circuits are now installed and energised (October 19). 132kV OHL dismantling works now underway (due to complete 3rd quarter 2020) New 275kV circuit energised 9th November 2015 New 400kV circuit energised 19th November 2015 Link to related info http://www.spenergynetworks.co.uk/pages/beauly_denny_overhead_line_upgrade.asp

SPT-RI-003 V2.4	Denny-Strathaven 400kV Reinforcement ENSG Central Scheme
OVERVIEW OF WORKS Construct a new 400,000 Volt double circuit overhead line from Bonnybridge to Newarthill and reconfigure associated sites to establish a fourth north to south double circuit Supergrid route through the Scottish central belt. One side of the new overhead line will operate at 400,000 Volts, the other at 275,000 Volts. This reinforcement will establish Denny-Bonnybridge, Bonnybridge-Wishaw, Wishaw-Strathaven No.2 and Wishaw-Torness 400,000 Volt circuits, and a Denny-Newarthill-Easterhouse 275,000 Volt circuit. This will continue to be updated following the outcome of the annual NOA process.	
Programme	Completion: - October 2028
Progress	Design Consenting Overhead line routing underway with potential route corridor identified. Detailed Engineering Still to commence - Subject to Network Options Assessment (NOA) Process Tendering Currently tendering for Communications Consultant. Construction Still to commence - Subject to Network Options Assessment (NOA) Process Commissioning/Close Out Still to commence - Subject to Network Options Assessment (NOA) Process Link to related info https://www.spenergynetworks.co.uk/pages/network_reinforcement_and_modernisation.aspx

SPT-RI-004 V2.4	Denny-Kincardine 400kV Reinforcement (East Coast Phase 1 Reinforcement and Re-Profiling)

OVERVIEW OF WORKS

SP Transmission works associated with SHE Transmission East Coast Phase 1 Reinforcement (reference SHET-RI-009) and SHE Transmission East Coast Re-Profiling (reference SHET-RI-097), comprising:

- Uprating of the existing Kincardine-Tealing/ Kintore (XL)1 overhead line route from 275kV 50oC operation to 275kV 65oC operation between Kincardine and the SP Transmission/ SHE Transmission border;
- Protection and control works at Kincardine 275kV Substation associated with the development of the SHE Transmission Alyth 275kV Substation;
- Increasing the maximum operating temperature of the Longannet-Mossmorran-Westfield-Tealing 275kV overhead line routes to 65oC, and replacing the associated 275kV cable sections at Longannet to match the increased overhead line rating; and
- Terminate the existing Windyhill-Lambhill-Longannet 275kV circuit in Denny North 275kV Substation, creating Windyhill-Lambhill-Denny North and Denny North-Longannet No.2 275kV circuits.

This will continue to be updated following the outcome of the annual NOA process.

Programme	Completion: - October 2023
Progress	Design Early Engineering Design complete, detailed design ongoing Consenting Identification of impacted landowners ongoing. Environmental surveys have commenced and are progressing. Detailed Engineering Ongoing Tendering Still to commence - Subject to Network Options Assessment (NOA) Construction Still to commence - Subject to Network Options Assessment (NOA) Commissioning/Close Out Still to commence - Subject to Network Options Assessment (NOA) Link to related info http://www.spenergynetworks.co.uk/pages/east_coast_400kv_reinforcement_project.asp

SPT-RI-028 V2.12	North Argyll Reinforcement: Dalmally Windyhill 275kV Reconfiguration
OVERVIEW OF WORKS As part of its non-load related asset modernisation programme, SPT will replace and reconfigure Dalmally 275kV substation to a double busbar arrangement (Scope 1). As part of its non-load related asset modernisation programme, SPT will uprate the overhead line conductor between Dalmally and Windyhill (Scope 2). As part of a joint SPT/ SHE Transmission project to reinforce the transmission network in north Argyll and accommodate proposed renewable generation schemes, SPT will extend Dalmally 275kV Substation and install two new double busbar bays to provide SHE Transmission with two 275kV points of connection at Dalmally 275kV Substation (Scope 3).	
Programme	Completion: - Scope 1 Complete Scope 2 Complete October 2019 for wiring. Clearance works and Foundations Dec 2022. Scope 3 October 2023
Progress	Design Scope 1: Complete Scope 2: Complete for reconductoring works / design evaluation in progress for remaining clearance infringements. Remaining 12 foundations to be complete along with removal of accesses. Scope 3: In progress Consenting Scope 1: Not required Scope 2: Wiring Complete / further consent is required for access road construction in National Park to resolve remaining clearance infringements and remaining foundations. Scope 3: Not commenced Detailed Engineering Scope 1: Complete Scope 2: Complete / to complete for remaining clearance infringements. Scope 3: Not commenced Tendering Scope 1: Complete Scope 2: Tenders pending clarification how to address the clearance infringements works Scope 3: Not commenced Construction

	Scope 1: Complete Scope 2: Complete (excluding clearance infringements works and remaining foundations) Scope 3: Not commenced Commissioning/Close Out Scope 1: Complete Scope 2: October 2019 completion (excluding clearance infringements works & foundations works) Scope 3: Not commenced

SPT-RI-124 V2.6	400kV GIS substation in Torness Area
OVERVIEW OF WORKS A new 400kV double busbar substation, utilising Gas Insulated Switchgear (GIS), will be established in the vicinity of Torness. This new substation, known for the purposes of this TO Reinforcement Instruction as 'Branxton 400kV Substation', and associated plant and apparatus, will provide six Transmission Interface Points to which the Firth of Forth offshore transmission system assets will connect.	
Programme	Completion: - September 2026
Progress	Design Currently working on finding the optimal location for the substation in conjunction with environmental assessment. Consenting Preliminary site selection works completed and currently under review to determine optimal preferred location. Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-125 V2.3	Thornton Bridge Torness Cables
OVERVIEW OF WORKS Following an outage of the Smeaton / Fallago 400kV circuit or the Smeaton SGT2 transformer, the existing 400kV cable between Torness / Crystal Rig may become overloaded. To prevent an overload on the Torness / Crystal Rig 400kV cable circuit, it is proposed that this Thornton Bridge / Torness 400kV cable will be uprated.	
Programme	Completion: - December 2021
Progress	Design Early engineering design phase complete Consenting Identifying affected landowners and enabling initial discussions Detailed Engineering Ongoing Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info http://www.spenergynetworks.co.uk/pages/network_reinforcement_and_modernisation.asp

SPT-RI-126 V2.1	East Coast HVDC Link
OVERVIEW OF WORKS Installation of an approximate 200km, 2GW VSC HVDC link between the Torness area (Branxton 400kV Substation) in South East Scotland, and Hawthorn Pit in North East England. Complete associated AC onshore reinforcement works at both terminals. These works are subject to NOA process, scope, costs and program are subject to review and change. A "proceed" direction was made in the January 2020 NOA and a joint TO project team has been established to progress optioneering with a view to submitting a strategic wider work (SWW) initial needs case in Q3 2020.	
Programme	Completion: - December 2027
Progress	Design On going works to define technology requirements with further supplier engagement planned for Q4 2020 Consenting Imminent mobilisation of the marine survey contract. Marine Licence applications submission planned for Q2 2022 Detailed Engineering Still to be commenced - Subject to Network Options Assessment (NOA) Process Tendering Still to be commenced - Subject to Network Options Assessment (NOA) Process Construction Still to be commenced - Subject to Network Options Assessment (NOA) Process Commissioning/Close Out Still to be commenced - Subject to Network Options Assessment (NOA) Process Link to related info http://www.spenergynetworks.co.uk/pages/network_reinforcement_and_modernisation.asp

SPT-RI-130 V2.2	Strathaven – Smeaton

OVERVIEW OF WORKS

The overhead line conductor system on the existing 11.6km 400,000 Volt double circuit route from Strathaven to Wishaw (XH route) will be replaced with a conductor system of increased thermal rating.

The overhead line conductor system on the existing 61.8km 400,000 Volt double circuit route from Wishaw to Smeaton (XJ route) will be replaced with a conductor system of increased thermal rating.

The existing XH and XJ overhead line routes are equipped with twin 400mm^2 ACSR (Zebra) conductor operating at 50^{o}C. The replacement conductor system is subject to ongoing consideration.

These works will not modify the prevailing circuit configuration.

Programme	Completion: - April 2024
Progress	Design Due to changes in contracted background, design review is required. Design review to be arranged. Consenting Still to be commenced Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/network_reinforcement_and_modernisation.aspx

SPT-RI-137 V2.5	Torness/Innerwick/Dunbar 132kV Reinforcement

OVERVIEW OF WORKS

It is proposed to reinforce the Torness/Innerwick/Dunbar No.1 and No.2 132kV circuits, consisting of tower lines and underground cables, to provide a minimum pre-fault summer rating of 108MVA per circuit. For the overhead line section, the transmission works required involve a re-profile of the existing Lynx ACSR conductor system from 50°C to operate at 65°C. The works will also involve installation of a Load Management Scheme to monitor the 132kV No.1 and No.2 circuits (capacity limited by the underground cable) post completion of the new transformers installation at Dunbar GSP in order to send a trip signal to SPD's appropriate generation in an event of an overload.

