Eastern Green Link 4:

Scottish Onshore Scheme

Volume 2: Main Report

Chapter 1: Introduction

December 2025

Prepared for:

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Introduction

1. Introduction

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by AECOM on behalf of SP Energy Networks[1] (also referred to as 'the Applicant'). It accompanies two planning applications made to Fife Council under the Town and Country Planning (Scotland) Act 1997 for the Scottish onshore components of Eastern Green Link 4 (EGL4, also referred to as 'the Project'). The Project is a subsea High Voltage Direct Current (HVDC) electricity link between Westfield in Fife, Scotland and Walpole in Norfolk, England which will reinforce the National Electricity Transmission System (NETS).

As part of the Project, SP Energy Networks is seeking planning permission from Fife Council for the onshore elements of EGL4 in Scotland from Mean Low Water Springs (MLWS) on the Fife coast to the new 400kV Westfield Substation. The onshore elements in Scotland comprise underground cables and a converter station (collectively referred to as the 'Scottish Onshore Scheme'). The Applicant is seeking planning permission in full for the underground AC and DC cables and planning permission in principle for the converter station. The individual boundaries for the two separate Applications can be found on **Figure 1-3 Scottish Onshore Scheme Application Boundaries**. However, for the purposes of this EIA the two boundaries have been combined as shown on **Figure 1-4 Scottish Onshore Scheme Location Plan**. The boundaries have been combined for the EIAR for purposes of ensuring effects of the Scottish Onshore Scheme are considered as a whole rather than individual parts. References to the planning application boundary in this EIAR relate to the combined boundary.

This EIAR describes the results of the Environmental Impact Assessment (EIA) for the Scottish Onshore Scheme. This chapter introduces the Project and the Scottish Onshore Scheme and sets out the background to and structure of the EIAR.

Note that the new 400kV Westfield Substation forms part of a separate reinforcement known as the Tealing to Kincardine Upgrade Project (TKUP). The extension to the existing 275kV Westfield Substation to increase its capacity to 400kV does not form part of this application and is referred to as the 'new 400kV Westfield Substation' throughout this EIAR.

1.2 About the Project

Background to the Project

The UK and Scottish Governments have set legally binding targets to reach net zero in greenhouse gas emissions and end their contributions to climate change by 2050 and 2045 in the Climate change Act 2008 and Climate Change (Scotland) Act 2009 respectively. Decarbonisation of the energy sector is a central pillar of both governments' net zero strategies meaning the way in which energy is generated, transported and used is undergoing

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

transformational change. Traditional fossil fuel-based forms of generation are being retired and replaced by renewable and low carbon sources of energy generation including onshore and offshore wind as well as being supported by increased interconnection with Europe.

Offshore wind is a critical component of the UK Government's energy strategy with targets to increase installed capacity from around 10 gigawatts (GW) today to 40 GW by 2030 originally being set in the Energy White Paper (2020)[2], and then increased to 50 GW by 2030 in the British Energy Security Strategy (BESS) (2022)[3]. Similarly in Scotland, the Scottish Government's Offshore Wind Policy Statement[4] identifies a target of up to 11 GW of installed offshore wind capacity in Scottish Waters by 2030, while a recent consultation concluding in August 2025 sought views on increasing these ambitions to 40 GW by 2040[5]. The scale of the offshore wind development pipeline is also reflected in the most recent seabed leasing rounds; Round 4 (2021) and Round 5 (2025) overseen by The Crown Estate (TCE) as well as ScotWind (2022) and INTOG (2023) overseen by Crown Estate Scotland (CES) have awarded seabed leasing rights for approximately 11 GW of offshore wind capacity in English and Welsh Waters and approximately 30 GW of offshore wind capacity in Scottish Waters respectively.

In 2023 the Scottish Government consulted on its draft Energy Strategy and Just Transition Plan[6]. The draft Strategy sets out objectives for Scotland to increase production of renewable energy including the aforementioned 8-11 GW of installed offshore wind capacity by 2030 and an additional 12 GW of installed onshore wind capacity by 2030. This is consistent with the Scottish Government's Offshore Wind Policy Statement described above and the Onshore Wind Policy Statement (2022)[7] which sets out a target to achieve a minimum of 20GW of installed capacity of onshore wind in Scotland by 2030. These onshore and offshore wind targets were most recently reaffirmed in the Scottish Government's Green Industrial Strategy[8] published in September 2024. Since then, the UK Government published Clean Power 2030 in 2024 which reinforces and builds upon targets established in the BESS in 2022. Specifically, Clean Power 2030 sets out targets to deliver 50 GW of offshore wind, 29 GW of onshore wind and 47 GW of solar by 2030 delivering the UK Government's vision to decarbonise the country's economy and addressing three major challenges: (1) the need for a secure and affordable energy supply, (2) the creation of essential new energy industries, supported by skilled workers in their thousands, and (3) the need to reduce greenhouse gas emissions and limit our contribution to the damaging effects of climate change.

