Chapter 01: Introduction

Environmental Impact Assessment Report for:

Westfield Substation Extension

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1. Introduction

1.1 Overview

1.1.1 This Environmental Impact Assessment Report (EIAR) has been prepared by The Environmental Dimension Partnership Ltd (EDP) and Stantec UK on behalf of SP Transmission plc (SPT). This EIAR has been prepared to accompany an application for Planning Permission in Principle (PPiP) under the Town and Country Planning (Scotland) Act 1997 (as amended). It relates to proposals to reinforce the electricity transmission infrastructure in Fife, in particular for an extension to the existing Westfield Substation and decommissioning of the 275kV elements of the existing Westfield Substation, Cardenden near Lochgelly (the Proposed Development), as part of the Tealing to Kincardine Upgrade Project (TKUP) (shown on **Figure 1.1**). The location of the Proposed Development is shown on **Figure 1.2**.

1.1.2 TKUP is a strategic electricity transmission reinforcement required to increase north-to-south power transfer capacity, reduce constraints on the transmission system and facilitate the connection and transfer of clean power generation. It forms part of the wider programme of electricity infrastructure needed to support the transition to a low-carbon electricity system and to meet the requirements identified for the 2030 period.

1.1.3 In broad terms, TKUP comprises three distinct components delivered across phases: (i) the addition of 400kV extensions to the existing 275kV substations at Westfield and Mossmorran, (ii) the establishment of a new 400kV substation at Conland, (altogether referred to as "the Substations"), and (iii) the uprating of the existing overhead line route between the SSEN Transmission boundary at Tealing to Kincardine North from 275kV to 400kV operation. The project will create a reinforced 400kV transmission corridor through Fife, using the existing overhead line throughout, and will provide additional capacity and resilience across the wider transmission network.

1.1.4 Westfield is a critical transmission hub for the east of Scotland. It is required to facilitate the connection of EGL4, create capacity for connection of potential future renewable and low-carbon generation projects and provide a 400kV node capable of supporting the wider TKUP transmission corridor. There is also an asset-driven need associated with existing equipment at Westfield, with the new substation providing an enduring replacement and reinforcement. Even if the overhead line uprating were not ultimately consented for 400kV operation, SPT would retain a need for transmission infrastructure at this location.

1.1.5 The project has a direct interface with EGL4. EGL4 is planned to connect into the new Westfield 400kV substation, and that connection requires Westfield to be available in sufficient time to support load testing and staged commissioning. The timely delivery of Westfield is therefore a key programme requirement for the wider transmission network, alongside the wider TKUP need to establish a 400kV transmission corridor through the east of Scotland.

1.1.6 The works are technically and operationally connected, but they perform distinct roles. The overhead line uprating will provide the 400kV transmission path needed to move power across the network. However, it cannot collect and transfer wider generation capacity, or deliver the associated system interconnectivity benefits, unless the related 400kV substations are in place and capable of receiving, transforming and distributing power at the required voltage. The full strategic benefits of

TKUP will therefore only be realised when the substations and overhead line works are completed and commissioned together as an integrated transmission reinforcement.

1.1.7 This EIAR relates to the proposed Westfield Substation Extension in this context.

1.2 The Applicant

1.2.1 SP Energy Networks (SPEN) is the trading name for Scottish Power Energy Networks Holdings Limited. SPEN owns and operates the electricity transmission and distribution networks in central and southern Scotland through its wholly owned subsidiaries SPT and SP Distribution plc. These businesses are 'asset-owner companies' holding the regulated assets and Electricity Transmission and Distribution Licenses.

1.2.2 SPT are the Transmission Licence holder for the south of Scotland. They are obliged as part of their statutory duties and licence obligations to manage the electricity transmission network and provide electrical connections from energy sources, and where necessary, to upgrade the network.

