



Westfield Substation Extension

Environmental Impact Assessment
Report.

Volume 1: Main Text
September 2026

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EIA Report (Volume 1: Main Text)

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Document Control

	Report Ref: edp8754_r005			
	Author	Formatted	Peer Review	Proofed by/Date
005_ DRAFT	LMa, CMy, MMI, ESt + Stantec	GPa	CMy	-
005a_	LMa, CMy, MMI, ESt + Stantec	GPa	LMa	CRo 141025
005b_	CMy, MMI, CNe + Stantec	FMi	CMy/SPEN	

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Preface

This Environmental Impact Assessment Report (EIA Report; EIAR) has been prepared in support of a Planning Application in Principle (PPiP) for consent to construct and operate a high-voltage substation extension at Westfield Substation, Fife and to decommission parts of the existing Westfield Substation. The Local Planning Authority (LPA) is Fife Council (FC). The EIAR has been prepared by The Environmental Dimension Partnership Ltd (EDP) and Stantec UK on behalf of SP Energy Networks (SPEN).

The EIA Report comprises the following documents:

- Volume 1: Main Text;
- Volume 2: Figures; and
- Volume 3: Technical Appendices.

A free-standing Non-Technical Summary (NTS) has also been produced in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (The EIA Regulations).

Electronic copies of the NTS and EIA Report can be downloaded free of charge via the Project website:

www.spenergynetworks.co.uk/pages/tkup_project.aspx

Electronic (USB) and hard copies of the EIA Report may be obtained by contacting SP Energy Networks by email: tkup@communityrelations.co.uk.

In accordance with Regulation 21 (3) of the EIA Regulations, notice of the EIA Report will be published in the following:

- The Application Website;
- The Edinburgh Gazette; and
- Local newspapers including Glenrothes Gazette, Central Fife Times and Fife Free Press.

Glossary of Terms

Term	Definition
AADT	Annual Average Daily Traffic
AAWT	Annual Average Weekday Traffic. The total volume of vehicle traffic on a highway for a year and divided by 365 days, excluding weekends and public holidays.
Abnormal Indivisible Load (AIL)	Oversized or overweight loads that cannot be divided into smaller parts for transportation without incurring excessive costs or risks.
ATC	Automatic Traffic Count
Air Insulated Busbars	A type of electrical busbar designed to safely and efficiently distribute electrical power while minimising the risk of accidental contact. Air is used as the insulator to reduce the risk of electrical shocks and short circuits.
Air Insulated Switchgear (AIS)	A type of electrical equipment that uses air as the primary insulation medium to safely control, protect and distribute electricity.
Alignment	A centre line of an overhead line, along with location of key angle structures.
Ambient Sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. Comprises of the residual sound and the specific sound when present.
Amenity	The natural environment, cultural heritage, landscape and visual quality. Also includes the impact of Scottish Power Transmission plc's works on communities, such as the effects of noise and disturbance from construction activities.
AQMA	Air Quality Management Area
AQSR	Air Quality Standards (Scotland) Regulations 2010
Ambient Sound Level (La = LAeq,T)	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
A-Weighting	Octave band and 1/3 octave band filters that correlate to the response of the human hearing system to sound pressure levels at different frequencies.
Background Sound Level (LA90,T)	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using a fast time-weighting and quoted to the nearest whole number of decibels.
Basic Noise Level	The level (LA10,18hour) from a road at a reference distance of 10m away from the nearside carriageway edge, based on the traffic flow, speed of the traffic, composition of the traffic, the gradient of the road and the road surface.

Term	Definition
Construction Industry Research and Information Association (CIRIA)	A neutral, independent and non-for-profit organisation within the construction industry.
Construction Environmental Management Plan (CEMP)	A site-specific environmental management plan setting out the environmental management procedures, legislation and requirements for a particular project and site.
CEMP	Construction Environmental Management Plan
Conductor	A metallic wire strung from structure to structure, to carry electric current.
Consultation	The dynamic process of dialogue between individuals or groups, based on a genuine exchange of views, normally, with the objective of influencing decisions, policies or programmes of action.
Corridor	A linear area which allows a continuous connection between defined connection points. The corridor may vary in width along its length; in unconstrained areas it may be many kilometres wide.
CRTN	Calculation of Road Traffic Noise
Decibel (dB)	A logarithmic unit used to describe the ratio between the measured level and a reference level of 0 dB. The ratio can be sound pressure, intensity or power. The reference value for sound pressure is 20 µPa and for sound power is 1 pW.
DEFRA	Department for Environment, Food and Rural Affairs
Diffusion Tube	A passive sampler used for collecting NO ² in the air
Equivalent Continuous A-Weighted Sound Pressure Level (LAeq,T)	Value of the time-averaged A-weighted sound pressure level, in decibels (dB), of a continuous steady sound for the duration of the specified time interval, T.
Environmental Impact Assessment (EIA)	A formal process used to systematically identify, predict and assess the likely significant environmental impacts of a proposed project or development.
Environmental Impact Assessment Report (EIAR)	A comprehensive document which brings together the findings of the Environmental Impact Assessment process outlining the potential environmental and social impacts of a proposed project. It includes a range of information and is written to comply with the requirements of the relevant legislation.
EPUK	Environmental Protection UK
EU	European Union
Fast Time Weighted	The speed at which the instrument responds to changes in amplitude of the measured signal. The response time of a fast time-weighted instrument is 0.125 seconds.
Frequency (f)	The number of cycles of pressure fluctuations within a given period of time. Measured in Hertz.
Gas Insulated Busbars	A type of electrical busbar used in gas insulation substations that provides insulation for electrical conductors.

Term	Definition
Gas Insulated Switchgear (GIS)	A type of electrical equipment that uses gas as the primary insulation medium to safely control, protect and distribute electricity.
GWDTE	Ground Water Dependent Terrestrial Ecosystem
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities.
Hertz (Hz)	The unit of frequency or pitch of a sound. One hertz is equal to one cycle per second.
HDV	Heavy Duty Vehicle; a vehicle with a gross vehicle weight greater than 3.5 tonnes. Includes Heavy Goods Vehicles and buses
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
ISEP	Institute of Sustainability and Environmental Professionals
IAQM	Institute of Air Quality Management
Kilovolt (kV)	One thousand volts.
Landscape Character Type	A defined area of consistent landscape character identified in the NatureScot National Landscape Character Assessment of Scotland.
Listed Building	Building included on the list of buildings of special architectural or historic interest and afforded statutory protection under the 'Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997' and other planning legislation. Classified categories A–C(s).
LAQM	Local Air Quality Management
LEZ	Low Emission Zone
LAeq,T	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
Lmax,f	A noise level index defined as the maximum noise level recorded during a noise event with a period T. Lmax,f is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq,T noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
NAQO	National Air Quality Objective as set out in the Air Quality Strategy and the Air Quality Regulations
NO2	Nitrogen Dioxide
NOx	Oxides of nitrogen generally considered to be nitric oxide and NO ² . Its main source is from combustion of fossil fuels, including petrol and diesel used in road vehicles
Noise Sensitive Receptors (NSR)	Noise sensitive receptors are defined as receptors which are potentially sensitive to noise and vibration. Examples include dwellings, hospitals, schools, community facilities.

Term	Definition
Non-Technical Summary (NTS)	Is a report which conveys the findings of an Environmental Impact Assessment in a clear and concise format that allows the public to understand the proposed project and its associated environmental and social impacts.
Non-SF₆ Dielectric Gas	An insulating gas used in high voltage electrical equipment. These gases have good dielectric properties and are used as an alternative for SF ₆ which is associated with high levels of greenhouse gas emissions.
NPF4	National Planning Framework 4
Octave Band	Band of frequencies where the upper limit of the band is twice the frequency of the lower limit. E.g., the 1000 Hz band contains noise energy at all frequencies from 707 to 1414 Hz.
Overhead line (OHL)	An electric line installed above ground, usually supported by lattice steel towers or poles.
Plantation Woodland	Woodland of any age that obviously originated from planting.
Planning Permission in Principle (PPiP)	A type of planning application that allows developers to establish whether a proposed development is acceptable in principle before submitting detailed designs or layouts.
PM₁₀/PM_{2.5}	Small airborne particles less than 10/2.5 µm in diameter
PIC	Personal Injury Collision
Rating Level (L_A,T_r)	Specific sound level plus any adjustment for the characteristic features of the sound.
Reference Time Interval (T)	Specified interval over which the specific sound level is determined.
Background Sound	The background sound present in a location or environment.
Residual Sound Level (L_r = L_{Aeq,T})	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound. Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T.
Semi-natural Woodland	Woodland that does not obviously originate from planting. The distribution of species will generally reflect the variations in the site and the soil. Planted trees must account for less than 30% of the canopy composition.
Sites of Special Scientific Interest (SSSI)	Areas of national importance. The aim of the SSSI network is to maintain an adequate representation of all natural and semi-natural habitats and native species across Britain
Span	The section of overhead line between two supporting structures.
Special Area of Conservation (SAC)	An area designated under the EC Habitats Directive to ensure that rare, endangered or vulnerable habitats or species of community interest are either maintained at or restored to a favourable conservation status.