To facilitate renewable forms of generation supported by UK and Scottish Government policy and targets for offshore and onshore wind, new electricity transmission network infrastructure is needed to ensure that energy can be transported from where it is generated to where it is used. Traditionally the electricity transmission system was developed to transport electricity in bulk from power stations to cities and towns where it is transported via the electricity distribution network, but as renewable energy sources such as onshore and offshore wind are typically located in more geographically remote and/or disparate locations this requires new

[2] Energy White Paper. Powering our Net Zero Future (2020) HM Government
[3] British Energy Security Strategy (2022) HM Government
[4] Offshore Wind Policy Statement (2020) Scottish Government
[5] Increasing offshore wind ambition (2025) Scottish Government
[6] Draft Energy Strategy and Just Transition Plan (2023) Scottish Government
[7] Onshore Wind Policy Statement (2022) Scottish Government
[8] Green Industrial Strategy (2024) Scottish Government

electricity network infrastructure both to connect it to the network as well as to transport it to areas of demand.

Peak winter electricity demand in Scotland is currently around 4 GW, with this figure expected to rise to just below 5 GW by 2030. At the same time Scotland's generation capacity is almost 20 GW and forecasted to reach 45 GW by 2030[9]. With electricity demand predominantly located in the south of Great Britain and considerable renewable energy resources in the north this leads to high north-south power flows on the electricity transmission system. Reflecting prevailing policy objectives and the pipeline of offshore and onshore wind and other renewable energy projects in Scotland, this requires an increase in cross-border electricity transmission capability so that energy can be transported to areas of increased demand further south in Great Britain and to avoid constraints on the system.

SP Energy Networks as the owner of SP Transmission, the Transmission Owner (TO) and Licence Holder responsible for the electricity transmission network in central and southern Scotland therefore has a crucial role to play. Its transmission network enables the bulk transfer of renewable energy generated within its licence area, as well as that generated within SSEN Transmission's (SSENT) licence area to the north, southwards to National Grid Energy Transmission's (NGET) licence area and large centres of demand.

Need for the Project

The need for electricity transmission network reinforcement such as EGL4 is assessed by National Energy System Operator (NESO), the electricity system operator for Great Britain, as part of a number of activities it undertakes on an annual basis to ensure the economic and efficient operation of the electricity transmission system. These include the Network Options Assessment (NOA), an economic assessment of projects proposed by TOs to provide network capacity and meet the future needs of the electricity transmission system. The analysis in NOA allows recommendations to be made as to which projects will be economic and efficient to develop and the optimal timing of those projects.

EGL4 was first identified in NOA 2021[10], (NOA Reference TGDC) and was described as an eastern subsea HVDC link from southeast Scotland to south Humber and given a 'proceed' signal indicating the need for the Project to go ahead. TGDC was subsequently given a 'proceed' signal in NOA[11] in January 2022 and in the NOA Refresh[12] in July 2022 which was published in parallel with the publication of the Holistic Network Design (HND). This set out a blueprint for the connection of offshore wind needed to meet the Government's 2030 targets (also referred to as the 'Pathway to 2030'), and also recommended the development of 'TGDC'.

More recently the need for the Project was re-evaluated as part of the development of the transitional Centralised Strategic Network Plan 2 (tCSNP2) [13] (also referred to as 'Beyond 2030'). This was published in March 2024 and recommended the development of 'TGDC', describing it as a new offshore HVDC link between East Scotland and the East of England (i.e.

[9] Scottish boundaries (2025) National Energy System Operator
[10] Network Options Assessment (January 2021), NGESO
[11] Network Options Assessment (January 2022), NGESO
[12] Network Options Assessment Refresh, NGESO (July 2022)
[13] Transitional Centralised Strategic Network Plan 2 (March 2024), NGESO

EGL4). Since then, SP Energy Networks (on behalf of SP Transmission) and NGET have been working jointly to develop proposals for EGL4, with SP Energy Networks being responsible for the Scottish Onshore Scheme.

Overview of the Project

EGL4 is a major reinforcement of the NETS which will provide additional north-south transmission capacity across transmission network boundaries between Scotland and England, ensuring that renewable energy is transported from where it is produced to where it is needed reducing constraints on the network. The Project extends between Westfield in Fife, Scotland and Walpole in Norfolk, England, as shown on **Figure 1-1 The Project** and comprises the components described below and as shown on **Figure 1-2 Schematic Overview of the Project**.