Programme	Completion: - December 2020
Progress	Design Surveys and pre-engineering studies completed. Consenting Title search completed and consenting against planned route. Land consents Q3 2019. Land to be purchased at Innerwick S/S Detailed Engineering Underway on preferred cable routes. Tendering LMS (P&C system) awarded, Construction LMS started Construction ongoing. Commissioning/Close Out Still to be commenced, completion date under review Link to related info http://www.spenergynetworks.co.uk/pages/network_reinforcement_and_modernisation.asp

SPT-RI-143 V2.2	Kilmarnock South Substation Reinforcement
OVERVIEW OF WORKS Contracted renewable generation in South West Scotland has reached a level where the thermal uprating of Kilmarnock South 275kV substation is required to ensure compliance with NETS SQSS. The existing switchgear in Kilmarnock South 275kV substation is rated at 2000Amps/952MVA and this will need to be replaced with higher rated switchgear to ensure thermal limits are not exceeded at the 275kV substation. It is proposed to replace the switchgear with 3150Amp/1500MVA rated equipment to provide sufficient capacity for the generation in South West Scotland. Furthermore, there are two 400/275kV 1000MVA auto wind transformers at the 400kV substation and to comply with NETS SQSS a third transformer is required to ensure that for N-1 conditions there are no restriction on generation in South West Scotland.	
Programme	Completion: - November 2020
Progress	Design Complete Consenting Complete Detailed Engineering Complete. Tendering All main contracts now placed Construction • The building for the new 275kV and 400kV Gas Insulated Switchgear (GIS) are complete and the 400kV GIS is now in service. • The 275 GIS has been installed and tested and was commissioned Q2 2019 • All cabling work is now complete • Circuit transfers to the new GIS are ongoing. Commissioning/Close Out Still to be commenced, completion date November 2020. Link to related info https://www.spenergynetworks.co.uk/pages/kilmarnock_south_substation.aspx

SPT-RI-144 V1.1	Coalburn SGT3
OVERVIEW OF WORKS At Coalburn 400/132kV substation a 360MVA 400/132kV transformer (SGT3) will be installed. In addition, a bus section/coupler circuit breaker arrangement will be installed on the Coalburn 400kV Main busbar, and Coalburn 132kV Reserve busbar, to provide three separate 400kV and 132kV busbar sections to which the supergrid transformers may connect. Installation of SGT3 will increase the firm transformer capacity between the Coalburn 400kV and 132kV busbars to 480MVA, to provide additional thermal capacity for renewable generation contracted to connect to the Coalburn 132kV network.	
Programme	Completion: - Energised in November 2019 but final snagging works completed in June 2020.
Progress	Design Complete Consenting - No consents required Detailed Engineering Complete Tendering All main contracts now awarded Construction/Commissioning Works commenced 28th May 2018 SGT3 energised 14th November 2019 Final plant commissioned June 2020 Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-146 V2.0	Maybole to Coylton 132kV Overhead Line Uprating

OVERVIEW OF WORKS

Contracted renewable generation at Maybole GSP has reached a level where the thermal uprating of the 132kV circuit between Maybole and Coylton is required to facilitate this generation.

The two 132kV circuits between Maybole and Coylton are on a mixture of double circuit tower lines, single circuit tower lines, single circuit wood pole overhead lines and incorporates three 132kV underground cable sections (~1km total). The total route length is 22.5km and consists of CD Route (13km double circuit), CG Route (5km single circuit), N Route (5km single circuit) and X Route (4.5km double circuit).

The existing overhead line circuits are single 175mm ACSR with a pre-fault summer rating of 89MVA.

To accommodate the generation at Maybole GSP it is proposed that the existing Maybole to Coylton 132kV overhead line circuits are reconductored using LARK HTLS conductor. This gives a summer pre-fault continuous rating of 227MVA. In addition, the three 132kV underground cable sections on the circuit (~1.2km in total), will be replaced with 1600mm^2 Al XLPE cable to match the new rating of the overhead line.

Programme	Completion: - August 2022
Progress	Design Still to be commenced Consenting Still to be commenced Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced, anticipated start date Q2 2020 Commissioning/Close Out Still to be commenced, completion date August 2022

SPT-RI-151b V2.0	Galashiels to Eccles 132kV Overhead Line Rebuilding

OVERVIEW OF WORKS

The existing two 132kV circuits between Galashiels and Eccles are on a mixture of double circuit tower lines single circuit tower lines and two 132kV underground cable sections (for the overhead line termination at each end). (The circuits are made up of part of P Route and AT Route U Route overhead lines). The Galashiels to Eccles No.1 and No.2 132kv overhead lines are single 175mm^2 ACSR, with a pre-fault summer rating of 89MVA, each with a total circuit length of 30.58km and 30.14km respectively.

In order to provide GBSQSS compliant connections for additional generation requiring to export from Hawick/Galashiels to Eccles, it is proposed to construct a new 132kV double circuit tower line between Galashiels and Eccles and remove the existing U and AT Routes. The new double circuit, utilising UPAS conductor, will provide the following minimum circuit ratings:

	Winter		Autumn		Summer	
	Amps	MVA	Amps	MVA	Amps	MVA
Pre-Fault Continuous	885	203	845	193	770	176
Post-Fault Continuous	1060	241	1000	230	915	210

Programme	Completion: - September 2028
Progress	Design Early engineering design phase. Surveys of current OHL to be undertaken. Consenting Early environmental works progressing Detailed Engineering – Still to commence Tendering – Environmental consultant appointed. Construction – Still to commence, anticipated start date Q2 2024 Commissioning/Close Out – Still to commence, completion date September 2028 Link to related info http://www.spenergynetworks.co.uk/pages/network_reinforcem

	ent_and_modernisation.asp

SPT-RI-155 V2.2	Coalburn –Linnmill No.1 132kV Underground Cable Reinforcement
OVERVIEW OF WORKS There are two 132kV circuits from Coalburn 132kV substation which supply Linnmill 132/33kV Grid Supply Point (GSP). From Coalburn. Each Linnmill 132kV circuit has an initial 3.2km 300mm Cu underground cable section (rated at 123MVA summer continuous and 141MVA cyclic). These connect to a 132kV tower line with each circuit having a 302MVA summer pre- fault continuous rating (ex 275kV circuit). Contracted renewable generation at Linnmill GSP has reached a level where the thermal uprating of the 132kV underground cable section, on the Coalburn to Linnmill GSP No.1 132kV circuit, is required to ensure compliance with the NETS SQSS. (Blacklaw Extension wind farm (69MW) is contracted to connect to the Coalburn to Linnmill No.1 circuit, resulting in this circuits thermal limit being reached before the No.2 circuit). It is proposed to replace the 3.2km 132kV underground cable section, on the Coalburn to Linnmill No.1 132kV circuit, with a 2000mm Cu XLPE cable having a continuous summer rating of 1285A (293MVA).	
Programme	Completion: - October 2021
Progress	Design Initial engineering design phase complete, now progressing through detailed engineering. Consenting Detailed discussions with landowners progressing and we have agreement for voluntary wayleaves with two of the landowners. We have now completed the statutory process with the third land owner. Detailed Engineering Progressing detailed engineering following completion of the initial engineering design phase. Tendering Tendering for cable works commenced in March 2020 HDD – Contract was awarded in August 2020, works will commence on site 19th of October. Cable Duct Installation – Contract has been awarded. Cable Supply & Install – At final stage of tendering process, contract award programmed for November 2020. Construction Current programme dates: • Horizontal Directional Drill – October 2020 to February 2021 • Cable Duct Installation – January to June 2021 • Cable Supply Install – May to October 2021

	Commissioning/Close Out Completion date October 2021.

SPT-RI-158 V2.4	New Cumnock 132kV Substation Extension

OVERVIEW OF WORKS

Contracted renewable generation in South West Scotland has reached a level where the thermal rating of the New Cumnock 275kV substation supergrid 275/132kV transformers, which currently planned to connect to 132kV Board A, is exceeded. There is also a fault level issue triggered by the current contracted generation on the New Cumnock 132kV Board A. To mitigate these issues, it is proposed to separate Board A into Boards A and C whereas Board B remains. Cabling and transformer connections for Boards A and B will also be reconfigured as follows:

- Board A: 3 × 275/132kV SGT1A, SGT2A and SGT3A 240MVA auto wind transformers, providing a total firm capacity of 720MVA
- Board B: 3 × 275/132kV SGT1B, SGT2B and SGT3B 240MVA auto wind transformers, providing a total firm capacity of 720MVA
- Board C: 2 × 275/132kV SGT1C and SGT3C 360MVA auto wind transformers, providing a total firm capacity of 720MVA

This will provide sufficient transformer capacity for the current overall contracted generation into New Cumnock (the contracted generation position in South West Scotland as indicated in December 2017).