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 SSSEN 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.
- 14.5 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).
- 14.6 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).
- 14.7 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.
- 14.8 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.
- 14.9 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.
- 14.10 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.
- 14.11 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).
- 14.12 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, MEnvSci. Emma is an Associate Member of the Institute of Air Quality Management and AMEnvSci. 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 AMEnvSci. 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.

Chapter 02:

Scope, Methodology

and Consultation

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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2. Scope, Methodology and Consultation

2.1 Introduction

- 2.1.1 EIA is a process that considers how a development is predicted to change the existing environmental conditions and what the consequences of these changes will be.
- 2.1.2 This chapter sets out the regulatory context for undertaking an EIA and the assessment methodology applied, the approach to mitigation and the assessment of the significance of likely environmental effects. It also sets out the scope of the EIA and information on any consultation undertaken to inform the EIA.

2.2 Environmental Impact Assessment Regulations

- 2.2.1 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations), implement the requirements of the European Directive on EIA (2014/52/EU) into Scots law. These regulations include two schedules, those which specify the types of proposal that should be subject to mandatory EIA and those for which the need for EIA should be determined by the relevant competent authority. Further schedules also specify the criteria for determining the need for EIA and the information to be included within the resultant EIA Report.
- 2.2.2 The proposed extension to the Westfield Substation does not fall under Schedule 1 of the EIA Regulations, and therefore a mandatory EIA is not required, and does not fall within those categories listed in Schedule 2 of the EIA Regulations. However, on the basis that the EIA Directive has a wide scope and broad purpose, a voluntary EIA is being undertaken for the proposed extension to the Westfield Substation. SPEN considered it appropriate to undertake a proportionate level of environmental assessment having regard to SPT's statutory duties as a transmission licence holder under the Electricity Act 1989 and the guidance contained in Circular 1/2017 Environmental Impact Assessment Regulations.
- 2.2.3 Furthermore, Schedule 9, paragraph 3 of the Electricity Act 1989 states that in formulating any 'relevant proposals', a person authorised to participate in the transmission of electricity:
- *"shall 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*
 - *shall do what he 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."*
- 2.2.4 And in exercising any relevant functions, a licence holder:
- *"shall avoid, so far as possible, causing injuries to fisheries or to the stock of fish in any waters."*
- 2.2.5 Therefore, this EIAR has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations).

- 2.2.6 The EIAR also takes account of the relevant guidance set out in:
- Planning Advice Note (1/2013) Environmental Impact Assessment Revision 1.0 (Scottish Government, 2017), which emphasises the importance of achieving a proportionate EIA scope, focussed on the likely significant effects;
 - The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, Planning Circular 1/2017 Scottish Government.; and
 - EIA Handbook v5 (Scottish Natural Heritage and Historic Environment Scotland, 2018).
- 2.2.7 Other environmental discipline specific guidance will be referred to in the relevant technical **Chapters 6-12**.

2.3 The EIA Process

- 2.3.1 EIA is the process of systematically compiling, evaluating and presenting all the likely significant environmental effects, both positive and negative, of a Proposed Development, to assist the determining authority in considering the application for planning permission, and reaching a reasoned conclusion in the decision notice.
- 2.3.2 The information compiled during the EIA is presented within an EIAR to accompany the application. The preparation of the EIAR enables the significance of these effects to be identified and the scope for reducing negative, or enhancing positive, effects to be clearly understood by the determining authority, as well as those consulted as part of the EIA process.
- 2.3.3 The assessment of effects is undertaken by first establishing a robust understanding of the relevant baseline and then predicting the potential impact of key development activities on that baseline. Predictions of effect is based on a combination of professional judgement, expert knowledge and modelling where appropriate, and the use of topic-specific methodologies. The definition of what constitutes a significant effect for each environmental aspect is determined by pre-defined assessment criteria, as discussed further below.
- 2.3.4 The EIAR preparation process contains the following key stages:
- Project inception and consideration of whether a development requires ‘Screening’ for EIA. A request for a screening opinion was not made in this instance, and a voluntary EIA has been prepared;
 - Preparation of a Scoping Report;
 - Consideration of the Scoping Response issued, and revision of the scheme in light of this response;
 - Baseline data collection, informed by the high-level data collection undertaken during the Scoping stage;
 - Assessment of likely significant environmental effects based on pre-determined methodologies and assessment criteria. This to be based upon site review and field work and documentary review;
 - Identification of mitigation measures in accordance with the mitigation hierarchy to reduce or minimise identified adverse effects;

- Identification of residual effects following the implementation of mitigation measures; and
- Identification of any required compensation or offsetting measures, where significant residual adverse effects remain and cannot be further mitigated, in accordance with the mitigation hierarchy.

2.3.5 The EIA Report satisfies the requirements of Regulation 5 and Schedule 4 of the EIA Regulations as set out in **Table 2.1** below.

Table 2.1: EIA Report Compliance

	EIA Regs Requirement (full quote)	Where Addressed in EIAR (Chapter / Section)
Reg 5(2)(a)	<i>“a description of the development comprising information on the site, design, size and other relevant features of the development”</i>	Chapter 3: Description of Development
Reg 5(2)(b)	<i>“a description of the likely significant effects of the development on the environment”</i>	Technical Chapters 6-12
Reg 5(2)(c)	<i>“a description of the features of the development and any measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment”</i>	Technical Chapters 6-12
Reg 5(2)(d)	<i>“a description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment”</i>	Chapter 5: Need, Alternatives and Design Evolution
Reg 5(2)(e)	<i>“a non-technical summary of the information referred to in sub-paragraphs (a) to (d)”</i>	Non-Technical Summary
Reg 5(2)(f)	<i>“any other information specified in schedule 4 relevant to the specific characteristics of the development and to the environmental features likely to be affected”</i>	See rows below
Reg 5(5)	<i>“a statement outlining the relevant expertise or qualifications of the persons involved in the preparation of the EIA report”</i>	Chapter 1: Introduction
Schedule 4, para 1	<i>“a description of the development, including in particular: (a) a description of the location of the development”</i>	Chapter 3: Description of Development
Schedule 4, para 1	<i>“(b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases”</i>	Chapter 3: Description of Development
Schedule 4, para 1	<i>“(c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used”</i>	Chapter 3: Description of Development
Schedule 4, para 1	<i>“(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases”</i>	Chapter 3; Technical chapters 6-11
Schedule 4, para 2	<i>“a description of the reasonable alternatives... studied by the developer ... and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”</i>	Chapter 5: Need, Alternatives and Design Evolution
Schedule 4, para 3	<i>“a description of the relevant aspects of the current state of the environment (the ‘baseline scenario’) and an outline of the</i>	Technical chapters 6-11

	EIA Regs Requirement (full quote)	Where Addressed in EIAR (Chapter / Section)
	<i>likely evolution thereof without implementation of the development"</i>	
Schedule 4, para 4	<i>"a description of the factors specified in regulation 4(3) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape"</i>	Technical chapters: 6-11 (unless scoped out by the Scoping Opinion (Technical Appendix 2.1)).
Schedule 4, para 5	<i>"a description of the likely significant effects of the development on the environment resulting from, inter alia: (a) the construction and existence of the development..."</i>	Technical chapters 6-11
Schedule 4, para 5	<i>"(b) the use of natural resources, in particular land, soil, water and biodiversity..."</i>	Technical chapters 6-11
Schedule 4, para 5	<i>"(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste"</i>	Technical chapters 6-11
Schedule 4, para 5	<i>"(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)"</i>	Topic-specific risk pathways: Chapter 8 Transport; Chapter 9 Air Quality; Chapter 10 Noise; Chapter 11 Accidents and Risks; cumulative risks in Chapter 12. Cultural Heritage and Human Health were Scoped Out.
Schedule 4, para 5	<i>"(e) the cumulation of effects with other existing and/or approved projects..."</i>	Chapter 12: Cumulative and Interactive Effects
Schedule 4, para 5	<i>"(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change"</i>	Technical chapters 6-12
Schedule 4, para 5	<i>"(g) the technologies and the substances used"</i>	Chapter 3: Description of Development
Schedule 4, para 5	<i>"The description of the likely significant effects ... should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development."</i>	Technical chapters 6-12
Schedule 4, para 6	<i>"A description of the forecasting methods or evidence... and the main uncertainties involved."</i>	Chapter 2: Scope Methodology and Consultation; Technical chapters: 6-12
Schedule 4, para 7	<i>"A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects ... and any proposed monitoring arrangements"</i>	Technical chapters: 6-12; consolidated in Chapter 13
Schedule 4, para 8	<i>"A description of the expected significant adverse effects ... deriving from the vulnerability of the development to risks of major accidents and/or disasters ... and details of the preparedness for and proposed response to such emergencies."</i>	Chapter 11 Major Risks and Accidents
Schedule 4, para 9	<i>"A non-technical summary of the information provided under paragraphs 1 to 8."</i>	Non-Technical Summary

	EIA Regs Requirement (full quote)	Where Addressed in EIAR (Chapter / Section)
Schedule 4, para 10	<i>"A reference list detailing the sources used for the descriptions and assessments included in the EIA report."</i>	Chapter 15 References

- 2.3.6 The assessment of the likely significant effects, using a range of appropriate methodologies, will take into account the construction and operation of the extension to the Westfield Substation in relation to the defined study areas and environs for each topic, as defined by the competent experts undertaking the assessment.