- **Scottish Onshore Scheme**: a converter station at Westfield in Fife, Scotland which will be connected to the existing NETS via the new 400 kV Westfield Substation by approximately 1 km of underground High Voltage Alternating Current (HVAC) cables. From the converter station approximately 16.20 km of underground HVDC cable will be installed to a landfall north of Kinghorn.
- **Marine Scheme**: comprising subsea DC cable route from the landfall at Kinghorn on the Fife coast, where it connects to the Scottish Onshore Scheme through the North Sea to a landfall on the Lincolnshire Coast, where it connects to the English Onshore Scheme.
- **English Onshore Scheme**: comprising a converter station connected to the NETS via a new Walpole Substation in west Norfolk as well as underground DC cables from the converter station to a landfall on the Lincolnshire coast where it connects to the Marine Scheme.

This EIAR is written with specific regard to the Scottish Onshore Scheme of EGL4. Equivalent Impact Assessments have been undertaken for the Marine Scheme and English Onshore Scheme under the relevant regulations.

1.3 Overview of the Scottish Onshore Scheme

The Scottish Onshore Scheme has been developed through a systematic process taking account of SP Energy Network's statutory duties and licence obligations as well as relevant industry-recognised approaches such as the Holford and Horlock Rules.

The location of the Scottish Onshore Scheme is shown on **Figure 1-4 Scottish Onshore Scheme Location Plan**. Further information on the alternatives considered can be found within **Chapter 2: Project Description and Alternatives**.

The Scottish Onshore Scheme comprises the following key components, as shown on **Figure 1-2 Schematic Overview of the Project** and detailed in **Chapter 2: Project Description and Alternatives**:

- The landfall - where the subsea cables come ashore north of Kinghorn and are joined to the onshore underground cables at a buried Transition Joint Bay (TJB);
- The underground DC cable route – approximately 16.20 km of underground cables between the landfall and the converter station;

- The converter station - enables electricity to be converted from AC to DC or vice versa depending on the direction of operation. Located immediately east of the new 400 kV Westfield Substation; and
- The underground AC cable route – approximately 1 km of underground AC cables between the converter station and the new 400 kV Westfield Substation.

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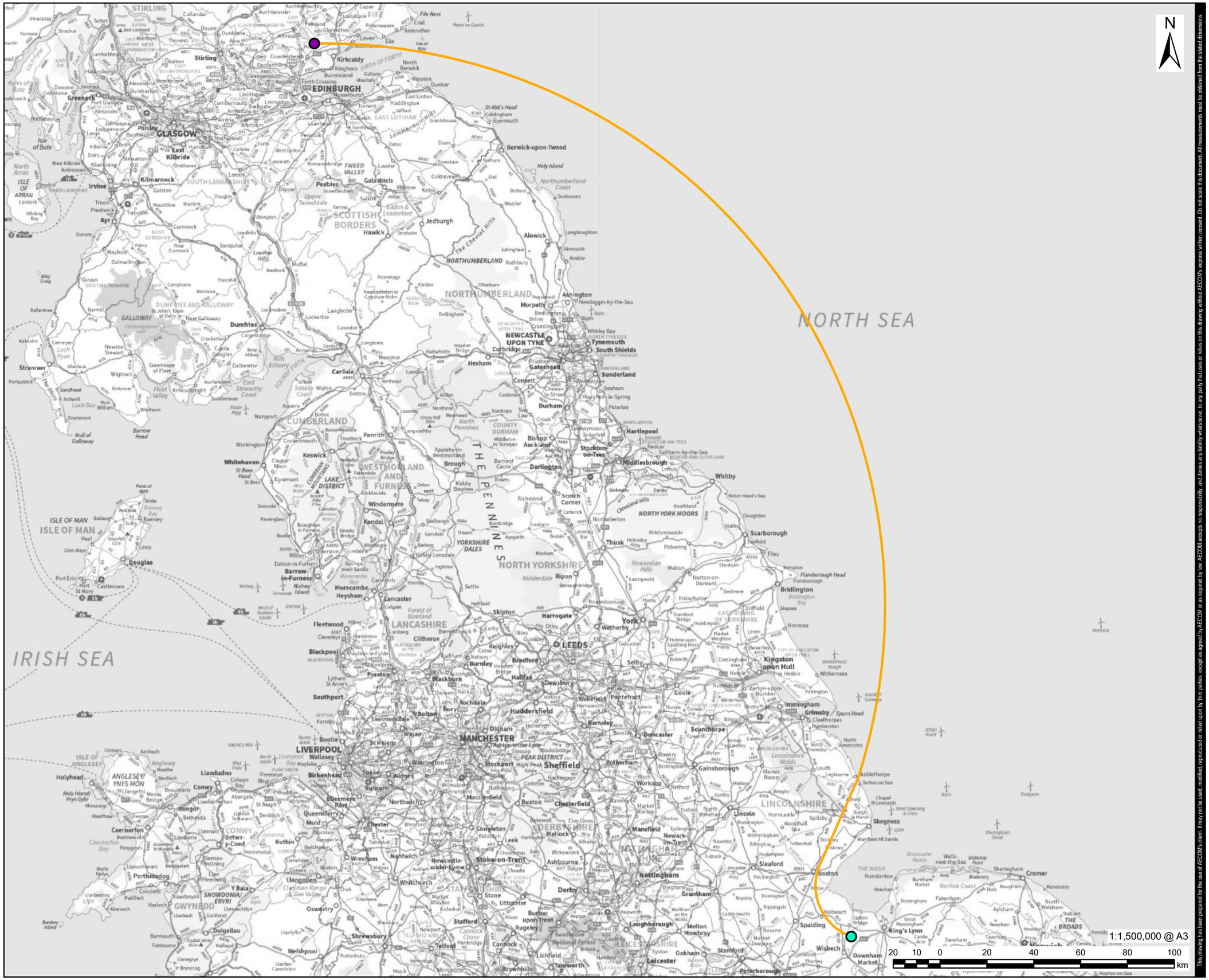