Programme	Completion: October 2022
Progress	Design Engineering detailed design phase ongoing. Extension area strimmed April 2020 to mitigate environmental constraints for commencement of construction. Consenting Planning application (local) submission early May with expected determination now imminent. Detailed Engineering Tender design complete for piled platform solution, detailed design to be developer by successful enabling works Contractor. Other detailed design packages ongoing. Tendering Bulk order tender pack issued to market, tender process ongoing - target award date Dec 2020. Enabling works (road and platform construction) tender process ongoing. Construction

	Still to be commenced. Extension area strimmed and cleared to mitigate against environmental risks / protected species, nesting birds etc. Commissioning/Close Out Still to be commenced Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-162 V2.0	Coylton 275kV Infrequent Infeed Loss Risk Protection Scheme
OVERVIEW OF WORKS A protection scheme will be installed at Coylton 275kV substation, on the Ayr/Kilmarnock South No.1 and No.2 275kV circuits (XY Route), such that if a level of power flow from Coylton to Kilmarnock South is detected which may result in the Infrequent Infeed Loss Risk (as defined in the NETS Security and Quality of Supply Standard) being exceeded, a trip signal will be provided to SP Transmission and/or SP Distribution to disconnect generation as required such that the Infrequent Infeed Loss Risk is not exceeded.	
Programme	Completion: - Complete
Progress	Design Initial engineering design complete Consenting No consents required Detailed Engineering Detailed engineering complete Tendering Cabinet tender complete E&C contract placed Q1 2016. Construction Complete. Commissioning/Close Out Complete. Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-170 V1.7	Tongland 132-33kV GSP Reinforcement
OVERVIEW OF WORKS At present, Tongland Grid Supply Point is supplied by two 132/11kV grid transformers which feed two 11kV boards, Tongland Hydro generation, Tongland 11kV Distribution and two outgoing feeders. Each of the two outgoing feeders is connected to two step-up 11/33kV 10MVA transformers, with 40MVA capacity in total supplying the 33/11kV primary substations (Castle Douglas, Dalbeatie and Gatehouse). The 30MVA 132/11kV transformers have reached the thermal capacity limit and the GSP is required to be reinforced. It is proposed to commission a new 33kV GSP at Tongland substation to provide a system that is consistent with standard design and provides sufficient capacity and flexibility for the future.	
Programme	Completion: - September 2020. Commissioning of Transmission assets complete.
Progress	Design In Progress Consenting Planning consent approved. SEPA CAR license applied for Detailed Engineering Complete Tendering Civil contract awarded Q1 2016 BOP contract awarded Q1 2017 Construction Commenced date March 2016 Commissioning/Close Out Commissioning of Transmission assets complete. Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-173 V2.5	Glenglass Extension and Glenmuckloch Collector
OVERVIEW OF WORKS To enable the connection of generation around the Glenmuckloch area, the 132kV network need to be extended from Glenglass substation to Glenmuckloch. To achieve this, it is proposed to build a new 132kV double circuit between Glenglass and Glenmuckloch. The project will mainly entail the extension of the proposed GIS substation at Glenglass to add two new bays to which the 132kV double circuit will connect, then construct around 10km of steel lattice towers to Glenmuckloch and at Glenmuckloch establish a 132kV double busbar collector substation to terminate the OHL double circuit.	
Programme	Completion: Updated TORI for May 2025 connection date in progress. Stakeholder engagement complete.
Progress	Design Early Engineering design phase complete. Consenting Public Consultation on overhead line route complete. Scoping Opinion submitted to Consents Unit. Landowner discussions underway. Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-176 V2.5	New Cumnock Overload Protection Scheme
OVERVIEW OF WORKS To utilise the non-firm capacity at New Cumnock and the 132kV network in South West Scotland an overload protection scheme is required at New Cumnock substation to monitor the loading on the 275kV circuits from Coylton, supergrid transformers and 132kV circuits at New Cumnock to prevent any overloading on the transmission system. The scheme at New Cumnock will communicate with remote systems at Dunhill, Blackhill, Glenglass and Kendoon substations to trigger tripping signals to generators connected at these substations.	
Programme	Completion: - October 2021
Progress	Design Early engineering design phase. Consenting No consents required. Detailed Engineering Still to be commenced. Tendering Still to be commenced. Construction Still to be commenced. Commissioning/Close Out Still to be commenced. Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-177 V2.4	Glenglass Overload Protection Scheme
OVERVIEW OF WORKS To utilise the non-firm capacity at New Cumnock, Glenglass and the 132kV network in South West Scotland an overload protection scheme is required at Glenglass substation to monitor loading at Glenglass and receive intertrip signals from New Cumnock to prevent any overloading on the transmission system. On the receipt of a local overload signal or a remote intertrip signal from New Cumnock, the scheme will trip generators in a pre-determined sequence by opening the relevant circuit breaker. Stage 1 The transformer overload protection will be required first with currently a proposed delivery date of January 2021 to align with the Twentyshilling wind farm connection. Stage 2 The 132kV OHL overload protection will be delivered in May 2021, currently aligned with the connection of Sandy Knowe wind farm.	
Programme	Stage 1: April 2020 Stage 2: May 2021
Progress	Design Early engineering design phase complete Consenting No consents required Detailed Engineering Completed Tendering Offers under review for the panel manufacturing and installation Construction Works scheduled from November 2020 to January 2021 Commissioning/Close Out January 2021 Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-185 V1.4	Galashiels 132kV/Dunlaw Extension 132kV Overload Protection Scheme

OVERVIEW OF WORKS

Installation of an Energy Management (Overload Protection) Scheme at Galashiels 132kV substation and Dunlaw Extension substation to monitor the following circuits:

1) Galashiels to Eccles No.1 132kV Circuit
2) Galashiels to Eccles No.2 132kV Circuit
3) Dunlaw Extension to Smeaton 132kV Circuit

If the seasonal post-fault rating of these circuits is exceeded a trip signal will be issued to SPT at Dunlaw Extension 33kV substation to disconnect the appropriate generation to remove the overload.

Programme	Completion: - June 2021
Progress	Design Still to be commenced. Consenting Still to be commenced. Detailed Engineering Still to be commenced. Tendering Still to be commenced. Construction Still to be commenced. Commissioning/Close Out Still to be commenced, Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-191 V2.1	Gretna-Ewe Hill 132kV Reinforcement
OVERVIEW OF WORKS The thermal capacity of the 132kV circuit between Gretna 132kV substation and Ewe Hill Wind Farm 132kV Collector Substation (works detailed in SPT-RI-017), will be increased by re-conductoring the 132kV overhead line utilising "Lark" High Temperature Low Sag (HTLS) conductor (~16km), and installing an additional 800mm2 Al XLPE 132kV underground cable in parallel with the existing cable (~0.3km), to give a minimum summer continuous rating of 224MVA. This is to accommodate additional generation connecting at the Ewe Hill Wind Farm 132kV Collector Substation.	
Programme	Completion: - October 2022
Progress	Design Early design in progress. Consenting All required servitudes have been concluded. Detailed Engineering Still to be commenced Tendering Still to be commenced for construction works. Contract for Lark conductor supply and type testing has been placed. Construction Still to be commenced Commissioning/Close Out Completion date October 2022. Link to related info https://www.spenergynetworks.co.uk/pages/network_reinforcement_and_modernisation.aspx

SPT-RI-196 V2.3	Clyde South 33kV Works and Overload Protection Scheme
OVERVIEW OF WORKS At Clyde South substation, the following will be installed: A containerised substation Transformer 33kV incomer circuit breaker (to form a part of a 3-panel board with a 33kV feeder circuit breaker for Whitelaw Brae 'A' Wind Farm and a 33kV feeder circuit breaker for Crookedstane Wind Farm, both of which will be contained within the relevant wind farm TOCOs) 0.05km 2x500mm2 Cu XPLE cable from the LV side of SGT1A to the new incomer circuit breaker At Clyde South 275/33kV substation, an overload protection scheme will be installed on the Clyde SGT1A and SGT1B transformers.	
Programme	Completion: - April 2021. This TORI connection date is being revised as per change to contracted background.
Progress	Design Early design well progressed. Earthing study, drainage survey and GPR survey complete Ecological survey on cable route complete. Consenting Negotiation of land rights continues. Detailed Engineering Commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-198 V2.1	Newton Stewart 132kV Substation Works
OVERVIEW OF WORKS At Newton Stewart 132/33kV substation, a second 132/33kV transformer will be installed as part of a separate project to accommodate contracted generation on a firm basis. To enable the transformer installation, substation works are required involving a new 132kV line isolator to connect the second grid transformer onto the existing T2 33kV circuit breaker.	
Programme	Completion: - October 2023
Progress	Design Early design in progress. Consenting Still to be commenced. Detailed Engineering Still to be commenced. Tendering Still to be commenced. Construction Still to be commenced. Commissioning/Close Out. Still to be commenced. Link to related info http://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.asp