2.4 Scope and Consultation

- 2.4.1 A request for an EIA Scoping Opinion was submitted to Fife Council (FC) in July 2024 (planning reference 24/01927/SCO). An EIA Scoping Opinion was received from FC in September 2024. A copy of the Scoping Opinion is provided in **Technical Appendix 2.1**. The Scoping Opinion concluded that matters to be 'Scoped In' to the EIAR are:

- Landscape and Visual Amenity (day time only);
- Ecology and Biodiversity;
- Traffic and Transport (construction only);
- Air Quality (during the Construction Phase only, including Construction Traffic and Dust);
- Noise (Construction Traffic Noise and Operational Noise only); and
- Cumulative Effects.

- 2.4.2 Matters to be 'Scoped Out' of the EIA are:

- Landscape and Visual Amenity (night time);
- Traffic and Transport (operational);
- Air Quality (operational);
- Socio Economics and Tourism;
- Hydrology;
- Cultural Heritage;
- Ground Conditions and Contamination;
- Climate Change; and
- Risks to Human Health.

- 2.4.3 In addition, a pre-application consultation process was undertaken with FC (planning reference 24/01931/PREAPP) in 2024 and a written pre-application report provided in October 2024. Subsequent pre-application meetings were also held with FC in 2025. A copy of the Pre--Application Report is provided in **Technical Appendix 2.2**.

- 24.4 In addition to the matters identified above for inclusion in the EIA, an assessment of Major Accidents and Disasters has been undertaken and is set out in a standalone assessment in **Chapter 11**.
- 24.5 Where additional consultation with statutory consultees and others has been undertaken in relation to a particular environmental topic, information is provided in the relevant technical chapter and copies of correspondence provided in a technical appendix to the chapter.
- 24.6 To ensure that the EIA covers all elements required to facilitate the Proposed Development, this EIAR also considers the impacts of the proposed permanent 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**.

2.5 Baseline and Future Baseline

- 25.1 To identify the scale of likely significant effects as a result of the Proposed Development, it is necessary to establish the existing baseline environmental conditions.
- 25.2 The baseline scenario was established through desk-base studies, site visits and surveys, and modelling as appropriate to each environmental topic. Further information on the baseline scenarios for each environmental topic is set out in the relevant chapter and technical appendix.
- 25.3 A future baseline, which describes the evolution of the environment without the implementation of the Proposed Development is considered for each environmental topic. The future baseline date is set at 2030. This is the date at which the Proposed Development would be operational, alongside the other elements of TKUP, should it be implemented.

2.6 Determining Likely Significant Effects

- 26.1 The likely effects of the Proposed Development have been assessed and the significance of the effect determined. In doing so, the following are considered:
- Indirect Effects – those effects that are not a direct result of the Proposed Development;
 - Direct Effects – where the effect is a direct result of the Proposed Development;
 - Short-Term, Medium-Term and Long-Term Effects;
 - Temporary Effects – where the effect only occurs for a limited period of time and the change can be reversed;
 - Permanent Effects – where the effect is a long-lasting change;
 - Beneficial Effects – a positive effect considered beneficial to one or more environmental receptors; and
 - Adverse – a negative, or detrimental, effect on one or more environmental receptors.
- 26.2 There are no transboundary effects likely to arise from the Proposed Development.
- 26.3 In assessing the significance of effects, the magnitude of change likely to arise as a result of the Proposed Development is considered alongside the sensitivity of the affected environmental receptor. The geographical extent of the change is also taken into account. Where embedded or

additional mitigation measures (in accordance with the mitigation hierarchy) are identified, the assessment of residual effects reflects the implementation of those mitigation measures only. Enhancement measures are identified separately and are not relied upon in determining the significance of residual effects.

- 2.6.4 The criteria used for identifying magnitude of change, sensitivity and significance of effect specific to each environmental topic, based on the relevant technical guidance and best practice for that topic. Further information is set out in the relevant chapter and technical appendices. The criteria for determining significant effects for each environmental topic is summarised in **Table 2.2**.

Table 2.2: Determining Significance of Effect

Environmental Topic	Level of Effect Considered to be Significant
Landscape and Visual Amenity	Moderate or higher (In certain cases of moderate effects, where additional factors may arise, a further degree of professional judgement may be applied when determining whether the overall change will be significant or not)
Ecology and Biodiversity	At a geographical scale of Local, County/Regional or International or National ¹ (Minor or higher) <i>CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester (last updated September 2024).</i>
Traffic and Transport	Moderate or higher
Air Quality	Moderate or higher
Noise	Moderate or higher

2.7 Cumulative Effects

- 2.7.1 The assessment of cumulative effects is a requirement of the EIA Regulations. It is concerned with identifying circumstances in which a number of potential effects either from the project itself, or from separate existing or future approved development, could combine to cause a significant effect on a particular environmental receptor. Cumulative effects have been considered for each environmental topic and are reported and summarised in **Chapter 12**. Assessment methods for cumulative impacts and interactions can vary across each environmental topic, and specific methodologies are provided in each environmental technical appendices, as appropriate.
- 2.7.2 In the assessment of cumulative effects, consideration is given to both effects arising from different elements of a project on environmental receptors (interactive effects) and from projects combined with other activities (in-combination) effects.
- 2.7.3 Interactive effects may arise where several direct or indirect effects from the Proposed Development affect a single receptor. The combination of such effects may or may not be greater than each of the effects assessed individually. These combined effects consider the

¹ Ecology and Biodiversity assessment carried out in accordance with industry guidance (The CIEEM Ecological Impact Assessment Guidelines 2018; (last updated in September 2024)), opposed to the standard EIA methodology.

interrelationships between different aspects of the Proposed Development. For example, effects on human receptors are considered in both the Landscape and Visual Amenity, Air Quality and Noise chapters.

- 27.4 The TKUP reinforcement project comprises a number of discrete elements, as described above, which are being progressed through separate consent applications. For the purposes of the cumulative assessment within this EIA, a structured approach has been applied to ensure that cumulative effects are appropriately identified and assessed.
- 27.5 This includes consideration of interactive effects arising from the Westfield Substation Extension itself, as well as the cumulative effects of the Westfield Substation Extension in combination with relevant elements of the TKUP and EGL4 projects. As a starting point, the TKUP and EGL4 projects have been considered, following which those individual elements of TKUP and EGL 4 with the potential to interact environmentally with the Westfield Substation Extension have been identified and assessed cumulatively with the Proposed Development.
- 27.6 In addition, the cumulative effects of the Westfield Substation Extension and the relevant interacting elements of the TKUP and EGL4 projects have been assessed with other existing, consented, or reasonably foreseeable developments in the surrounding area, as agreed with FC at the Scoping stage and subsequently updated. This staged approach ensures that cumulative effects associated with the Proposed Development are identified both in isolation and as part of the wider TKUP and EGL 4 projects, as well as cumulatively with other development. The methodology, assessment and conclusions arising from this cumulative assessment are presented in **Chapter 12** of this EIA Report.
- 27.7 EGL4 is a major electricity transmission project being developed by SPEN and National Grid, comprising a 2GW high-voltage direct current (HVDC) subsea link between Fife in Scotland and Norfolk in England. The project is designed to increase the capacity of the UK transmission network, enabling more renewable electricity generated in Scotland to be transported to areas of high demand across Great Britain. EGL4 will support the transition to a cleaner energy system while improving grid resilience, flexibility and long-term energy security.

2.8 Approach to Mitigation

- 28.1 Embedded mitigation measures have been incorporated throughout the EIA assessment to ensure that the Project's design and operational practices minimise environmental effects wherever possible. These measures, which are included within the baseline assessment and assumed throughout the evaluation of likely significant effects, address potential impacts from the outset and form an integral part of the Project design and assessment process. Their inclusion ensures that the assessment reflects realistic environmental outcomes based on the Project as proposed. Each technical chapter has identified embedded mitigation relevant to that topic.
- 28.2 Schedule 4, paragraph 7 of the EIA Regulations requires information to be provided on measures to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects of the Proposed Development on the receiving environment, as well as, where appropriate, any proposed monitoring arrangements. The impact assessment process is used to identify where additional mitigation is required to address likely significant effects, which it has not been possible to avoid through design. Mitigation has been considered following a hierarchy of first seeking to avoid effects, then seeking a reduction in effects to a level not considered significant, and where necessary offsetting or providing

compensatory measures or enhancement measures. The EIA will report on the residual effects that remain following the implementation of mitigation.