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PROJECT

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LEGEND

- Walpole Substation Location
- Westfield Substation Location
- Indicative Route

NOTES

ISSUE PURPOSE

EIA REPORT

PROJECT NUMBER

60707131

FIGURE TITLE

The Project

FIGURE NUMBER

Figure 1.1

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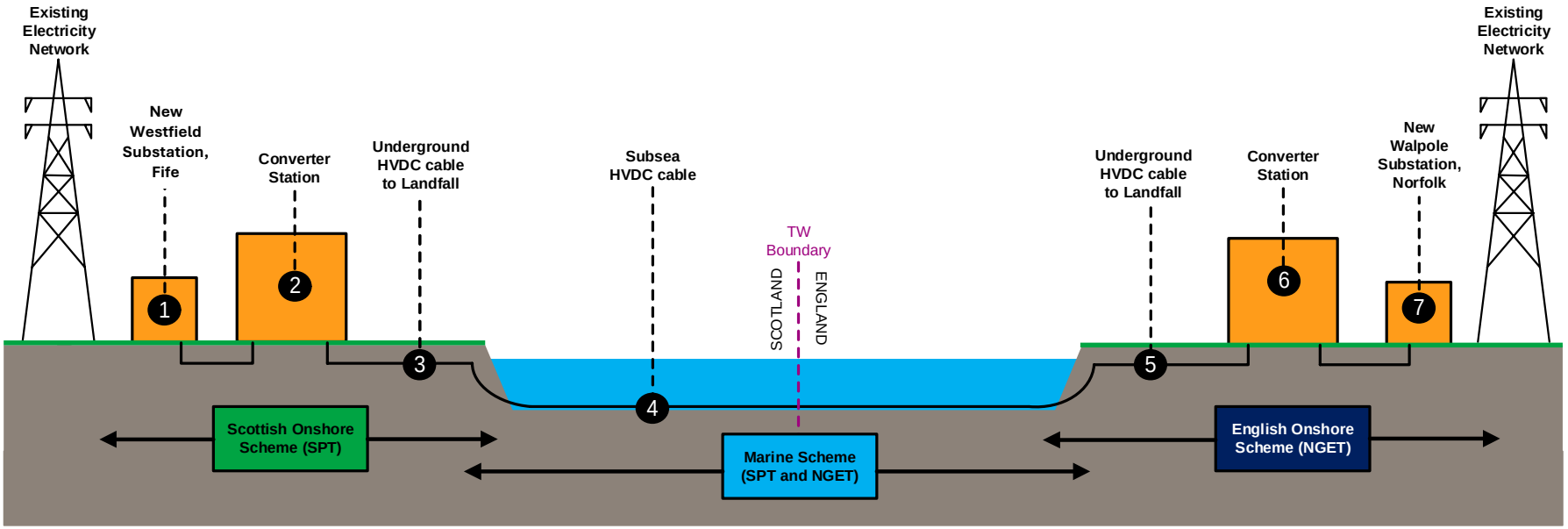
Figure 1-2 Schematic Overview of the Project



1. New 400 kV Westfield Substation in Fife, Scotland where EGL4 will be connected to the existing electricity transmission system.
2. New converter station in the vicinity of Westfield Substation to enable conversion of electricity for onwards transmission to England.
3. Underground DC cables between the converter station and landfall where underground and subsea cables are connected together.
4. Subsea DC cables installed below the seabed between landfalls on the Fife coast, Scotland and Lincolnshire coast, England.
5. Underground DC cables between the landfall, where subsea cables come ashore, and a new converter station.
6. New converter station to enable conversion of electricity and onwards export to the electricity transmission network.
7. New Walpole Substation in Norfolk where EGL4 will be connected to the existing electricity transmission system in England.