SPT-RI-200 V2.2	East Coast Phase 2 Reinforcement
OVERVIEW OF WORKS SP Transmission works associated with SHE Transmission East Coast Phase 2 400kV Reinforcement (reference SHET-RI-093), comprising: – Uprating of the existing Kincardine-Tealing/ Kintore (XL)[1] overhead line route from 275kV 50°C operation to 400kV 65°C operation between Kincardine and the SP Transmission/ SHE Transmission border; and – Installation of 2 x 400/275kV 1100MVA auto-transformers at Kincardine. Note the existing Kincardine-Tealing 275kV and Kincardine-Kintore 275kV circuits may be terminated in a new SHE Transmission substation at Alyth in advance of the works described in this TORI. In this event, reference to Kincardine-Tealing/ Kintore will become Kincardine-Alyth.	
Programme	Completion: - TBC subject to Network Options Assessment (NOA) Process and potential Ofgem Strategic Wider Work (SWW)
Progress	Design Conceptual design has been kicked-off following NOA4 results published Consenting Still to commence - Subject to Network Options Assessment (NOA) Process Detailed Engineering Still to commence - Subject to Network Options Assessment (NOA) Process Tendering Still to commence - Subject to Network Options Assessment (NOA) Process Construction Still to commence - Subject to Network Options Assessment (NOA) Process Commissioning/Close Out Still to commence - Subject to Network Options Assessment (NOA) Process Link to related info https://www.spenergynetworks.co.uk/pages/east_coast_400kv_reinforcement_project.aspx

SPT-RI-204 V1.2	Wishaw-Smeaton-Torness-Eccles Overload Protection Scheme
OVERVIEW OF WORKS An overload protection scheme is proposed to be installed within the Wishaw – Smeaton – Torness – Eccles 400kV network to protect the system as part of a Category 2 Intertripping Scheme as defined by the Grid Code.	
Programme	Completion: August 2021
Progress	Design Design for tender Complete. Consenting Not required Detailed Engineering Still to be commenced by successful tenderer Tendering Tender ongoing, close to BAFO Contract Award now expected Q4 2020 Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

<table>
<tr><td><u>SPT-RI-205
V2.5</u></td><td><u>Arecleoch Ext Tee to Chirmorie/Stranoch Wind Farm 132kV Circuit</u></td></tr>
<tr><td colspan="2">OVERVIEW OF WORKS
A ~4.7km 132kV overhead line will be installed from the Arecleoch Extension wind farm tee to the Chirmorie/Stranoch junction. The circuit will use standard 43:50 Trident with HTLS 3M ‘Lark’ ACCR conductor which has the following circuit ratings:
<table>
<tr><th></th><th colspan="2">Winter</th><th colspan="2">Autumn</th><th colspan="2">Summer</th></tr>
<tr><th></th><th>Amps</th><th>MVA</th><th>Amps</th><th>MVA</th><th>Amps</th><th>MVA</th></tr>
<tr><td>Pre-Fault Continuous</td><td>1040</td><td>237</td><td>1020</td><td>234</td><td>995</td><td>227</td></tr>
<tr><td>Post-Fault Continuous</td><td>1240</td><td>285</td><td>1220</td><td>280</td><td>1180</td><td>270</td></tr>
</table>
The underground cable will be sized to match the ratings of the overhead line.</td></tr>
<tr><td>Programme</td><td>Completion: - September 2023</td></tr>
<tr><td>Progress</td><td>Design
Design freeze reached.

Consenting
Consultation on the preferred route in progress. SP Energy Networks attended Barhill Community Council meeting to present OHL route design. Majority of wayleaves issued.

Detailed Engineering
In progress

Tendering
Still to be commenced

Construction
Pre-construction surveys in progress

Commissioning/Close Out
Still to be commenced

Link to related info
https://www.spenergynetworks.co.uk/pages/stranoch_windfarm.aspx
https://www.spenergynetworks.co.uk/pages/chirmorie_windfarm_connection_project.aspx</td></tr>
</table>

SPT-RI-206 V2.1	Mark Hill SGT3 240MVA
OVERVIEW OF WORKS At Mark Hill substation a 275kV switchbay will be installed to control a 275/132kV 240MVA transformer (SGT3). This will connect to a 132kV busbar (B Board) provided for the connection of renewable generation.	
Programme	Completion: - September 2023
Progress	Design Surveys for Mark Hill substation extension completed. Consenting Consenting activities in progress. Public consultation in progress. Detailed Engineering In progress Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-207 V2.0	Currie 275kV Reinforcement Works
OVERVIEW OF WORKS At Currie 275kV Substation: • Removal of all five 275kV bulk oil circuit breakers and installation of five new 275kV SF6 AIS circuit breakers. • Installation of a new 275/132kV 240MVA Super Grid Transformer. • All associated protection and control works. • All associated environmental and civil works. • Miscellaneous works.	
Programme	Completion: - Complete
Progress	Design Complete Consenting Complete Detailed Engineering Complete Tendering Complete Construction Complete Commissioning/Close Out Complete - All new assets installed and commissioned at October 2020. Finishing works and demolition ongoing to May 2021 Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-211 V2.4	**Holm Hill Switching Station to Lorg Wind Farm Junction 132kV Circuit**
OVERVIEW OF WORKS Construct a new 132kV switching station, named Holm Hill, and install a 132kV OHL circuit between the new site and the tee off points to Shepherds Rig and Lorg wind farms. At an appropriate tee-off point on the New Cumnock to Kendoon 132kV circuit, install the new Holm Hill 132kV Switching Station containing one 132kV circuit breaker with two associated disconnectors. Install ~8km of 132kV wood pole overhead line with High Temperature Low Sag (HTLS) EAGLE conductor (190°C, minimum summer pre-fault rating 295MVA) to the tee point between Shepherd's Rig and Lorg wind farms.	
Programme	Completion: - April 2024
Progress	Design Early design in progress. OHL route design in progress. Holm Hill switching station design in progress. Consenting Consultation on the preferred route took place recently and responses are being reviewed to confirm the route to be taken forward. Consent for Holm Hill switching station in progress. Detailed Engineering Commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/lorg_longburn_wind_farms.aspx

SPT-RI-213 V1.2	New Cumnock 275/132kV Transformer SGT2B
OVERVIEW OF WORKS At New Cumnock substation a third 275/132 240MVA transformer will be installed to increase the capacity of the 132kV Board B.	
Programme	Completion: -September 2022
Progress	Design Early design in progress Consenting Not Applicable Detailed Engineering Still to be commenced Tendering Bulk order tender pack for procurement of SGTs now complete and issued to market, target award date Oct/Nov 2020. Other tender packs still to be issued. Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-214 V1.0	ZS Route Overhead Line Uprating Works (Smeaton – Fallago)
OVERVIEW OF WORKS The overhead line conductor system on the existing 31.1km 400,000 Volt circuit from Smeaton to Fallago (ZS route) will be uprated to achieve an increased thermal rating. The existing ZS overhead line route is equipped with twin 700mm2 AAAC (Araucaria) conductor operating at 75oC. The maximum operating temperature of the conductor system will be increased from 75oC to 85oC. These works will not modify the prevailing circuit configuration.	
Programme	Completion: - April 2024
Progress	Design Early design in progress Consenting Not Applicable Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info http://www.spenergynetworks.co.uk/pages/network_reinforcement_and_modernisation.asp

SPT-RI-215 V1.0	Wishaw 400kV GIS Substation Reconfiguration
OVERVIEW OF WORKS Terminate the existing Strathaven-Torness 400kV circuit in Wishaw 400kV Substation and install a 400kV bus section circuit breaker at Wishaw 400kV Substation.	
Programme	Completion: - April 2024
Progress	Design Early design in progress Consenting Not Applicable Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-216 V2.3	Dunbar 132kV Line Isolators
OVERVIEW OF WORKS Establishment and installation of two 132kV line isolators at Dunbar GSP. All associated civil, miscellaneous and minor works.	
Programme	Completion: - December 2020
Progress	Design Complete Consenting Planning application approved. Detailed Engineering Complete Tendering Civil awarded. BoP awarded 132kV Cable supply awarded and ready for delivery 132kV Cable installation, contract negotiation ongoing Construction Civil works progressing BoP works started Commissioning/Close Out Still to be commenced Link to related info http://www.spenergynetworks.co.uk/pages/network_reinforcement_and_modernisation.asp

SPT-RI-218 V2.1	Coalburn 132kV Bus Coupler Auto-Close Scheme
OVERVIEW OF WORKS An auto-close scheme will be installed, at Coalburn 132kV substation, on the 132kV bus-coupler Circuit Breaker (CB) which couples the Main 1 and Reserve 132kV busbars (CB 1030). Following installation of the auto-close scheme, the bus coupler CB 1030 will be normally open to split the 132kV busbars into two discrete sections (Main 1 and Main2/Reserve), supplied by different supergrid transformers. This will maintain the 132kV fault level within design limits on each section of 132kV busbar, and allow additional generation to connect.	
Programme	Completion: - April 2021
Progress	Design Complete Consenting Not Applicable Detailed Engineering Complete Tendering Commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-221 V2.0	Kendoon to Glenlee 132kV reinforcements
OVERVIEW OF WORKS The works in this reinforcement entails the extension of the L7 high capacity (twin UPAS) 132kV double circuit that runs between New Cumnock substation and the Margree Tee off in South West Scotland to Glenlee substation. This will enable the increase of transfer capability from the Galloway group to the wider supergrid system at New Cumnock. The transfer capability of the group is currently limited by the single 132kV Lynx circuit between Kendoon and Tongland. At Glenlee the substation will need to be extended to modify the configuration of the substation from a four to a six mesh corner arrangement to allow the termination of the new high capacity double circuit overhead line from New Cumnock. One side of the circuit will also be turned into Kendoon to maintain connectivity at the substation.	
Programme	Completion: - Q3 2024 Customer engagement ongoing for all impacted parties.
Progress	Design Tender design is ongoing. Consenting Glenlee Planning Consent received August 2020 OHL Section 37 Planning Consent application submitted and published Q3 2020 Detailed Engineering Underway Tendering Commenced in Q2 2019. Construction Commenced in Q2 2020 – pre-enabling works ongoing to divert circuit and create permanent access, enabling works Contract awarded working on discharge of planning conditions following receipt of local planning consent. Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/dumfries_galloway_strategic_reinforcement.aspx