- 28.3 SPT's approach to biodiversity enhancement and compensatory planting is based on delivering meaningful ecological enhancement at suitable off-site locations rather than within the operational substation site, where space and functional constraints limit opportunities for on-site measures.
- 28.4 To meet the requirements of NPF4 for developments to provide positive effects for biodiversity, SPT provide on-site mitigation in addition to off-site compensation and enhancement. SPT has a proven track record of off-site biodiversity delivery within the same local authority area as their development projects. The off-site delivery model is based on collaboration with landowners and delivery partners such as Fishery Trusts, environmental organisations, or community organisations to identify local biodiversity opportunities. This approach allows SPT to support enhancement schemes that compliment Nature Networks and wider landscape-scale restoration ambitions in the local area. SPT assesses the biodiversity impacts from our developments using the SSEN-T biodiversity metric. The same metric is used by delivery partners to identify suitable biodiversity schemes to compensate for losses and provide appropriate levels of enhancement. In order to secure the biodiversity enhancements, SPT enter into a contractual agreement with the supplier of the biodiversity enhancement works. SPT fund the full cost of all associated capital works together with 5 years establishment costs. For the avoidance of doubt, SPT do not purchase biodiversity units or land. A Biodiversity Enhancement Plan (BEP) is developed which sets out the required compensation and enhancement along with details of habitat management and monitoring required to ensure the created habitats reach the expected condition.
- 28.5 For the proposed infrastructure works at Westfield substation, SPT are in ongoing discussions with the Forth Rivers Trust who are a prospective partner of biodiversity enhancement delivery. Thus far, two sites have been identified as potentially suitable schemes to be matched to the substation site for off-site biodiversity enhancement. The first potential site is at Stenhouse Reservoir near Burntisland and would see the creation of woodland, species-rich grassland, and wetland. The second site is a farm near Cowdenbeath which is a potential site for woodland creation and species-rich grassland creation.
- 28.6 This approach is reflected in the EIAR, which outlines that biodiversity enhancement will be delivered off-site in collaboration with landowners and relevant stakeholders. The EIAR confirms that this strategy aligns with SPEN's established environmental commitments and ensures that biodiversity enhancement objectives can be met in a practical and ecologically beneficial manner. Significant biodiversity enhancement will be provided in accordance with policy 3 Biodiversity of NPF4, with a minimum of 10% net gain to accord with SPEN's T3 business plan goals.
- 28.7 A Schedule of Environmental Mitigation is provided in **Chapter 13**, which summarises the mitigation measures identified in **Chapters 6–12**.

Chapter 03:

Description of

Development

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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3. Description of Development

3.1 Introduction

- 3.1.1 This chapter provides a description of the main elements of the Proposed Development, and the maximum development parameters that form the basis for the environmental assessment.

3.2 The Existing Westfield Substation

- 3.2.1 The existing Westfield 275/132kV substation is connected to the primary transmission network by overhead lines operating at both 275kV and 132kV. It is an outdoor substation, which utilises Air Insulated Switchgear (AIS) with both 275kV and 132kV busbar systems.
- 3.2.2 Photographs of the existing Westfield substation are shown in **Images 3.1–3.6**.



Image 3.1: Westfield Substation Access.



Image 3.2: Westfield Substation Existing Infrastructure.



Image 3.3: Westfield Substation Existing Infrastructure.



Image 3.4: Westfield Substation Northern Boundary Adjacent to B9097.



Image 3.5: Westfield Substation Western Boundary.



Image 3.6: Westfield Substation View from the South-East.

- 3.2.3 Following the completion of the construction and electrification of the proposed extension to the Westfield substation, the existing 275kV component of the substation will be deconstructed and the land maintained for future high voltage infrastructure that may be required. This decommissioning work forms part of the Proposed Development assessed within this EIAR.

3.3 The Proposed Development

- 3.3.1 The site is located in central Fife, and comprises the existing Westfield substation site and neighbouring land near the Westfield Green Energy Park (which is located on the site of the former Westfield opencast coal mine). Located mid-way between the settlements of Balingry to the west and Kinglassie to the east, the site is directly accessed via the B9097, which runs along its northern boundary. This road provides a link between the M90 motorway circa 8km to the west and the A92 circa 5km to the south. The surrounding landscape is characterised by nearby built and infrastructural development, particularly the existing substation, the Westfield Energy Recovery Facility and an operational wind farm.
- 3.3.2 The Proposed Development comprises the 400kV extension to the existing 275/132kV Westfield substation and the decommissioning of the 275kV elements of the existing Westfield Substation. The proposed Westfield 400kV Substation Extension is located immediately west of the existing 275/132kV Westfield Substation at central grid reference 319213, 697641 (referred to as the site and illustrated on **Figure 1.3**). The Proposed Development is illustrated in **Figure 3.1**, along with the Illustrative Landscape Strategy at **Figure 3.2** and Cross Section at **Figure 3.3**.

3.3.3 An example of a similar substation is illustrated on **Image 3.7**.

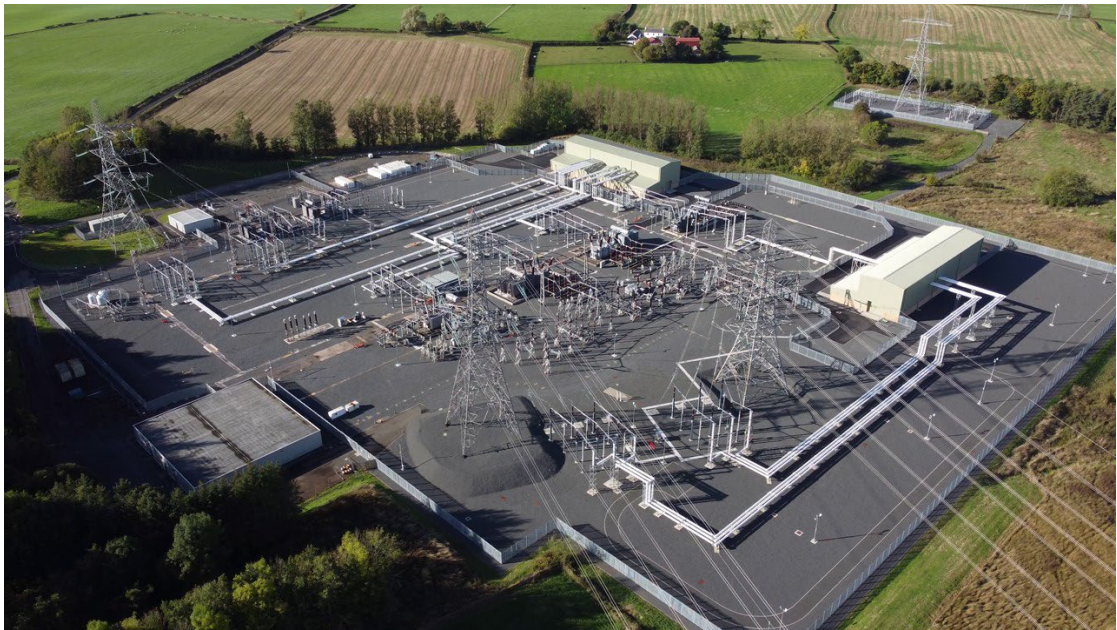


Image 3.7: Example of an Existing Substation.

Electrical Infrastructure

- 3.3.4 The Proposed Development will utilise Gas Insulated Switchgear (GIS) (with a non-SF₆ dielectric gas) to house different electrical devices to switch, separate, transform, measure and distribute electricity. There will be a GIS building to house the 400kV GIS Switchgear and associated protection and control equipment. The building will be a steel portal frame design with exterior cladding (Moorland Green BS12B21). Within the GIS building during normal operation there will be minimal activity, with electrical switching taking place during energisation, if faults occur and for maintenance. (The GIS building will house staff welfare facilities and an office. The site will be unmanned, other than for typical maintenance, or if emergency works are necessary).
- 3.3.5 The Westfield Substation Extension will include the installation of a minimum of two and maximum of six 400kV Super Grid Transformers, which enable connections from the 400kV transmission network into the wider 132kV network, with the transformers allowing a change in voltage in the system from one level to another. Of these, one will be a 400/275kV transformer. Each transformer will be sat within an impermeable concrete bunded area to contain any oil spill from the equipment. The bund will be fitted with a suitable Class 1 oil water separator system, with any clean water to drain to soakaway, designed to meet the requirements of BS EN 858-1 (separator systems for light liquids).
- 3.3.6 There will also be a Mechanically Switched Capacitor with Damping Network (MSCDN), which is a highly developed form of mechanically switched capacitor which assists in managing and controlling system voltage levels across the network.
- 3.3.7 Other necessary electrical infrastructure will include earth switches, surge arresters, current and capacitive voltage transformers, and post insulators. In addition, there will be auxiliary systems and equipment, including for example distribution boards, a standby diesel generator and fuel tank (which will be integrally bunded), fuse boxes etc. There will be Gas Insulated Busbars (GIB) (which

have the appearance of pipes), other plant structures, line gantries, and other cabling as necessary. The GIB will be a grey colour (likely to be RAL 7038 Agate Grey).

Substation Platform and Access

- 3.3.8 The substation electrical infrastructure will be located on the substation platform, a flat levelled area (delivered through cut and fill earthworks), comprised primarily of permeable gravel, at a height of approximately 89m aOD. The new substation platform will be approximately 8m west of the existing Westfield substation. There will be tarmacked access roads and vehicle parking areas (including provision for EV charging), and a perimeter maintenance access.
- 3.3.9 Improvement works to increase the visibility at the existing access onto the B9097 is proposed to improve safe access and egress by all vehicles and to allow for the delivery of the Super Grid Transformers on larger vehicles as an Abnormal Indivisible Load (AIL). Transformer deliveries will enter and exit the site to the east. Appropriate visibility splays will also be provided, which will require the management of some roadside vegetation either side of the existing access.