1.2.3 In addition to its obligation to develop and maintain the electricity transmission network as noted below, they are required under Schedule 9 of The Electricity Act 1989, when formulating any relevant proposals, to have regard to the desirability of preserving the environment to do what they reasonably can to mitigate any effect which the proposals would have on the environment and to avoid, so far as possible, causing injury to fisheries or to the stock of fish in any waters. A copy of the SPT Schedule 9 Statement is provided in **Technical Appendix 1.1**.

1.2.4 Requirements under Section 9(2) of the Electricity Act 1989 are to:

- Develop and maintain an efficient, co-ordinated and economical system of electricity transmission; and
- Facilitate competition in the supply and generation of electricity.

1.2.5 There are also obligations pursuant to the licence conditions, including:

- To make available those parts of the licensee's transmission system which are intended for the purposes of conveying, or affecting the flow of, electricity so that such parts are capable of doing so and are fit for those purposes;
- To make the transmission system available for electricity generators wishing to connect to the transmission system in its licence area. SPT is also obliged to ensure that the system is fit for purpose through appropriate reinforcements to accommodate the contracted capacity; and
- To plan and develop its transmission system in accordance with the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS) and in so doing take account of the obligations of the National Energy System Operator as the Independent System Operator and Planner to co-ordinate and direct the flow of electricity on, to and over the British transmission system.

1.2.6 Therefore, in response to statutory and licence obligations, the Applicant is required to ensure that the transmission system is developed and maintained in an economic, co-ordinated and efficient manner in the interests of existing and future customers.

1.3 Context and Background

1.3.1 The British Energy Security Strategy set out the UK Government's ambition for the UK transmission network to enable the connection of 50GW of offshore wind generated around Great Britain by 2030. The Pathway to 2030 Holistic Network Design (HND) (NGESO, 2022) and Network Options Assessment (NOA) and Refresh (NGESO, 2022) recommends the optimal onshore transmission network required to connect offshore windfarms to shore as well as transporting the power to where it will be used, supported by the Accelerated Strategic Transmission Investment (ASTI) framework, which provides a new regulatory framework to fund the large strategic onshore transmission projects required to deliver the 2030 ambitions.

1.3.2 Across the Central Belt of Scotland and across the Anglo-Scottish Border high power flows from north to south are required. Expected increases in onshore and offshore wind generation confirm the need to deliver significant additional transmission capacity through central and southern Scotland in the period to the end of the current decade and beyond. This leads to an overall north-south power flow through the region. Therefore, growing north to south power transfer requirement across each of the SPT network boundaries is required, driving the need for significant transmission reinforcement.

1.4 Consenting Requirements

Project Phasing

1.4.1 TKUP is being progressed through distinct but related phases. The substation phase comprises the development of substation extensions at Westfield and Mossmorran, and a new substation at Conland, while the overhead line phase requires the uprating of the existing route from 275kV to 400kV operation. This sequencing reflects the practical delivery requirements of establishing a functioning 400kV transmission system and its integration with the wider regional and GB transmission network.

1.4.2 The substations must be designed, consented, and constructed sufficiently in advance of the overhead line energisation so that they are available to support the uprated system and minimise the impact on the existing operational 275kV system. Reconductoring works on the YV, YJ and YS routes will also be sequenced to minimise the impact on the existing operational 275kV system and tie in with the network system transmission outage sequence. The sequential nature of these works requires the Substations to be consented & constructed earlier than the Overhead line works. The whole TKUP system will be completed & energised years in advance of customer connections & EGL4 testing / commissioning to ensure that transmission system security is always maintained.

1.4.3 Westfield substation extension is required to: (i) facilitate the connection of EGL4, (ii) create capacity for connection of potential future renewable and low-carbon generation projects, (iii) provide a replacement for the equipment within the existing 275kV substation which is reaching the end of its useful life, and (iv) provide a 400kV node capable of supporting the wider TKUP transmission corridor. Westfield plays an important role in the context of TKUP, and it is also an essential transmission hub for the east of Scotland.