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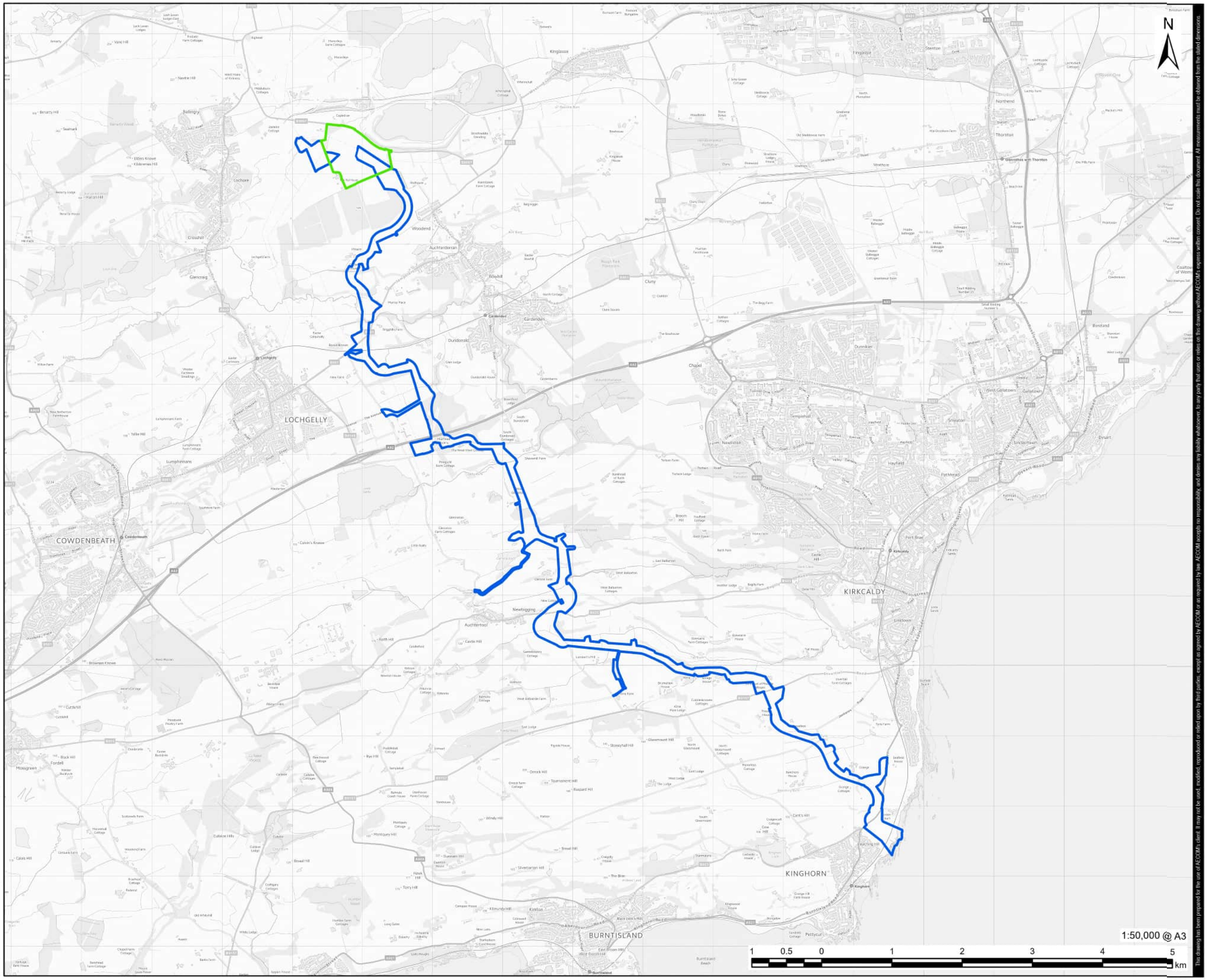

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PROJECT

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LEGEND

- Planning in Full - AC and DC Cables
- Planning in Principle - Converter Station