Drainage and Landscape

- 3.3.10 There will be appropriate sustainable drainage system (SuDS) provision to accommodate surface water runoff from the substation platform. This will include both permanent and temporary drainage features. A permanent SuDS feature, comprising two interlinked basins will be provided, located to the south-east of the substation platform, with access for maintenance. The basins will have an outfall to an existing ditch at the south-eastern extent of the basin. It is also anticipated that a section of the existing perimeter ditch will need to be realigned, where this is necessary the channel section will be designed to accommodate compensatory flood storage. This is illustrated on **Figures 3.2 and 3.4**.
- 3.3.11 The drainage scheme will be designed in accordance with the Construction Industry Research and Information Association (CIRIA) publications; Control of water pollution from construction sites. Guidance for consultants and contractors (C532); and Control of water pollution from linear construction projects. Technical guidance (C648). The drainage scheme may include pre-earthworks construction drainage ditches around work areas to intercept and divert water runoff away from work areas. Where large flow volumes are expected ditches will be supplemented with settlement ponds or swales to attenuate flows during high rainfall events. Further features such as silt fencing, straw bales, and check dams may be utilised within the design, where required, to further assist with silt catchment and treatment. All areas of temporary drainage scheme will be reinstated upon completion of the substation platform and associated earthworks.

- 3.3.12 Landscape bunds, with a maximum height of 2m, will be located to the south-west and south-east of the substation platform. In addition, low height tree and shrub planting and new hedgerow will assist with filtering views of the Proposed Development from the south and south-west. Outside of the substation platform there will be an area established as a wildflower grassland. Along the northern, western and south-eastern boundaries of the site existing hedgerow and trees will be retained where possible. The landscape strategy is illustrated on **Figure 3.2**. Existing trees and vegetation within the centre of the site will be removed to facilitate the development of the substation platform. Tree planting is proposed as shown on **Figure 3.2**; other landscaping includes proposed , hedgerow planting and grassland. Compensatory Planting – if necessary – will be delivered off site as is standard practice for SPT projects of this nature.

Other

- 3.3.13 Within the substation compound there will be some exterior lighting on columns (maximum of 6m), which will only be lit when the site is manned. For the majority of the time the site is unmanned and therefore these will not be required. There will also be approximately 20 CCTV columns along the perimeter security fence line and within the substation compound itself at a height of 6.5m above ground level.
- 3.3.14 The site will be treated as high risk/critical due to its strategic importance within the 400kV transmission network and as the primary onshore connection point for the EGL4 project. The operational compound will be enclosed by a 3m high security fence founded on a continuous anti-dig concrete strip to prevent burrowing and undermining. A secondary maximum 2m high agricultural post-and-wire stock fence will be set 5m outside the security fence to discourage livestock and wildlife from approaching the perimeter and to maintain a clear patrol/inspection corridor. Vehicle and pedestrian gates will match the security fence standard, and the 5m corridor will be kept free of obstructions for safe access and maintenance.

The Existing Westfield Substation 275kV Decommissioning

- 3.3.15 The existing 275kV elements of the AIS Westfield substation will remain energised until circa Q2-2030 until the overhead line circuits (Glenrothes/Conland and Tealing) are uprated to a 400kV voltage level and the completion of all works at the new substation extension and connection of downleads from the new 400kV tower with the new substation extension gantries. Upon energisation of the new 400kV Westfield GIS substation extension and the other elements of TKUP, the existing 275kV substation elements will be completely disconnected and decommissioned. The deconstruction of the existing 275kV substation elements will likely start in Q4-2030 and will continue until all the related equipment is dismantled and removed.
- 3.3.16 The existing Westfield 275kV substation will require decommissioning of existing plant equipment such as:
- Existing 275kV 240MVA Transformers;
 - Existing 275kV AIS Circuit Breakers;
 - Existing 275kV AIS Disconnectors;
 - Existing 275kV AIS Surge Arresters;

- Existing 275kV AIS Capacitor Voltage Transformers;
- Existing 275kV AIS current transformers;
- Existing 275kV AIS Post Insulators;
- Existing 275kV Gantries Structure;
- Busbar connections, structures, interlocking, earthing, cabling, foundations etc.; and
- Other ancillary equipment.

Other Development Related to the Proposed Development and Covered by this EIAR

33kV Undergrounding

- 3.3.17 The EIAR also covers the impacts arising from the undergrounding of the 33kV OHL which currently passes through the site. These works involve the diversion of the existing Kelty–Cowdenbeath No.1 and No.2 33kV circuits from overhead line construction to a new underground cable route around the Westfield Grid Supply Point (GSP) development area as part of the transmission site expansion works. For the proposed 33kV undergrounding, two new terminal 'H Poles' are proposed of circa 10m in height at the point at which the OHL moves underground. Construction will be undertaken in a linear fashion, with plant moved along the route as the project progresses.
- 3.3.18 The red line boundary for the local planning application being progressed for this element is provided on **Image 3.8** below. The parameters of this development are provided below.

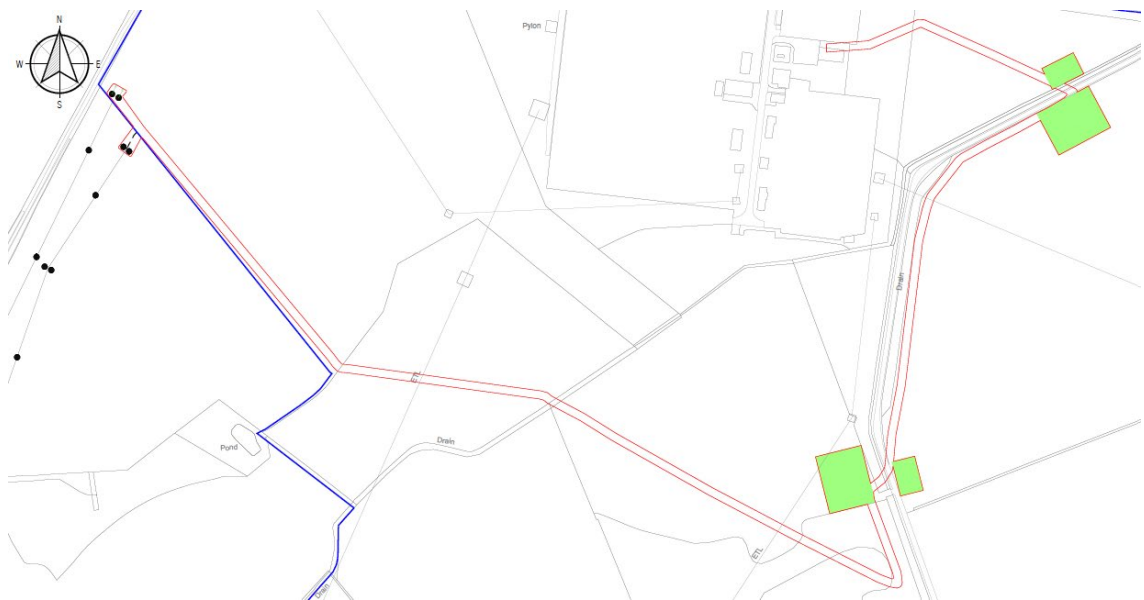


Image 3.8: Undergrounding route for 33kV OHL cables.

Temporary Drainage Scheme

- 3.3.1 The temporary drainage scheme will be provided to mitigate the risk of pollution caused by silt and other damaging materials arising from the construction. It will be designed, constructed and

maintained so that all silt-laden run-off is collected and treated prior to it entering the nearby watercourse. Temporary construction drainage shall comprise a series of interconnected settlement and attenuation ponds arranged in cascade to the south-west of the site. Surface water runoff from areas of disturbed ground, including the substation platform earthworks, temporary access tracks, laydown areas and soil stockpiles, shall be intercepted by temporary cut-off and collection ditches and directed towards the settlement pond system.

3.3.2 The ponds shall operate as a treatment train, with runoff passing sequentially through a series of settlement ponds connected by shallow open ditches. Check dams shall be incorporated within the collection and interconnecting ditches, where appropriate, to reduce flow velocities, promote settlement of suspended solids and minimise erosion. The upstream ponds shall principally provide coarse sediment settlement, with subsequent ponds providing further settlement and attenuation prior to controlled discharge.

3.3.3 Where practicable, the permanent SuDS infrastructure shall be constructed at an early stage to limit the use of the temporary drainage system. Temporary ponds, ditches, check dams and silt-control measures shall be inspected regularly and following significant rainfall events, with accumulated sediment removed as required to maintain treatment and storage capacity. The temporary drainage scheme is illustrated on **Figure 3.4**.