1.4.4 The approach to consenting also reflects the different statutory regimes and various drivers in relation to the different elements of TKUP. The substations are being progressed under the Town

and County Planning (Scotland) Act 1997, with the local planning authority as decision makers. The overhead line works will be promoted separately under Section 37 of the Electricity Act 1989, with Scottish Ministers as decision maker. This approach recognises that the substations and overhead lines are related parts of the same strategic reinforcement, whilst also acknowledging that they have various other drivers and can therefore be subject to different consenting frameworks / programmes.

1.4.5 Progressing the applications for the substations ahead of the OHL works reflects the need for the substations to be available for the TKUP energisation programme and the associated connection benefits (including the nationally significant EGL4 project).

1.4.6 An environmental impact assessment for each phase will be provided which assesses the likely significant environmental effects of that phase. In each assessment, the known and reasonably foreseeable effects of the other phases of TKUP, together with any other reasonably foreseeable developments with the potential to have a significant effect cumulatively with the relevant project will be considered cumulatively where sufficient information is available. The relevant decision maker would therefore have sufficient information regarding the effects of each project on the environment (both alone and cumulatively with other foreseeable developments including the other phases of TKUP).

1.4.7 The consenting approach reflects that each substation is required to serve as a node supporting a number of planned and potential future connections to the transmission network, and therefore has a number of functions, in addition to the TKUP reinforcement works.

1.4.8 As well as serving a strategic role, each substation also performs a distinct and necessary network function in its own right. The substations are not merely ancillary to the overhead line works; they are enduring transmission nodes which support system operation, enable customer renewable generation connections, provide local and regional network capacity, and allow the existing network to be operated safely and efficiently as it transitions to 400kV capability.

1.4.9 As later phases are brought forward, further environmental information will be presented with the relevant applications in accordance with the applicable EIA Regulations ensuring the wider cumulative aspects of the development are considered.

1.4.10 This staged approach will allow decision makers to understand the project as a whole, the purpose and effects of each phase, and the cumulative effects of the substations, overhead line uprating and associated infrastructure as the design and consenting information matures.

1.4.11 Indicative timelines for the consenting phases:

- Phase 1: Westfield 400kV Substation (TCPA submission – scheduled Q3 2026).
- Phase 2: Conland 400kV Substation (TCPA submission – scheduled Q3 2026).
- Phase 3: Mossmorran 400kV Substation (TCPA submission – scheduled Q1 2027).
- Phase 4: OHL Route Uprating [YJ, YS, YV] (S37 submission – scheduled Q2 2027).

1.4.12 Further details of the separate TKUP elements are summarised in **Table 1.1**.

Table 1.1: TKUP Consenting Requirement

TKUP Element	Consenting Requirement
One new span of OHL between ZC(N)001 and YJ001A and an increase in voltage to 400kv for one existing span between these towers	Consent under Section 37 of the Electricity Act 1989 and deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997.
Removal of tower YJ001 and span between YJ001 and YJ001A.	Consent under Section 37 of the Electricity Act 1989 and deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997.
Reconductoring of the YJ Route and increase of voltage to 400kv (Longannet to Westfield)	Consent under Section 37 of the Electricity Act 1989 and deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997.
Reconductoring of the YV Route and increase of voltage to 400kv (Longannet/Westfield Tee to Mossmorran)	Consent under Section 37 of the Electricity Act 1989 and deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997.
Reconductoring of the YS Route and increase of voltage to 400kv (SPT license boundary to Westfield)	Consent under Section 37 of the Electricity Act 1989 and deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997.
Reconfiguration of existing 275kv overhead lines on YJ, YS, YT and YV Routes including, removal of existing towers, proposed new terminal towers and use of temporary masts associated with works at Westfield, Mossmorran and Conland Substations	Consent under Section 37 of the Electricity Act 1989 and deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997.
400kV Extension to Westfield Substation and Decommissioning of parts of the existing 275kV Westfield Substation and two 132kv underground cables between the proposed 400kv substation and reconfigured 132kv substation **(the Proposed Development)**	Consent under Town and Country Planning (Scotland) Act 1997 (as amended). Planning Permission in Principle Application to Fife Council (FC).
Provision of Temporary SuDS to facilitate construction of the substation extension	Local Planning Application to FC.
400kV Extension to Mossmorran Substation and Decommissioning of parts of the existing Mossmorran Substation	Consent under Town and Country Planning (Scotland) Act 1997 (as amended). Planning Application to C.
Conland 400 kV Substation	Consent under Town and Country Planning (Scotland) Act 1997 (as amended). Planning Application to C.