NOTES

ISSUE PURPOSE

EIA REPORT

PROJECT NUMBER

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FIGURE TITLE

Onshore Scheme Application Boundaries

FIGURE NUMBER

Figure 1.3

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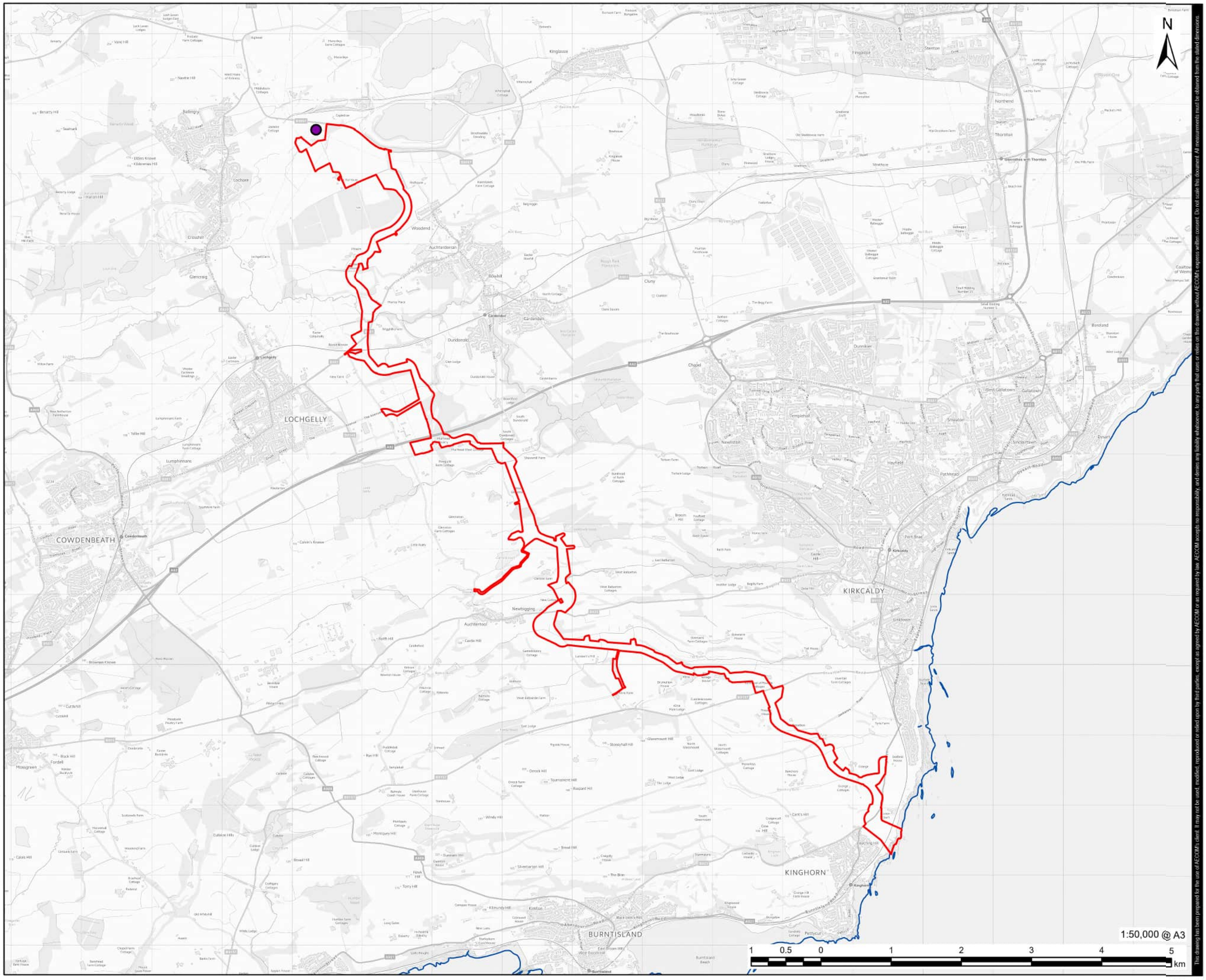

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LEGEND

- Planning Application Boundary
- Westfield Substation Location
- Mean Low Water Springs (MLWS)

NOTES

ISSUE PURPOSE

EIA REPORT

PROJECT NUMBER

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FIGURE TITLE

Scottish Onshore Scheme Location Plan

FIGURE NUMBER

Figure 1.4

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1.4 The Applicant

As the holder of a transmission licence under the Electricity Act 1989, SP Transmission is subject to a number of statutory duties and licence obligations. These include requirements "*to develop and maintain an efficient, coordinated and economical system of electricity transmission*" and "*to facilitate competition in the generation and supply of electricity*". This requires SP Transmission to provide for new electricity generators such as wind farm developers wishing to connect to the transmission system in its licence area; to make its transmission system available for these purposes and to ensure that the transmission system is fit for purpose through appropriate reinforcements to accommodate the contracted capacity.