SPT-RI-222 V2.1	Glenlee to Tongland 132kV Modernisation
OVERVIEW OF WORKS The works in this modernisation entails the construction of a new L4 (single POPLAR) 132kV double circuit from Glenlee to Tongland. This will enable the increase of transfer capability from Tongland to the wider supergrid system at New Cumnock and increase the local boundary capabilities of the 132kV system. The transfer capability of Tongland is currently limited by the single 132kV Lynx circuit between Glenlee and Dumfries and this scheme will remove this limitation.	
Programme	Completion: - Q3 2025 Customer engagement ongoing for all impacted parties.
Progress	Design Tender design in progress Consenting OHL Section 37 Planning Consent application submitted and published Q3 2020 Detailed Engineering Underway. Tendering Commenced in Q3 2019 Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/dumfries_galloway_strategic_reinforcement.aspx

SPT-RI-223 V1.1	Glenlee to Newton Stewart Reconductoring
OVERVIEW OF WORKS The existing No.1 and No.2 132kV circuits between Glenlee and Newton Stewart substations are on a double circuit tower line (~ 30km, BG route). The overhead line circuits are single 175mm^2 ACSR with a pre-fault summer rating of 89MVA. To facilitate increasing levels of generation at Glenluce and Newton Stewart GSP, it is proposed to reconductor BG route with High Temperature Low Sag conductor (HTLS) to provide a minimum summer pre-fault continuous rating of 250MVA.	
Programme	Completion: - Q3 2025 Customer engagement complete for all impacted parties.
Progress	Design Early design in progress Consenting Not Applicable Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/dumfries_galloway_strategic_reinforcement.aspx

SPT-RI-224 V1.0	Coylton SGT1(2) Reinforcement
OVERVIEW OF WORKS At Coylton substation, the existing SGT1 and SGT2 275/132kV 120MVA Auto-transformers will be replaced (on line) with 240MVA units.	
Programme	Completion: - August 2022
Progress	Design Early design in progress Consenting Not Applicable Detailed Engineering SCA draft prepared and circulated for comments. Site surveys are being carried out. Detail engineering still to be commenced Tendering Transformers tender issued to market via bulk transformer tender in April 2020. Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-226 V2.2	275/132kV Elvanfoot Transformer
OVERVIEW OF WORKS A new 275/132kV 360MVA transformer shall be installed at Elvanfoot substation. This will create a new 132kV busbar at Elvanfoot, to allow new generators to connect.	
Programme	Completion: - October 2022
Progress	Design Early design in progress Consenting In progress, planning application information being prepared. Detailed Engineering Still to be commenced Tendering Transformer procurement commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-227 V2.0	Chapelcross – Harker 132kV Uprating
OVERVIEW OF WORKS It is proposed to rebuild AK and T Route single circuit Chapelcross to Harker 132kV overhead line, to increase the thermal rating to a minimum summer pre-fault continuous rating of 227MVA. The current circuit is a 132kV overhead tower line, with Lynx conductor, with a pre-fault summer continuous rating of 89MVA. This project is in response to the increased level of generation in the area. The 132kV overhead line circuit between Chapelcross and Harker has split ownership, 17.5 km from Chapelcross 132kV substation following AK and T route, to tower T137A. This is owned by SPT with the remaining 8.6 km from tower T137A to Harker 132kV substation owned by NGET. Any uprating by SPT will need to be matched by NGET. The project will be to rebuild the SPT-owned 17.5km of AK and T route utilising LARK HTLS conductor on a 132kV wood pole construction. This will provide a pre-fault summer continuous rating of 227MVA. The existing AK and T route 132kV steel tower circuit will be dismantled.	
Programme	Completion: - November 2024
Progress	Design Early design in progress Consenting Env / Planning consultant contract awarded potential route corridors identified, on-going Environmental / Engineering assessment to identify a preferred corridor Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-229 V2.3	Moffat SGT3
OVERVIEW OF WORKS A new 400/132kV 240MVA transformer, and associated 400kV and 132kV circuit breaker bays, shall be installed at Moffat 400/132kV substation to increase the available generation capacity at the 132kV substation.	
Programme	Completion: - August 2025
Progress	Design Early design in progress Consenting Not Applicable Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-230 V2.1	Gretna to Faw Side WF Tee 132kV Reinforcement
OVERVIEW OF WORKS It is proposed to re-profile approximately 36km of the 132kV overhead line existing Gretna to Hawick circuit (AL and V Route), between Gretna and the proposed Faw Side Community Wind Farm 'T' connection. It is proposed to utilise LARK HTLS conductor. NGET own a section of AL and V Route on this circuit and will have to reinforce to match the SPT proposals.	
Programme	Completion: - October 2025
Progress	Design Early design in progress Consenting Not Applicable Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-231 V2.0	Elvanfoot to Harker 400kV Circuit Uprating
OVERVIEW OF WORKS In order to maintain the 4.4GW North-South boundary transfer over Boundary B6, due to the level of generation connecting on to this interconnector, it is necessary to thermally uprate the Elvanfoot – Harker 400kV double circuit, via reconductoring with twin Curlew HTLS conductor, operating at 190°C.	
Programme	Completion: - TBC subject to Network Options Assessment (NOA), project did not receive a proceed signal from NOA 5
Progress	Design Design not kicked off yet. Consenting Not Applicable Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-232 V1.4	Hopsrig Substation Transformer 132-33kV
OVERVIEW OF WORKS A new 132/33kV 90MVA transformer will be installed at Hopsrig collector substation. This will create a new 33kV busbar to allow new generators to connect.	
Programme	Completion: - October 2026
Progress	Design Preliminary Civil Design has commenced, and a ground investigation completed. Basic Main Plant layout has been developed for the collector substation. Consenting Planning and environmental consultant has been engaged to progress the planning application for the substation. Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-233 V2.2	Gretna to Jun V 132kV Circuit Reinforcement (AL Route)
OVERVIEW OF WORKS It is proposed to re-profile AL Route single circuit Gretna to Junction V 132kV overhead line, in order to increase the thermal rating to a minimum summer pre-fault continuous rating of 124MVA. The current circuit is a 132kV overhead tower line, with Lynx conductor, with a pre-fault summer continuous rating of 89MVA. This project is in response to the increased level of generation in the area. The 132kV overhead line circuit between Gretna and Junction V has split ownership, 5 km from Gretna 132kV substation following AL route, to tower AL57. This is owned by SPT with the remaining section from tower AL57 to AL68 at Junction V owned by NGET. Any uprating by SPT will need to be matched by NGET. The project will be to reconductor the SPT-owned 5km of AL route utilising Poplar conductor on the existing steel tower construction. This will provide a pre-fault summer continuous rating of 124MVA.	