3.4 Maximum Development Parameters

3.4.1 Maximum development parameters have been established for the purpose of the environmental impact assessment. These include the following and are illustrated on **Figures 3.1–3.5**:

- Maximum building and infrastructure/component heights: GIS Building 17m, Transformers 14m, Busbars, gantry structures and other ancillary infrastructure 14m;
- Maximum extent of substation platform of 60,000 square metres;
- Maximum height (90.5m aOD) of the finished floor level of the substation platform;
- Location of access onto B9097;
- Maximum height of primary perimeter security fence will be 3m founded on a continuous anti-dig concrete strip to prevent burrowing and undermining. A secondary maximum 2m high agricultural post-and-wire stock fence will be set 5m outside the security fence.. Closed Circuit TV poles will be a maximum of 6.5m with lighting columns a maximum of 6m (4m standard height);
- Maximum extent of any earthworks or construction zones within the site boundary (16.7ha);
- Maximum noise emissions from plant and equipment. The maximum sound power level of the transformers is 87dB(A);
- A construction compound will be located within SPEN land adjacent to the substation footprint. The indicative size of this compound is 30 m × 55 m. The compound will provide hardstanding for plant and welfare facilities, designed for 100 kN/m² bearing capacity, with granular layers and geotextile separation where required. Drainage will include temporary SuDS to manage runoff;
- Access tracks: The existing junction onto the B9097 will be altered to improve access to the site, including for transformer delivery vehicles. It will connect to an internal access road

running parallel to the existing road and internal tracks around the platform. Roads will be 5 m wide, widened on bends, surfaced in asphalt externally and granular Type 1 internally. Drainage will use filter drains discharging via SuDS ponds; and

- Junction details: The junction will meet DMRB CD123 standards with 215 m visibility splays. Swept Path Analysis confirms suitability for 20-axle transformer vehicles (64.4 m long). Over-run areas and verge widening will accommodate abnormal loads. Assessments undertaken to date have been based on transformer delivery accessing and exiting the site from the east.

3.5 Construction

- 3.5.1 The Proposed Development will be constructed 'offline', in effect while the existing 275/132kV substation remains operational. This is in order to provide continuity of supply across the transmission network. It is anticipated that the construction will commence in 2027 for a period of approximately four years.

Programme and Phasing

- 3.5.2 The construction of the Proposed Development will be delivered in phases. Indicative phases are set out as follows:
- Construction of the access roads;
 - Construction of the substation platform;
 - Installation of the main plant and equipment;
 - Electrification and commissioning of the proposed substation extension;
 - Decommissioning of the 275kV elements of the existing Westfield Substation; and
 - Reinstatement and landscape works.
- 3.5.3 Other aspects of TKUP in proximity to the substation extension which will be delivered via different consenting regimes, such as the removal and installation of OHL towers will overlap this programme.
- 3.5.4 Subject to securing planning permission and other required consents and approvals being granted the indicative construction programme for the Proposed Development is as follows:
- Construction Start: September – 2027;
 - Installation of Main Plant and Equipment: October 2029
 - Reinstatement of grassland and proposed landscaping measures October 2030;
 - Electrification and Commissioning: October 2030; and
 - Decommissioning of the existing 275kv electrical equipment Q4 2031.
- 3.5.5 Further detailed construction phasing and programme are subject to change as the design progresses and land rights are secured.

Construction Compounds, Temporary Works and Temporary Lighting

- 3.5.6 There will be a temporary construction compound, which will accommodate welfare facilities, office cabins, vehicle parking and equipment and material storage. A temporary construction compound of approximately 30m x 55m will be located north of the proposed substation platform with access from the internal access road. It will have a levelled stone surface with perimeter security fencing.
- 3.5.7 The proposals will require the complete removal of six tree groups (G2, G3, G4, G5, G6 and G8) totalling an area of approximately 4,686m³ and two hedgerows (H1 and H2) totalling approximately 338m in length. Within hedgerow H2, there are eighteen mature field boundary trees that require removal.
- 3.5.8 All vegetation proposed for removal to facilitate the development is illustrated on **Figure 3.7**. In addition, some minor pruning works may be required to trees either side of the existing access to the substation to facilitate access by larger vehicles, and the undergrounding of the 33kV OHL. During construction exclusion zones around retained trees by tree protection barriers will be used. The tree protection barriers will be designed and installed to exclude construction activities and will ensure adequate protection for trees, woodlands and hedgerows as appropriate.
- 3.5.9 Temporary works areas, including construction compounds, laydown areas, and other areas required during construction, will be reinstated following completion of the construction phase. Restoration will aim to return these areas to a condition consistent with the Landscape Strategy at **Figure 3.2**.
- 3.5.10 This will include the removal of temporary structures, hardstanding, and any construction materials, and the reinstatement of the surface to its previous condition or a condition suitable for its intended use. Restoration activities will follow good practice guidance to minimise environmental impacts, including maintaining drainage and promoting re-establishment of vegetation where appropriate. Post-construction monitoring will be undertaken to confirm the success of reinstatement measures and to allow remedial action if required.
- 3.5.11 Works shall be primarily undertaken during daylight hours backed up (when needed and only during the agreed working hours) by tower lights and plant/vehicle lighting at key locations to provide a minimum of:
- 20 lux for normal plant operations; and
 - 80 lux for operatives working.
- 3.5.12 The potential light spillage shall be reduced by:
- Turning off plant when not in operation;
 - Turning off tower lights when not needed;
 - Minimising the mounting height of tower lights and reducing tilt angles to the minimum needed;
 - Providing tower lights of the flat glass construction with zero direct upward light, to reduce sky glow and glare;

- Providing tower lights of as low a wattage as possible; and
- Where practicable, directing lighting into the site rather than directing light outwards.

3.5.13 The lighting will be continually managed and monitored, and further detail will be provided in an appropriate method statement or site management plan.

Undergrounding Works for the 33kV OHL (Kelty to Cowdenbeath No.1 and No.2 Circuits)

3.5.14 Prior to commencing the works, the cable route will be surveyed and set out, with all existing utilities, environmental constraints and third-party assets identified and clearly marked. Consideration will be given to the existing high-pressure gas main, water mains, telecommunications infrastructure, field drainage systems and transmission assets located within the work area. All works shall be carried out in accordance with SPEN Specification CAB-15-003, relevant SPEN Safety Rules and the approved construction drawings.

3.5.15 The route will be established through agricultural land and existing access routes, with suitable access arrangements, working areas and exclusion zones established prior to the commencement of excavation works. The cable route will be clearly marked using survey stakes and route markers. Trial holes and service investigations will be undertaken where required to verify the location and depth of existing services before excavation begins.

3.5.16 The existing OHL circuits will be modified by removing the existing intermediate poles and installing new terminal H-poles at the cable transition locations (as shown on **Image 3.9** below). Existing conductors will then be transferred to the new terminal structures, providing the interface between the overhead line network and the new underground cable system.

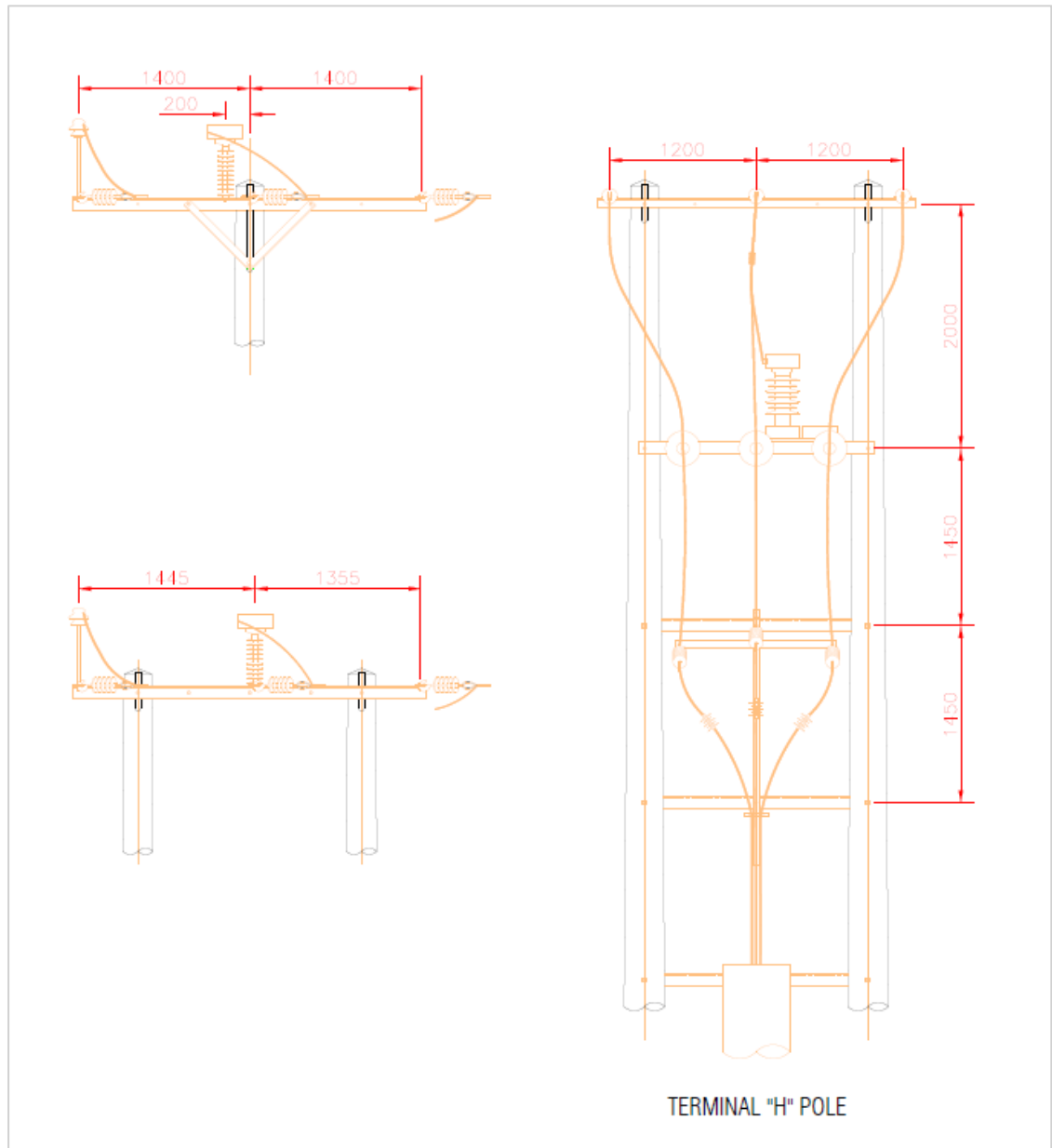


Image 3.9: 33kV Undergrounding H-Pole Section

- 3.5.17 Cable trenching and duct installation works will be undertaken along the approved route. Excavations will be completed in a controlled manner to maintain safe access and minimise disruption. Joint bays will be constructed at designated locations to facilitate cable pulling, jointing and termination activities. Where the route crosses existing infrastructure or other constrained areas, specialist installation techniques, including Horizontal Directional Drilling (HDD), will be utilised where required. As shown on **Image 3.10**, HDD is anticipated in two locations along the route – HDD locations are shown by shaded green areas.