In addition, in formulating proposals for electricity transmission infrastructure, SP Transmission is subject to duties under Schedule 9 of the Act: "*(a) to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and, (b) to do what it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.*"

SP Energy Networks, acting on behalf of SP Transmission, is jointly developing EGL4 with NGET and is wholly responsible for seeking planning permission for the Scottish Onshore Scheme.

1.5 The EIA Team

The EIAR has been co-ordinated, prepared and reviewed by AECOM on behalf of the Applicant (SP Energy Networks). AECOM is registered to the EIA Quality Mark, which is a scheme operated by the Institute of Sustainability & Environmental Professionals (ISEP) that allows organisations (both developers and consultancies) that lead the co-ordination of statutory EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed on annual basis.

1.6 Approach to EIA and Consenting

EIA and Consenting Requirements

The Applicant has submitted two applications for planning permission for the Scottish Onshore Scheme to Fife Council under the Town and Country Planning (Scotland) Act 1997. This comprises an application for planning permission in principle (PiP) for the proposed converter station located at Westfield and a second for full planning permission for the DC underground cables from MLWS north of Kinghorn to the converter station, and for the AC underground cables from the converter station to the new 400 kV Westfield Substation. The relevant Environmental Impact Assessment (EIA) regulations for applications under the Town and Country Planning (Scotland) Act 1997 are the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (hereafter referred to as the 'EIA Regulations').

None of the elements which make up the Scottish Onshore Scheme or the wider Project (i.e. converter stations, underground cables and subsea cables) are identified in Schedule 1 or 2 of the relevant EIA Regulations. As the Scottish Onshore Scheme is not classed as 'Schedule

1 Development' EIA is not mandatory. With regard to Schedule 2, while none of the elements which make up the Scottish Onshore Scheme fall under the descriptions of development in Category 3 Energy Industry, converter stations could broadly be interpreted as an industrial estate development under Category 10 Infrastructure Projects with them having some similar characteristics. EIA may be required for 'Schedule 2 Development' subject to certain thresholds being met or exceeded and having regard to the criteria in Schedule 3 of the EIA Regulations. In such instances the requirement for EIA can be determined through submission of a screening opinion request to the relevant authorities (in this case Fife Council). Planning Circular 1: The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 makes clear that the basic test of the need for EIA in this particular case is the likelihood of significant effects on the environment.

In this instance, as a matter of best practice and having regard to their statutory duties and obligations under Schedule 9 of the Electricity Act 1989, the Applicant has undertaken an EIA and has prepared this EIAR to accompany the planning application for the Scottish Onshore Scheme. More details on the EIA process and the approach to EIA for the Scottish Onshore Scheme are set out in **Chapter 4: Environmental Impact Assessment Methodology (Volume 2: Main Report)**.

Development and Consenting of the Scottish Onshore Scheme

The approach taken to developing the Scottish Onshore Scheme comprises a number of phases as summarised below.

- Phase 1. Routeing and Siting Study. Phase 1 comprised a routeing and siting study in which alternative options for the landfall and converter stations sites, as well as potential underground cable routes between, were identified and assessed taking into account a range of environmental, technical and economic routeing and siting considerations. Phase 1 concluded with the identification of a Preferred Option for the Scottish Onshore Scheme which was subject to non-statutory consultation (referred to as Phase 1 Consultation) in April 2024[14].
- Phase 2. Environmental Impact Assessment (EIA). As described above SP Energy Networks has volunteered that the Scottish Onshore Scheme be subject to statutory EIA in accordance with the EIA Regulations. The EIA process includes a number of steps, the first of which is a request for a Scoping Opinion which was made to Fife Council in late 2024. The Scoping Opinion was subsequently issued by Fife Council in February 2025. Through Phase 2 the EIA process seeks to identify, assess and mitigate the likely significant adverse effects of the Scottish Onshore Scheme on the environment. The EIA process concludes with the production of this EIAR which accompanies the applications for planning permission to Fife Council. During this phase SP Energy Networks also undertook a second round of statutory public consultation (referred to as Phase 2 Consultation) on the proposals for the Scottish Onshore Scheme in May 2025. Further details can be found within the standalone Pre-Application Consultation report submitted with the planning applications.

[14] Phase 1 Consultation Material (April 2024), SP Energy Networks

- Phase 3. Application for Consent. SP Energy Networks has applied to Fife Council for planning permission in principle (PiP) under the Town and Country Planning (Scotland) Act 1997 for the proposed converter station, and for full planning permission for the DC underground cable from MLWS to the converter station and for the AC underground cable from the converter station to the new 400 kV Westfield Substation. This EIAR accompanies both applications to Fife Council.