Programme	Completion: - October 2023
Progress	Design Early design in progress Consenting N/A Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-234 V2.0	Glenniston to Mossmorran No.2 Cct Reinforcement Works
OVERVIEW OF WORKS The original scope of works has been revised following the system restudy in the area. The revised scope of works is divided into 2 stages as outlined in the followings. The works are required at Glenniston 132kV substation in order to increase the thermal rating of the equipment: Stage 1 Glenniston 132kV T1 LVDOC Relay, and Glenniston 132kV T2 LVDOC Relay. Stage 2 Replace the 132kV disconnectors 124 and 128 and bus section circuit breaker 120 to achieve a minimum rating of 185MVA.	
Programme	Completion: Stage 1 June 2020 Stage 2 April 2021
Progress	Design Progressing Consenting Not Applicable Detailed Engineering Progressing Tendering Contract awarded for stage 2 Construction Stage 1 completed Stage 2 still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-236 V2.0	Glenmuckloch to ZV Route Reinforcements
OVERVIEW OF WORKS The works in this TORI extends the 400kV network from the ZV route to Glenmuckloch collector substation. It is proposed to establish a new 400kV substation by turning in the ZV route into a new 400kV substation between Elvanfoot and Coalburn. From the new 400kV substation a new 400kV L8 overhead line will be established to a new 400kV substation at Glenmuckloch. Three 400/132kV 360MVA interbusing transformers will connect the 400kV to the 132kV collector substation at Glenmuckloch.	
Programme	Completion: October 2027
Progress	Design Early design in progress. High level routing options being assessed. Consenting Consenting requirements being assessed. Detailed Engineering Still to commence Tendering Still to commence Construction Still to commence Commissioning/Close Out Still to commence Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-237 V2.0	Enoch Hill Collector 132/33 kV substation and associated 132 kV circuit
OVERVIEW OF WORKS A 132/33kV substation will be established, adjacent to Enoch Hill wind farm, in East Ayrshire (255265E, 609695N). A new circuit by underground cable 4.4 km in length from Board C, will connect this new substation into a new 132kV bay on Board C, at New Cumnock 132kV substation. This TORI describes the works required for the installation of Enoch Hill Collector 132/33 kV Substation and its associated 132 kV circuit The 132 kV circuit is approximately 5km in length and extend from the Enoch Hill collector substation to New Cumnock.	
Programme	Completion: May 2023
Progress	In early design and development phase Design Early design in progress Consenting Early stages in progress Detailed Engineering Still to commence Tendering Still to commence Construction Still to commence Commissioning/Close Out Still to commence Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-238 V2.0	Cumberhead Wind Farm 132kV Collector Substation
OVERVIEW OF WORKS A collector substation is required for the connection of both Cumberhead and Dalquhandy wind farm. The collector substation will require the installation of a 132kV busbar section with two line disconnectors and short sections of underground cable (~0.2km each) to connect into the existing Coalburn to Galawhistle 132kV underground cable. From the 132kV busbar section a 132kV circuit breaker, with associated disconnectors, will be installed and connected to a 132/33kV 120MVA transformer with a shared 33kV busbar section. The works to establish this collector substation will include the construction of the substation platform as well as a control building to house SPT's protection and control equipment.	
Programme	Completion: June 2022
Progress	Design Early designs complete Consenting HoT's issued aiming to close out consents early Q4. Detailed Engineering Tendering design commenced Tendering Transformer tender ongoing Construction Still to commence Commissioning/Close Out Still to commence Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-240 V1.2	Douglas West Wind Farm 132kV Collector Substation
OVERVIEW OF WORKS At the Douglas West Wind Farm 132kV substation site, a 132kV air insulated busbar will be installed to facilitate the connection of Douglas West Wind Farm and future connections. This 132kV busbar will be looped into the proposed Coalburn to Middlemuir wind farm 132kV underground cable, utilising two new 132kV underground cable sections (~0.3km each).	
Programme	Completion: April 2021
Progress	Design Complete Consenting Land for substation purchased. Planning Application granted. Detailed Engineering Complete Tendering Civil and control building contracts awarded. BoP and 132kV cable works awarded. Construction Commenced 6th July – civil works planned to complete October 2020. Modular Control Building delivered to site. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-243 V2.4	Devolmoor-Erskine-Braehead Park Circuit LMS
OVERVIEW OF WORKS A Load Management Scheme (LMS) is required to manage connections in the Neilston – Devol Moor 132 kV group to prevent overloads on the Devol Moor-Erskine-Braehead Park Circuit. The overload will be managed by the LMS tripping the appropriate non-firm connections.	
Programme	Completion: April 2021
Progress	In early design and development phase Design Underway Consenting Not Applicable Detailed Engineering Still to commence Tendering Still to commence Construction Still to commence Commissioning/Close Out Still to commence Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-244 V1.0	Erskine GT1 Protection Modifications
OVERVIEW OF WORKS PROTECTION MODIFICATIONS The LVDOC relay protecting GT1 at Erskine will need to be modified or replaced to allow for reverse power flow through GT1. The modification is required to allow full reverse power flow at this GSP. This will take one of the following options, depending on detailed engineering solutions: • Relay settings modifications utilising existing relay (currently set with pickup at 50% of Tx rating) • Relay change • Removal of directional element and add in an additional intertrip.	
Programme	Completion: Withdrawn
Progress	In early design and development phase Design PDS being finalised Consenting Not Applicable Detailed Engineering To be finalised Tendering Not Applicable Construction Still to commence Commissioning/Close Out Still to commence Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-246 V2.1	Denny SGT2
OVERVIEW OF WORKS At Denny North substation, a new 1000MVA 400/275kV supergrid transformer and associated circuit breakers will be installed. This will increase the thermal capacity of Denny North 400kV substation, and across the B4 Boundary, to facilitate the connection of generation in the SHE Transmission area.	
Programme	March 2025
Progress	Design Still to commence Consenting Still to commence Detailed Engineering Still to commence Tendering Still to commence Construction Still to commence Commissioning/Close Out Still to commence Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-251 V1.2	Coalburn to Douglas West WF 132kV Cable Reinforcement