Image 3.10: 33kV Undergrounding HDD Locations

- 3.5.18 The cable trench will pass through an area currently comprising a number of trees. This area of trees is due for felling as part of the SPD works to facilitate the EGL4 project.
- 3.5.19 Following completion of the civil works, the new 33kV cable circuits will be installed between the terminal pole locations and the substation connection points. Cable installation will be undertaken in sections between joint bays, followed by the completion of all straight-through joints, transition joints and terminations. Adequate cable allowances will be maintained at each termination location to facilitate the installation of the pole terminations and provide sufficient working length for cable dressing and connection activities.
- 3.5.20 The new cable circuits will then be terminated onto the overhead line terminal structures and the existing substation equipment in accordance with the approved design.

- 3.521 Upon completion of the installation works, the circuits will be inspected, tested and commissioned in accordance with SPEN requirements. Following the successful completion of testing and the agreed network outage, the existing circuits will be transferred onto the new underground cable route and returned to service.
- 3.522 Following successful energisation, the redundant overhead line sections will be isolated, disconnected, cut, capped and earthed under SAP instruction. Any redundant equipment will be removed where required.

Hours of Work

- 3.523 Construction work is likely to be during daytime periods only. Working hours are currently proposed to be between approximately 08:00 to 18:00 Monday to Friday, 08:00 to 13:00 on a Saturday and no scheduled works on a Sunday or Bank Holiday. Any out of hours working will be agreed in advance with Fife Council.

Traffic

- 3.524 The construction phase will give rise to regular numbers of staff transport movements, with work crews travelling to the site on a daily basis. In addition, daily HGV vehicle movements will be required to construct the new access roads, deliver the construction materials, and deliver the plant and equipment. The Super Grid Transformers will be delivered on larger vehicles as an AIL. Transformer deliveries will enter and exit the site to the east.

Construction Management Plans

- 3.525 The Applicant is committed to minimising the environmental impact of construction activities on the environment. Environmental Management Systems (EMS) have been developed by the Applicant and cover a large range of activities. All construction works will be undertaken in accordance with these and the Applicants Contractor Environmental Performance Requirements (CEPR) for major projects.
- 3.526 A site-specific Construction Environmental Management Plan (CEMP) and Project Environmental Management Plan (PEMP) will be developed for the Proposed Development by the Contractor and will provide information on the proposed infrastructure and to aid in avoiding, minimising and controlling adverse environmental impacts associated with the Proposed Development. In addition, the Contractor will also provide an Environmental Risk Assessment, Pollution Prevention Plan, Surface Water Management Plan, Species Protection Plans, Habitat Management Plan, Peat Management Plan, and Site Restoration Plan.
- 3.527 An Outline CEMP is provided as **Technical Appendix 3.1**.

3.6 Operation and Management

- 3.61 Operation and Maintenance: The Proposed Development will operate 24 hours per day, 365 days per year and will predominantly be unmanned. There will be maintenance visits to the site approximately 90 days per year and any planned maintenance work will be undertaken between the hours of 08:00 and 17:00. Other maintenance repairs and works will be required sporadically.

- 3.6.2 Welfare facilities: Welfare facilities will be provided within the GIS Building. These facilities will use rainwater harvesting to provide potable water and a septic tank for discharge.
- 3.6.3 Life of the Proposed Development: The Applicant is seeking planning permission for the Proposed Development on an enduring basis. It is anticipated that the substation plant and equipment have a design life of approximately 40 years, after which it will be replaced with new equipment designed and installed to the relevant engineering specification and environmental standards.

3.7 Residues, Waste, Materials and Emissions

- 3.7.1 Excavation materials will be generated, and will require management, at a number of construction stages including excavation of materials for construction of substation foundations, construction of ancillary infrastructure and occupation of temporary construction premises.
- 3.7.2 The Principal Contractor will be required to prepare a Site Waste Management Plan to ensure best practice principles are applied to reduce, re-use or recycle all materials as part of the CEMP. Measures to reduce possible environmental effects associated with the storage and transportation of wastes will include:
- The careful location of stockpiles and other storage areas;
 - The use of good practice in the design of waste storage areas and the use of suitable waste containers;
 - The use of sheeting, screening, and damping where appropriate and practicable;
 - The control and treatment of runoff from soil and waste soil stockpiles;
 - Minimising storage periods;
 - Minimising haulage distances; and
 - The sheeting of vehicles.
- 3.7.3 All materials will be identified, classified, quantified and, where practicable, appropriately segregated. Any materials that cannot be reused will be disposed of according to relevant waste management legislation which will serve to address a number of possible environmental effects. This includes:
- The Duty of Care imposed by Section 34 of the Environmental Protection Act 1990; and
 - The Waste Management Licensing (Scotland) Regulations 2011 (as amended), particularly provisions relating to registered exemptions from waste management licensing.
- 3.7.4 If materials are required to be removed from site, these will be handled in accordance with relevant waste and environmental regulations. Waste will be transferred using a registered waste carrier to a licensed waste disposal site or recycling centre.
- 3.7.5 The anticipated residues and emissions from the Proposed Development, required by Schedule 4, para. 1(d) of the EIA Regulations are summarised in **Table 3.1**.

Table 3.1: Residues and Emissions

Topic	Potential Residue/Emissions
Water	Construction: Surface water run off to temporary SuDS. Operation: Limited to rainwater run-off.
Air	Construction: No Significant Emissions from construction vehicles, plant and equipment. Construction vehicles including diesel, petrol and electric cars, vans and 4x4; and HGV vehicles including Hiab boom lift, Low loaders, Tipper Flat-bed, Tipper 8-wheeler etc. Plant and equipment including D9 Dozers, 24 tonne excavators, Bell Dump Trucks, Bomag Compaction Plant, Tractor and Trailer, Bowser, 6 tonne site dumpers and miscellaneous small plant. Operation: Routine emissions to air are not anticipated. There will be an emergency diesel back-up generator but emissions will not be significant. The Proposed Development would contribute to connecting renewable electricity generation capacity to the transmission network, in turn displacing emissions associated with fossil fuel-based electricity generation elsewhere.
Soil and Subsoil	Construction: Soil and subsoil excavation, handling, and storage would be required during construction. All soil and subsoil would be stored temporarily for use in reinstatement and creation of landscape bunds. Where there is surplus soil, this would be taken for disposal off-site. During excavation, handling, and storage, appropriate measures would be implemented to minimise the risk of pollution, including avoiding cross-contamination, controlling runoff, and preventing the release of contaminants into surrounding soils or watercourses. All temporary stockpiles would be appropriately contained and managed to prevent erosion, sedimentation, or accidental spills of construction materials, fuels, or chemicals. Any areas subject to potential contamination would be monitored and remediated as required to ensure that soils and subsoils are suitable for reinstatement. Operation: No requirement for soil or subsoil excavation or handling during the operation phase has been identified. Routine emissions to land are not anticipated. Oil filled plant such as the Super Grid Transformers will be located within suitable bunds, which will undergo inspection and maintenance required.
Noise and Vibration	Construction: Noise from onsite construction plant and equipment includes: • Mobile Welfare Unit Generator; • 40KVA Generator (Main Welfare); • Tower Lights; • Mechanical excavators; • Dump Trucks; and • Construction Traffic.