1.7 Content and Structure of the EIA Report

This EIAR describes the results of the EIA for the Scottish Onshore Scheme. This includes a detailed description of the Scottish Onshore Scheme and its surroundings, an overview of the relevant legislative and policy framework, and technical assessments with associated reports by individual environmental aspects. The EIAR has been published in five volumes:

- **Volume 1: Non-Technical Summary (NTS)** – concise and written in non-technical language, providing a description of the Scottish Onshore Scheme, a summary of its residual environmental effects, and proposed mitigation measures.
- **Volume 2: Main Report** – contains the introductory and topic specific environmental assessment chapters, structured around the chapter headings as set out in **Table 1-1 Volume 2: EIAR Main Report Structure**. Figures relating to Volume 2 of the EIAR are included within Volume 2.
- **Volume 3: Visualisations** – contains photomontages to NatureScot standards, projecting how the Scottish Onshore Scheme will sit within the surrounding landscape.
- **Volume 4: Appendices** – contains supporting Appendices to the EIAR. The Appendices include detailed technical information such as raw data, survey reports and plans that are cross referenced where relevant within Volume 2 of the EIAR. Figures relating to Volume 4 of the EIAR are included within Volume 4.
- **Volume 5: Confidential Appendices** – contains supporting Appendices which are only provided to certain competent bodies due to the nature of the information which is contained within them.

Table 1-1 Volume 2: EIAR Main Report Chapter Structure

Chapter Number	Title
1	Introduction
2	Project Description
3	Site Selection and Routeing
4	Legislative and Policy Framework
5	Environmental Impact Assessment Methodology
6	Landscape and Visual Amenity
7	Ecology and Nature Conservation

Chapter Number	Title
8	Water Environment and Flood Risk
9	Cultural Heritage
10	Access, Traffic and Transport
11	Noise and Vibration
12	Geology and Ground Conditions
13	Climate Change
14	Cumulative and In-Combination Effects
15	Summary and Conclusions

1.8 Other Supporting Information

Other documents that will be submitted along with the EIAR as part of the planning application include:

- **Planning Statement** – Identifies the background to and need for the Project and specifically the Scottish Onshore Scheme. It includes an assessment of how the Scottish Onshore Scheme accords with the Development Plan comprising National Planning Framework 4 (NPF4) and the adopted Fife Local Development Plan (FifePlan).
- **Pre-Application Consultation Report** – A report setting out the pre-application consultation that has taken place prior to the submission of the planning application for the Scottish Onshore Scheme. This includes details of both Phase 1 (non-statutory) Consultation and Phase 2 (statutory) Consultation.
- **Design and Access Statement** – A short report accompanying the planning application which explains the design principles and concepts that have been applied to the development of the Scottish Onshore Scheme and set out how it has been designed having regard to its location.
- **Design Documents** – including:
    - Eastern Green Link 4: Cable Route, Ground Investigation Report, Mott Macdonald (2025)
    - Eastern Green Link 4: Cable Route, Coal Mining Risk Assessment, Mott Macdonald (2025)
    - Eastern Green Link 4: Cable Route, Contaminated Land Risk Assessment, Mott Macdonald (2025)
    - Eastern Green Link 4: Scotland Onshore Cable Route Drainage Strategy, Mott Macdonald (2025)
    - Eastern Green Link 4: Converter Station, Ground Investigation Report, Mott Macdonald (2025)

- Eastern Green Link 4: Converter Station, Coal Mining Risk Assessment, Mott Macdonald (2025)
- Eastern Green Link 4: Converter Station, Contaminated Land Risk Assessment, Mott Macdonald (2025)
- Eastern Green Link 4: HVDC Converter Station Geotechnical Interpretive Report, Mott Macdonald (2025)
- Eastern Green Link 4: Westfield Converter Station Drainage Strategy, Mott Macdonald (2025)

1.9 Availability of the Environmental Impact Assessment Report

This EIAR and all supporting documentation for the planning application will be available on the Fife Council website https://planning.fife.gov.uk/online/ and on the EGL4 project website: https://www.spenergynetworks.co.uk/pages/egl4_project_documents.aspx

Representations

Representations can be made using the online planning system at https://planning.fife.gov.uk/online/

Copies of the Application Documents

Hard copies of the EIAR can be viewed at the following locations:

- Planning Services, Fife Council, 3rd Floor, Fife House, North Street, Glenrothes, KY7 5LT
- Benarty Centre, Flockhouse Avenue, Ballingry KY5 8JH