1.5 The Proposed Development

1.5.1 This EIAR considers the proposed extension to Westfield Substation, Cardenden, near Lochgelly (the Proposed Development).

1.5.2 A full description of the project infrastructure and maximum development parameters associated with the Proposed Development is included in **Chapter 3**. In summary, Planning Permission in Principle is sought for "*erection of a 400kv electricity substation, decommissioning of existing 275kv equipment and associated infrastructure including plant, machinery, accesses, drainage, underground cables and landscaping.*"

1.5.3 To ensure that the EIA covers all elements required to facilitate the Proposed Development, this EIAR also considers the impacts of the proposed undergrounding of the 33kV OHL which currently runs north-south through the site and the temporary drainage scheme located immediately to the south-west of the red line boundary. Further details are provided in **Chapter 3**.

1.6 Site and Surrounding Area

1.6.1 The application site (the site) at grid reference X 319040 Y 697600, is located to the west of, and includes part of, the existing Westfield Substation (at grid reference X 319213, Y 697641), located south of the B9097 to the east of Lochore and Ballingry in Fife. The site area is approximately 16.7 hectares. The site location and its extents are illustrated on **Figures 1.2** and **1.3**. The majority of the site is currently agricultural and relatively flat with an elevation of ~85.7m Above Ordnance Datum (aOD) near the B9097 and ~84.3m aOD at the southern boundary. The remaining parts of the site comprise the existing 275kV parts of the existing Westfield Substation.

1.6.2 The 33kV cables which currently run through the site will be diverted and undergrounded, with the undergrounded sections passing through further agricultural land to the south and south-east of the site and through woodland to the immediate east of the existing substation.

1.6.3 Within the agricultural western parts of the site are two existing field boundary hedgerows with trees and existing OHL steel lattice towers. The site is bordered by the B9097 and roadside vegetation to the north; the existing Westfield 132kV substation and a small copse of trees and unnamed road to the east; further agricultural land and an existing drainage ditch to the south; and the abandoned railway line to the west. It includes the access from the B9097 to the existing Westfield substation. The existing site is illustrated on **Figure 1.3**.

1.6.4 The surrounding land use is predominantly farmland, a mix of arable and grazed pasture. There are also a number of commercial and industrial land uses, including a historic quarry being developed as the Fife Energy Park to the north-east. The residential settlement of Ballingry is located to the west. To the south is the Fife Pilgrim Way Long Distance Walking Route (LDWR), which connects West Fife and East Fife via routes used by medieval pilgrims. There are a number of Core Paths (CP) in proximity to the site, including the abandoned railway route to the north-west. To the west beyond Ballingry, and to the north, are areas designated within the Lomond Hills Regional Park. Further to the north-west is the Loch Leven National Nature Reserve, Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Wetland Designation.

1.6.5 The site and surrounding area are illustrated on the aerial image included at **Image 1.1**.

Image 1.1: Google aerial image of the site in its local context, highlighting the surrounding land use and habitat features.

1.7 EIA Report Structure

1.7.1 The EIA process seeks to avoid, reduce and where possible, offset likely significant effects on the environment through an iterative design process for the proposed works. This has culminated in the production of this EIAR, which considers and assesses the effects of construction and operation of the proposed extension to Westfield Substation.

1.7.2 The EIAR consists of the following volumes:

- EIAR: Non-Technical Summary;
- EIAR Volume 1: Main Report;
- EIAR Volume 2: Figures; and
- EIAR Volume 3: Technical Appendices.