OVERVIEW OF WORKS

Revised proposal as part of SPT-RI-251 to install a 132kV cable circuit between Coalburn and Douglas North Collector which can take all the contracted generation into the site. This 132kV circuit will not be connected in parallel, as per the previous solution, and will be connected electrically separate so the risks identified previously with regards to cable sharing will no longer be present.

Programme	May 2024
Progress	Design Proposed cable route surveyed and initial discussions progressing with Hargreaves regarding servitude for field adjacent to motorway slip road. Hargreaves carrying out check with regards to proposed cable route impacting their development. Consenting Discussions commenced with landowners of identified preferred route. Land required at entrance to Coalburn substation to minimise clash/crossing with existing cables. Detailed Engineering Still to commence. Tendering HDD tender package in progress, trial holes for joint bays to be progressed. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-252 V1.0	Fife 132kV Fault Level Reinforcement
OVERVIEW OF WORKS The following works are required at Mossmorran 132kV substation remove the fault level limitations introduced by the 8 GEC FC1 Circuit Breakers (1983): • Replace CB 210 and associated disconnector/earth switch • Replace CB 280 and associated disconnector/earth switch • Replace CB 310 and associated disconnector/earth switch • Replace CB 380 and associated disconnector/earth switch • Replace CB 405 and associated disconnector/earth switch • Replace CB 415 and associated disconnector/earth switch • Replace CB 505 and associated disconnector/earth switch • Replace CB 515 and associated disconnector/earth switch In addition to the above works, the protections on each bay, including remote ends, are to be replaced in line with the new primary plant.	
Programme	June 2022
Progress	Design SCA being produced & stages for outages being produced. Consenting N/A permitted development Detailed Engineering Still to commence. Tendering Site surveys tendered. Construction Main works still to commence, CB 505 & CB 280 have been changed by Transmission Operations. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-253 V1.0	Coalburn to Cumberhead WF Collector Substation 132kV Cable Reinforcement
OVERVIEW OF WORKS There is an existing 1600mm Al XLPE 132kV cable between Coalburn 132kV substation and Galawhistle WF. The Cumberhead WF 132kV Collector substation will be connected into this cable at a location ~10km from Coalburn. This 132kV cable has a summer continuous rating of 169MVA. It is proposed to install a second 1600mm Al XLPE 132kV cable in parallel with the existing cable between Coalburn and the proposed Cumberhead WF 132kV Collector substation (~10km). A minimum summer continuous rating of 200MVA is required for the circuit (two cables in parallel).	
Programme	May 2024
Progress	Design Early design commenced. Consenting Proposed cable route established landowners to be approached. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-254 V1.0	AA Route LMS
OVERVIEW OF WORKS A Load Management Scheme (LMS) is required at Bonnybridge 132 kV substation to prevent overload conditions on both the Bonnybridge to Bathgate leg of the Bonnybridge – Bathgate – Drumcross No. 1(2) 132 kV circuit when the adjacent circuit is out of service. The overload will be removed by the LMS scheme managing the appropriate non-firm connections via appropriate LMS outstations. Note that the LMS outstations are to be detailed in separate SPT-RI documents.	
Programme	October 2021
Progress	In early design and development phase Design PDS & SCA preparation in-progress Consenting Not Applicable Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-255 V1.0	Drumcross GSP GT1(2)
OVERVIEW OF WORKS An overload protection (OLP) scheme is required at Drumcross 132/33 kV substation to prevent overload conditions on the single transformer when the other transformer is out of service. The overload will be removed by the OLP scheme tripping the appropriate non-firm connections.	
Programme	October 2021
Progress	In early design and development phase Design PDS & SCA preparation in-progress Consenting Not Applicable Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-260 V1.0	Leven GSP GT1(2) OLP Scheme and LMS Outstation
OVERVIEW OF WORKS An overload protection (OLP) scheme is required at Leven 132/33 kV substation to prevent overload conditions on the single transformer when the other transformer is out of service. The overload will be removed by the OLP scheme tripping the appropriate non-firm connections.	
Programme	April 2021
Progress	Design Underway. Consenting Not Applicable Detailed Engineering Underway Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-261 V1.0	Cupar-Leven 132 kV Circuits LMS
OVERVIEW OF WORKS A Load Management Scheme (LMS) is required to monitor circuit loadings at: Westfield 132 kV substation to monitor for overload conditions on the Westfield-Cupar-Leven 132 kV circuit. Redhouse 132 kV substation to monitor for overload conditions on the Redhouse-Cupar-Leven 132 kV circuit. IED to be installed a Cupar GSP to act an LMS outstation to complete the communications channel.	
Programme	April 2021
Progress	Design Underway Consenting Not Applicable Detailed Engineering Underway Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-262 V1.0	Redhouse 132 kV Circuits LMS
OVERVIEW OF WORKS A Load Management Scheme (LMS) is required at Redhouse GSP to monitor circuit loadings on: The Redhouse – Glenniston 132 kV Circuit The Redhouse – Westfield 132 kV Circuit	
Programme	April 2021
Progress	Design Still to commence. Consenting Not Applicable Detailed Engineering Underway Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-263 V1.0	Coalburn SGT4
OVERVIEW OF WORKS At Coalburn 400/132kV substation, works will be required to extend the compound to facilitate the extension of the 400kV and 132kV double busbars, installation of a fourth supergrid transformer (SGT4), along with the associated switchbays. In addition, alterations will be made to the 400kV busbars to provide a Main and Reserve busbar, and the 132kV busbars to form two separate switchboards ("A" and "B" board). Modifications will be made to the existing load management scheme on SGT1, SGT2 and SGT3 to monitor only SGT1 and SGT2 whilst an additional scheme will be installed to monitor SGT3 and SGT4. The diverting of three of the 132kV cable circuits into Coalburn has been allowed for to ensure that the generation is split appropriately across the "A" and "B" 132kV switchboards. These works will provide additional capacity at Coalburn for generation connecting to the associated transmission and distribution network.	
Programme	May 2024
Progress	Design Preliminary design work complete Consenting Engagement with stakeholders ongoing Detailed Engineering Still to commence. Tendering 132kV cable diversion works tender issued. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-267 V1.0	Eccles 400kV Shunt Compensation
OVERVIEW OF WORKS In order maintain to post-fault voltages within statutory limits, the installation of voltage control in the east of the network is required. As such, dynamic shunt compensation will be installed at Eccles 400kV substation with associated switchgear.	
Programme	July 2026
Progress	Design Still to commence. Consenting Still to commence. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-268 V1.0	Coalburn to Douglas West 132kV cable rating enhancement
OVERVIEW OF WORKS The cable currently installed between Coalburn 132kV and Douglas West collector substation is an 800mm2 AL XLPE (~5km) with its rating limited to 144MVA. The limiting sections for the rating are: i) HDD section at Poniel water– 146MVA limit It is proposed to relay this sections with a larger capacity cable to enhance the thermal ratings on this circuit to 165MVA.	
Programme	October 2021
Progress	Design Scope confirmed Consenting No consents requirements Detailed Engineering Cable design requirements complete Tendering Cable works awarded Construction Still to commence – planned November 2020 Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-269 V2.2	Bathgate GSP OLP Scheme
OVERVIEW OF WORKS An overload protection (OLP) scheme is required at Bathgate 132/33kV substation to prevent overload conditions on the single transformer when the other transformer is out of service. The overload will be removed by the OLP scheme tripping the appropriate non-firm connections.	
Programme	November 2021
Progress	Design Still to commence. Consenting Not Applicable Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-273 V1.0	Maybole 132kV Load Management Scheme
OVERVIEW OF WORKS In order to utilise non-firm capacity on the Maybole – Coylton 132kV circuits, an overload protection scheme is required to trip generation if one circuit overloads following the unavailability of the other circuit.	
Programme	TERMINATED
Progress	Design Still to commence. Consenting Not Applicable Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-274 V2.1	Glenshimmeroch Collector Substation
OVERVIEW OF WORKS On the New Cumnock / Blackcraig 132kV circuit, establishment of a new collector substation named 'Glenshimmeroch collector substation'. At Glenshimmeroch collector substation, install of a 132kV circuit breaker and associated disconnectors, a 132kV busbar and a 132kV disconnector (on the Blackcraig 132kV circuit). It is also proposed to install an auto-isolation scheme at Glenshimmeroch collector substation in order to isolate the faulted circuit and re-energise the remaining circuit(s).	
Programme	October 2023
Progress	Design Early design works underway. Consenting Still to commence. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-275 V2.0	Mark Hill 132kV Bus
OVERVIEW OF WORKS To increase the utilisation of the available capacity at Mark Hill substation it is proposed to create a new 132kV Board by coupling both supergrid transformers SGT2 and SGT3. To achieve this it is proposed to install a 132kV bus section breaker and share the available capacity on both transformers.	
Programme	September 2023
Progress	Design Surveys for Mark Hill substation extension completed. Consenting Public consultation in progress. Detailed Engineering In progress Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-281 V1.0	Glenniston 132/33kV T1(2) GSP LMS
OVERVIEW OF WORKS An overload protection (OLP) scheme is required at Glenniston 132/33 kV substation to prevent overload conditions on the single transformer when the other transformer is out of service. The overload will be removed by the OLP scheme tripping the appropriate non-firm connections.	
Programme	February 2022
Progress	Design Still to commence. Consenting Not Applicable Detailed Engineering Underway Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-282 V2.1	Markhill SGT4
OVERVIEW OF WORKS At Mark Hill substation extend the substation to install 275kV switchbay and a fourth supergrid transformer (SGT4). This will connect to a 132kV busbar to provide for the connection of renewable generation.	
Programme	October 2025
Progress	Design Surveys for Mark Hill substation extension completed. Consenting Consenting activities in progress. Public consultation in progress. Detailed Engineering In progress Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-284 V1.1	GEMS
OVERVIEW OF WORKS The Generation Export Management Scheme (GEMS) is an active network management system that protects the SP transmission network in south west Scotland against unacceptable overloads on transmission equipment under intact and depleted system conditions. The GEMS system will instruct directly connected and embedded generation to curtail their output to avoid the overloading of any transmission circuits. The order with which these generators are curtailed will be determined by the System Operator (SO) and GEMS system will receive the order list periodically from the SO.	
Programme	Staged with completion October 2024
Progress	Design Initial engineering design underway. Consenting Not applicable. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-286 V1.0	Bonnybridge SGT1(2) Auto Changeover Scheme
OVERVIEW OF WORKS An auto-changeover scheme will be installed on the Bonnybridge 275/132kV transformer SGT1 such that SGT1 will remain disconnected but on hot standby in case of a fault on Bonnybridge SGT2, Denny 275/132kV SGT3, or a double circuit fault on the Bonnybridge-Westfield 132kV circuits.	
Programme	November 2022
Progress	Design Preliminary design started. Consenting Not required. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-287 V1.0	Cumbernauld GSP OLP scheme
OVERVIEW OF WORKS An overload protection (OLP) scheme is required at Cumbernauld 132/33kV substation to prevent overload conditions on the single transformer when the other transformer is out of service. The overload will be removed by the OLP scheme tripping the appropriate non-firm connections.	
Programme	November 2022
Progress	Design Preliminary design started. Consenting Not Applicable Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-288 V1.0	Hawick - Galashiels 132kV Reconfiguration

OVERVIEW OF WORKS

Hawick 132/33kV substation is currently supplied via two 132kV circuits from Gretna 400/132kV substation, with a 132kV circuit to Galashiels normally open at CB 205. With the proposed connection of Faw Side wind farm (250MW) it is proposed to reconfigure Hawick 132kV substation such that Hawick can be supplied from Galashiels and establish the Hawick / Galashiels 132kV circuit No.1 and No.2. Works at Galashiels will be required to terminate the double circuit from Hawick post reconfiguration.

At Hawick, it is also proposed to install two new 132kV circuit breakers and a fourth 132kV circuit at Hawick with Poplar conductor:

	Winter		Autumn		Summer	
	Amps	MVA	Amps	MVA	Amps	MVA
Pre-Fault Continuous	615	140	590	134	540	124
Post-Fault Continuous	730	167	700	160	645	147

The existing circuit breakers at Galashiels are of 600A and 800A. It is also proposed to replace the 600A circuit breakers 120 and 620 with a standard 2000A circuit breaker.

Programme	October 2025
Progress	Design Early design works underway. Consenting Still to commence. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-289 V2.1	Glenmuckloch Overload Protection Scheme
OVERVIEW OF WORKS To utilise the non-firm capacity between Glenmuckloch and Glenglass a Load Management Scheme (LMS) is required. This scheme will perform the following: 1. Monitor the loading on the 132kV circuits between Glenglass and Glenmuckloch. 2. Interface with the LMS at New Cumnock and Glenglass to receive information regarding overloads on other parts of the 132kV network and New Cumnock Transformers. 3. Interface with local tripping scheme to disconnect generators connected at Glenmuckloch substation.	
Programme	Updated TORI for June 2025 connection date in progress. Stakeholder engagement complete.
Progress	Design Initial design activities underway. Consenting Not Applicable Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-290 V1.0	Coalburn to Linnmill No.1 Circuit CSE Compound
OVERVIEW OF WORKS It is required to establish a 132kV cable sealing end compound on the Coalburn – Linnmill No.1 circuit to create a tee off connection to facilitate the connection of Broken Cross WF. The cable sealing end compound with require busbars and downlead connections onto the Coalburn to Linnmill steel tower circuit as well as busbars connection towards the windfarm. This will require the dismantling off the existing cable sealing end basket on the existing tower.	
Programme	September 2023
Progress	Design Initial design activities underway. Consenting Still to commence. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-292 V1.0	Lorg to Shepherds Rig tee
OVERVIEW OF WORKS Install ~10km of 132kV wood pole overhead line with UPAS conductor (75°C, minimum summer pre-fault rating 176MVA) between Lorg 132kV substation and the proposed Shepherds Rig tee connection. The will form part of the Lorg to Holmhill 132kV overhead line.	
Programme	April 2024
Progress	Design Early design in progress. OHL route design in progress. Holm Hill switching station design in progress. Consenting Consultation on the preferred route took place recently and responses are being reviewed to confirm the route to be taken forward. Consent for Holm Hill switching station in progress. Detailed Engineering Commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/lorg_longburn_wind_farms.aspx

SPT-RI-293 V1.0	Carrick 275kV substation
OVERVIEW OF WORKS A new 275kV substation will be installed on the Coylton-Mark Hill 275kV circuit (YY route) approximately 25km northeast of Mark Hill substation. The YY route will be turned in to the new substation with a 275kV circuit breaker on each circuit. The new circuit breakers will maintain the single-phase high-speed auto reclose capability which currently exists on the YY route.	
Programme	July 2024
Progress	Design Still to be commenced Consenting Still to be commenced Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/lorg_longburn_wind_farms.aspx

SPT-RI-294 V2.1	Ewe Hill – Hopsrig collector substations 132kV circuit
OVERVIEW OF WORKS An optimised solution has been identified to connect Hopsrig, Loganhead and Crossdykes Extension wind farms. This optimised solution will establish a new 132kV collector substation at Hopsrig wind farm where Hopsrig wind farm will be connected (via a 33kV PoC). At the Hopsrig collector substation, an individual PoC at 33kV will also be provided for Loganhead and Crossdykes Extension wind farms. To provide connectivity between the existing Ewe Hill collector substation and the Hopsrig collector substation, it is proposed to install a new 132kV overhead line circuit between Ewe Hill and Hopsrig collector substations. The circuit will utilise Poplar conductor operating at 90°C.	
Programme	October 2026
Progress	Design OHL route finalised Consenting Scoping and Screening document submitted to ECU. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-295 V1.0	Newton Stewart GSP GT1(2) OLP & LMS
OVERVIEW OF WORKS An overload protection (OLP) scheme is required at Newton Stewart 132/33 kV substation to prevent overload conditions on the single transformer when the other transformer is out of service. The overload will be removed by the OLP scheme tripping the appropriate non-firm connections.	
Programme	May 2025
Progress	Design Still to commence. Consenting Not Applicable Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-296 V1.0	Glenshimmeroch Collector Substation 132kV OHL Uprating
OVERVIEW OF WORKS It is proposed to uprate a section of the overhead line between the proposed Glenshimmeroch collector substation to the cable end on the New Cumnock 132kV circuit. This is approximately 11km. This will be achieved by replacing the existing UPAS conductor with LARK conductor on the existing wood pole system.	
Programme	October 2023
Progress	Design Still to commence. Consenting Still to commence. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-298 V1.0	Chapelcross to Gretna OHL Reinforcement

OVERVIEW OF WORKS

The Gretna to Chapelcross No.1 and No.2 132kV circuits require to be reinforced as the thermal capacity of the existing ACSR "Lynx" circuits are exceeded during times where the Chapelcross to Harker 132kV circuit is out of service or a Gretna to Chapelcross circuit is out of service.
The proposal is to reconductor the existing circuit with AAAC "Sycamore" conductor. This will give a summer pre-fault rating of 150MVA resulting in no overloads on the circuit.
It has been evaluated that the cable sections out of both Gretna and Chapelcross 132kV substations should be suitable to carry this increased loading therefore only the OHL conductors require to be replaced.

The table below details the pre-fault ratings of "Sycamore" conductor across the three seasonal periods.

	Winter	Spring/Autumn	Summer
	MVA	MVA	MVA
Pre-Fault Continuous	196	189	176

Programme	Oct 2027
Progress	Design Early design in progress. Consenting Still to be commenced Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/lorg_longburn_wind_farms.aspx

SPT-RI-300 V1.0	Douglas North Collector 132/33kV Transformer
OVERVIEW OF WORKS It is required to establish a 132/33kV 120MVA transformer at Douglas North Collector substation for the purposes of connecting Douglas West Ext WF and Hagshaw Hill Phase 2 WF. The 120MVA transformer to be installed will be in place of the 90MVA and 60MVA units which were included in the original contracts for the connections. The installation of a 33kV indoor circuit breaker is required given that only an indoor solution can be accommodated within the substation footprint.	
Programme	July 2024
Progress	Design Initial design engineering commenced. Consenting Initial approach for securing construction compound started. Detailed Engineering Still to commence. Tendering Still to commence – ITT for transformer planned November 2020 Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-301 V1.0	Mark Hill to Arecleoch Ext Tee 132kV Circuit
OVERVIEW OF WORKS At Mark Hill 132kV substation a 132kV switch bay will be installed. From this a 132kV circuit, consisting of 0.5 km of underground cable and ~7.5km of 132kV overhead line (HTLS 'Eagle' conductor), will be installed to the tee point with Arecleoch Extension wind farm.	
Programme	September 2023
Progress	Consenting Consultation on the preferred route in progress. SP Energy Networks attended Barhill Community Council meeting to present OHL route design. Majority of wayleaves issued. Detailed Engineering In progress Tendering Still to be commenced Construction Pre-construction surveys in progress Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/stranoch_windfarm.aspx https://www.spenergynetworks.co.uk/pages/chirmorie_windfarm_connection_project.aspx

SPT-RI-302 V1.0	Glenglass 132kV substation
OVERVIEW OF WORKS To enable the connection of generation in the Glenglass area and extend the 132kV network to Glenmuckloch a new 132kV substation is required in Glenglass. The new substation will be a double busbar 132kV GIS substation with a bus coupler and sized for eight feeder circuits. Also, to maximise the network capabilities the 132kV circuits between Glenglass and Blackhill are limited by cables at Blackhill substation. These cables will need to be uprated to match the 132kV Blackhill to Glenglass OHL ratings.	
Programme	April 2024
Progress	Design Still to commence. Consenting Still to commence. Detailed Engineering Still to commence. Tendering Still to commence. Construction Still to commence. Commissioning/Close Out Still to commence. Link to related info https://www.spenergynetworks.co.uk/pages/substation_modernisation_and_reinforcement.aspx

SPT-RI-306 V1.0	Moffat 132kV Fault Level Mitigation Bus Section Circuit Breaker
OVERVIEW OF WORKS At Moffat 132kV substation it is required to extend the existing compound to accommodate the connection of further generation into the site. The compound shall be extended with the existing 132kV busbars being extended into this area. The installation of a new 132kV bus section circuit breaker will be required to alleviate exceeding the fault level design limits at the site.	
Programme	August 2025
Progress	Design Still to be commenced Consenting Still to be commenced Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/lorg_longburn_wind_farms.aspx

SPT-RI-1576 V1.1	Cupar GSP GT1(2) OLP Scheme and LMS Outstation

OVERVIEW OF WORKS

An overload protection (OLP) scheme is required at Cupar 132/33 kV substation to prevent overload conditions on the single transformer when the other transformer is out of service. The overload will be removed by the OLP scheme tripping the appropriate non-firm connections.

A current and voltage measurement is required for each transformer so the direction, as well as magnitude, of the power flow through the transformer can be determined. This SPT OLP scheme will be required to transfer the following signals to the DNO (SPD):

- A Stage 1 Signal at 95% of the transformer rating for an export Condition *3
- A Stage 1 Signal at 95% of the transformer rating for an import Condition *4
- A Stage 2 Signal at 100% of the transformer rating for an export Condition
- A Stage 2 Signal at 100% of the transformer rating for an import Condition
- A Stage 3 Signal at 120% of the transformer rating for an export Condition
- A Stage 3 Signal at 120% of the transformer rating for an import Condition

An LMS outstation is required to interface with Load Management Schemes (LMS) on the wider network. This will allow any signals initiated by a wider network LMS to be transferred to the DNO (SPD) connected embedded generation.

Programme	October 2022
Progress	Design Still to be commenced Consenting Still to be commenced Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/lorg_longburn_wind_farms.aspx

SPT-RI-1577 V2.1	Cupar GSP LV Protection Modifications
OVERVIEW OF WORKS In order to remain within SPEN policy (PROT-01-107), the existing Alstom/Areva K-series LVDOC relays on the T1 and T2 and Cupar 132/33kV GSP are required to be replaced with a LVDOC relay which utilises a voltage-controlled characteristic such that reverse power flow is only limited by the rating of the transformer (including emergency ratings).	
Programme	October 2022
Progress	Design Still to be commenced Consenting Still to be commenced Detailed Engineering Still to be commenced Tendering Still to be commenced Construction Still to be commenced Commissioning/Close Out Still to be commenced Link to related info https://www.spenergynetworks.co.uk/pages/lorg_longburn_wind_farms.aspx