1.8 Statement of Expertise

1.8.1 The EIA Report and associated technical assessments have been undertaken by competent experts, in line with the requirements of Regulation 5(5) of the EIA Regulations. **Table 1.2** provides information on those competent experts outlining their relevant expertise and qualifications.

Table 1.2: Statement of Expertise

Topic/Role	Company and Individual Experience and Expertise
EIA Co-ordination	Charles Mylchreest BA (Hons) PGDipLA CMLI (Director) • Postgraduate diploma in Landscape Architecture, University of Gloucestershire; and • BA (Hons), University of Gloucestershire. Charles has spent 20 years as an Environmental Planner, Chartered Landscape Architect and EIA co-ordinator and is a Chartered Member of the Landscape Institute. Charles has a wealth of experience in the development and land management sector throughout England, Wales and Scotland. Working in roles including project landscape architect, EIA co-ordinator and Environmental Project Manager.
Planning	Stantec UK Ryan McTeggart MRTPI (Associate Planner) • Master of Planning (MPlan), University of Manchester. Ryan is a Chartered Member of the Royal Town Planning Institute (2017) and has been a Town Planner since 2014. He has experience of coordinating and reviewing multidisciplinary input to EIA, in addition to drafting EIA chapters relating to the legislative and policy context, summary of impact interactions and schedule of mitigation and monitoring measures. Steve Callan MRTPI (Planning Director) • BA Honours Degree in Geography, University College Cork; • Postgraduate Higher Diploma in Co-Operative Organisation, University College Cork; and • MSc in Urban and Regional Planning, Heriot Watt University. Steve is a Chartered Member of the Royal Town Planning Institute and a Practitioner Member of Institute of Environmental Management Association. Steve has over 21 years' experience in the planning industry and in particular within the development management process. Steves principal areas of expertise relate to development management, planning policy, the coordination, submission of applications supported by EIA Reports. He has extensive experience of being the planning lead for a wide number of renewable energy projects for onshore wind, solar, BESS, pumped storage hydro, hydrogen production, and carbon capture storage.
Landscape and Visual Amenity	The Environmental Dimension Partnership (EDP) Charles Mylchreest BA (Hons) PGDipLA CMLI (Director) • Postgraduate diploma in Landscape Architecture, University of Gloucestershire; and • BA (Hons), University of Gloucestershire. Charles has spent 20 years as an Environmental Planner, Chartered Landscape Architect and EIA co-ordinator and is a Chartered Member of the Landscape Institute. Charles has a wealth of experience in the development and land management sector throughout England, Wales and Scotland. Working in roles including project landscape architect, EIA co-ordinator and Environmental Project Manager.
Ecology and Biodiversity	The Environmental Dimension Partnership (EDP) Megan McLauchlin BSc (Hons) MCIEEM (Senior Ecologist) • BSc (Hons) Environmental Science, Open University.

Topic/Role	Company and Individual Experience and Expertise
	Megan is a Full Member of the Chartered Institute of Ecology and Environmental Management and a member of the Wiltshire Bat Group, the Gloucester Bat Group, the Bat Conservation Trust and the Marine Conservation Society. Megan has extensive experience of co-ordinating and undertaking protected species surveys including reptiles, great crested newt, bat and badger and has carried out site supervision as an ecological clerk of work on a variety of projects. She also has experience in project management, leading ecological elements for projects of various levels of complexities and undertaking and advising on Biodiversity Net Gain. Megan has been involved in a range of voluntary conservation outside of work including bat box checks and caving for bat hibernation monitoring.
Transport and Access	Stantec UK Jessica Harding (Transport Planner) • BSc Geography (2:1) Degree, Oxford Brookes University; and • Principles of Traffic and Transport 20-Week Certification Course. Jessica has four years of experience in Transport Planning. Jessica has worked on a range of projects for developments across the UK to support a variety of clients in the public and private sectors including residential, retail, mixed-use, retirement, commercial, industrial, and education. Jessica has had experience with producing reports including Transport Statements, Transport Assessments, Travel Plans, Feasibility Studies, Chapters of Environmental Impact Assessments, Audits and other analysis to support planning applications. Jessica has worked with software packages including AutoCAD, Junctions 10, and has also worked with databases including TRICS, CrashMaps, and TEMPro. Brian Laird (Technical Director of Transport) • Post Graduate Diploma, Engineering Design of Buildings, University of Paisley, Paisley; and • BSc Civil Engineering, Napier University, Edinburgh. Brian is a Member of Chartered Institution of Highways and Transportation and a Chartered Member of Chartered Institute of Logistics and Transport. Brian has 29 years' experience in traffic, highway and transport planning. Undertaking a full range of activities, Brian initially advises on potential issues associated with development schemes and the likelihood of obtaining transport and highways agreements at the Feasibility Stage, through to overseeing the preparation of Transport Assessments/Statements and Travel Plans in support of planning applications and carrying out negotiations with Local Highway Authorities and National Highways. Brian has also acted as Expert Witness at Public Inquiries, Local Hearings and a Lands Tribunal. Brian has gained a wide range of experience, working on projects within both the private and public sectors including education, residential, retail, leisure, energy, commercial, mixed-use developments, ports and public realm.
Air Quality	Stantec UK William Storey (Graduate Air Quality Consultant) • BSc (Hons) Geography, University of Birmingham. William is an Associate Member of the Institute of Air Quality Management and AMIEnvSci. William has worked on a variety of air quality projects including baseline reports, scoping reports, screening assessments, ADMS Roads models, Air Emissions Risk Assessments, Environmental Statements and Monitoring Reports. He also has

Topic/Role	Company and Individual Experience and Expertise
	experience undertaking both air quality monitoring and data analysis using R programming software. Emma Rigler (Principle Air Quality Consultant) • MChem Chemistry, University of York; and • MIAQM, MIEnvSci. Emma is an Associate Member of the Institute of Air Quality Management and AMIEnvSci. Emma has over five years of experience in air quality and has worked on projects across a range of sectors including residential, commercial, hospitals, schools and film and television studios. She has experience preparing air quality, odour and environmental impact assessments, indoor air quality plans and Medium Combustion Plant Directive permitting reports. Philip Branchflower (Technical Director of Air Quality) • BSc (Hons) Chemistry. Philip is an Associate Member of the Institute of Air Quality Management and AMIEnvSci. Philip is a highly skilled air quality practitioner with twenty years of consultancy experience. Throughout his career, he has undertaken detailed air quality assessments for a wide range of residential, mixed-use, mineral extraction and processing, waste, and industrial developments in support of planning applications, environmental impact assessments, environmental permit applications and for compliance assessment purposes.
Noise	Stantec UK Lewis Wheatley (Associate Acoustic Consultant) • BSc(Hons) Audio and Music Technology, University of the West of England. Lewis is a Member of the Institute of Acoustics. He has over nine years of experience in the acoustics industry and is a member of the IoA (MIOA), specialising in noise impact assessments for renewable energy, industrial, and commercial developments. He has contributed to Environmental Impact Assessment (EIA) schemes and Nationally Significant Infrastructure Project (NSIP) Development Consent Order (DCO) applications of varying scales, providing guidance throughout the planning process. Paul Taylor (Associate Acoustic Consultant) • MEng Acoustic Engineering, University of Southampton, 2012. Paul is an Associate Acoustician. He has 13 years' experience in acoustic consultancy, holds a Masters in Acoustical Engineering (MEng) and is a Chartered Engineers (CEng) and Member of the Institute of Acoustics. Paul has had a range of experience in dealing with noise and vibration matters, working for private developers, individuals and the public sector throughout the UK. He has significant experience in carrying out planning assessments of residential schemes, power generation schemes, leisure venues, schools, offices and industrial sites. He has specialist knowledge in building and environmental acoustics and is adept at utilising computer modelling to assist in successful project delivery.