Topic	Potential Residue/Emissions
	Assessment of construction activity noise has been scoped out of the EIAR, and therefore anticipated noise levels at receptors are not presented. Assessment of construction traffic noise is presented in Chapter 10 - Noise. Operation: Limited noise emissions are anticipated to be producing during operation. GIS equipment will be housed in a building to minimise noise emissions. Operational noise would originate primarily from the transformers in the form of low-frequency tonal noise in the range of 63 Hz to 2kHz. The emergency diesel generator would generate noise when operational. Assessment of operational noise is presented in Chapter 10 - Noise.
Light	Construction: Temporary lighting installations for use during low light conditions. 20 lux for normal plant operations. 80 lux for operatives working Operation: The site will be unmanned, no light sources during normal operation. There will be some exterior lighting on columns, which will only be lit when the site is manned for maintenance. 80lux for operation, maintenance and repairs including any portable lighting.
Heat, Radiation and Electromagnetic Fields (EMF)	Construction: No heat or radiation sources have been identified during the construction phase. There will be no significant EMFs generated during construction. EMFs are only usually generated once operational and then they will be in compliance with industry standards. Operation: No significant sources of heat or radiation will be generated during operation. No significant EMF emissions are expected, and the operation of the substation will adhere to the relevant regulations and guidance for EMF limits.
Waste	Construction: The construction will require the felling of trees and removal of vegetation and removal of inert materials. All waste will be recycled or re-used where possible and where waste will need to be disposed of it will be done at the time it arises and in line with current legislation and best practice. The Outline CEMP will detail waste management relevant to the construction phase for the Proposed Development. Operation: During operation very small volumes of waste would be produced. Limited waste may arise from maintenance due to the replacement of faulty/damaged equipment. Wastewater from maintenance activities and welfare facilities for visiting staff and contractors will be managed and disposed of via a proprietary septic tank system. All waste will be disposed of at the time it arises and in line with current legislation and best practice.

3.8 Decommissioning

- 3.8.1 The Applicant is seeking planning permission for the Proposed Development on an enduring basis. Therefore, no separate assessment of decommissioning of the Proposed Development (the substation extension) will be included in the EIAR, as it is considered a permanent facility. However,

any impacts arising from the decommissioning of the 275kV elements of the existing substation, and removal of temporary undergrounding works, are included within this EIAR.

Chapter 04:

Legal and Planning

Policy Framework

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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4. Legal and Planning Policy Framework

4.1 Introduction

- 4.1.1 This chapter sets out the key planning legislation, policies and other material considerations applicable to the Proposed Development, which have informed the siting, design and environmental impact assessment processes. Consideration is given to the following matters in turn:
- Relevant statutory provisions;
 - The Development Plan; and
 - Other material considerations, including local planning guidance and relevant national policies, advice and guidance.
- 4.1.2 The purpose of this chapter is to identify all legislative and policy requirements and considerations relevant to the technical assessments provided in **Chapters 6–11** of this EIA Report.
- 4.1.3 This Chapter also refers to the renewable energy policy and emissions reduction legislative framework with reference to relevant UK and Scottish provisions.
- 4.1.4 This chapter is factual in nature and does not assess the Proposed Development's accordance with relevant planning policies. A separate Planning Statement explains the rationale for the Proposed Development and assesses in detail how it accords with relevant Development Plan policies and other material considerations.
- 4.1.5 It should be noted that the technical assessments presented in **Chapters 6–11** have also been prepared in accordance with a wide range of topic-specific legislation, non-planning policies, technical guidance and standards, as detailed within a dedicated section of each chapter.

4.2 Relevant Statutory Provisions

- 4.2.1 The planning legislation of relevance to the proposals are:
- The Electricity Act 1989 (The Electricity Act);
 - The Town and Country Planning (Scotland) Act 1997 as amended (The Principal Act);
 - The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations) as amended;
 - The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 as amended;
 - The Construction Design and Management Regulations 2015; and
 - Other relevant subject specific legislation, as identified within individual technical assessment chapters of the EIA Report for the Proposed Development.

UK Energy Legislation and Policy

- 4.22 Planning Circular 3/2022 (Development Management Procedures) indicates some of the broad range of considerations which would be considered material in the determination of a planning application. Annexe A confirms some of these considerations to be Scottish Government and UK Government Policy.
- 4.23 Through these policies relating to the climate emergency and renewable energy, there is substantial support in place for the Proposed Development in contributing to climate change mitigation and increased renewable energy production. Therefore, although not part of the formal Development Plan, these national climate and renewable policies (which are identified and briefly summarised below) form key material considerations and should be afforded due weight in the determination of this planning application.

Energy Act 2023

- 4.24 The Energy Act 2023 was passed in October 2023 and is the largest piece of energy legislation in the UK. The Act includes several provisions that are relevant to the Proposed Development.
- 4.25 The Energy Act 2023 is a landmark UK legislation designed to transition to a cleaner, more secure, and affordable homegrown energy system. It aims to unlock £100 billion in private investment, support 480,000 jobs by 2030, and meet net-zero commitments

Net Zero Strategy: Build Back Greener (updated 2022)

- 4.26 The Net Zero Strategy (Build Back Greener), was published on 19 October 2021 and last updated in April 2022. It sets out a series of policies and commitments designed to enable the UK to reach net zero by 2050, including:
- Fully decarbonise the power system by 2035;
 - Deliver four carbon capture, usage, and storage (CCUS) clusters by 2030, capturing 20–30 MtCO₂ per year across the economy;
 - targeting £40 billion of private investment (specifically through the UK Infrastructure Bank) and up to £90 billion by 2030 to unlock green growth; and
 - Adherence to legally binding five-year carbon budgets to track progress toward the 2050 goal.

Transitioning to a Net Zero Energy System: Smart Systems and Flexibility Plan (2021)

- 4.27 This outlines a vision for a smart and flexible electricity system in the UK, essential for achieving net-zero emissions. It focuses on leveraging smart technologies and flexibility to integrate low-carbon energy sources like renewables.
- 4.28 The plan, a joint effort by the UK government and Ofgem, emphasizes the need for consumers to shift energy consumption patterns and for the grid to utilize smart technologies for storage and demand-side response, including powerful computers in substations, to analyse data and reconfigure the network to handle increased electricity flow, especially from renewable sources.

- 4.2.9 By optimizing substation capacity, the plan aims to facilitate the integration of more renewable energy into the system.

Climate Change Act 2008

- 4.2.10 The Climate Change Act 2008 (amended in 2019) set long-term statutory targets for the UK to achieve greenhouse gas reductions of 100% by 2050.
- 4.2.11 The Seventh Carbon Budget (covering 2038–2042) was formally legislated in the UK on 24 June 2026. This budget establishes a legally binding target to reduce greenhouse gas emissions by approximately 87% from 1990 levels during the period from 2038 to 2042.

Progress in Reducing Emissions - 2025 Report to Parliament

- 4.2.12 The Climate Change Committee's 2025 report to UK Parliament highlight major progress in decarbonising electricity via renewables and EVs, but stresses urgent need for action in buildings (heat pumps), industry, and land use, recommending cheaper electricity, better policy for adaptation, and significant investment in grid infrastructure to handle renewables and electrification, stating the Net Zero target is deliverable but requires consistent, enhanced government effort, with adaptation efforts currently too slow.

The Clean Power 2030 Action Plan (2024)

- 4.2.13 The Clean Power 2030 Action Plan (published December 2024) identifies electrical substations as a critical component of the urgent, "once-in-a-generation" upgrade required for the UK's energy infrastructure. To accelerate the expansion and upgrade of transmission and distribution networks, the plan outlines specific regulatory and planning reforms aimed at easing the deployment of these facilities. The government plans to engage with the Ministry of Housing, Communities and Local Government (MHCLG) to provide further flexibilities for the consenting of electrical substations in order to reduce delays in the planning process. An improved planning environment is designed to speed up the delivery of approximately twice as much new transmission network infrastructure by 2030 as was built in the previous decade.
- 4.2.14 Great Britain's electricity network must undergo unprecedented expansion, as the economy electrifies, to deliver decarbonisation, energy affordability and energy security, and support economic growth. To connect new generation and meet future demand, around twice as much new transmission network infrastructure will be needed in Great Britain by 2030 as has been delivered in the past decade

British Energy Security Strategy (2022)

- 4.2.15 The UK's British Energy Security Strategy, launched in 2022 and aims to boost energy independence, security, and affordability by rapidly scaling domestic, clean energy sources like wind, solar, nuclear, and hydrogen, while reducing reliance on volatile global markets and Russian fossil fuels. Key pillars include massive investment in renewables (offshore wind, solar), developing nuclear and hydrogen, improving energy efficiency, and streamlining approvals, all under the new Department for Energy Security and Net Zero to meet 2050 net-zero targets.
- 4.2.16 The Strategy states that accelerating our domestic supply of clean and affordable electricity also requires accelerating the connecting network infrastructure to support it.

National Energy System Operator - Pathway to 2030 (2022)

- 4.217 This is a plan for Great Britain to achieve a secure, affordable, and low-carbon electricity system by 2030, focusing on massive renewable energy expansion (wind/solar), grid modernization, demand flexibility, and significant grid connection reforms to unblock stalled projects. It outlines two main strategies, emphasizing increased flexibility, digital infrastructure, and a massive scale-up of clean power to reduce reliance on gas and meet net-zero goals, requiring urgent action and investment in storage and skills.
- 4.218 The plan identifies a critical need to significantly upgrade Great Britain's transmission infrastructure and supports the UK-wide 50GW and Scottish 11GW offshore wind targets by 2030, necessitating over £54 billion in network investment to connect renewable energy.

Transitioning to a Net Zero Energy System: Smart Systems and Flexibility Plan (2021)

- 4.219 This outlines a vision for a smart and flexible electricity system in the UK, essential for achieving net-zero emissions. It focuses on leveraging smart technologies and flexibility to integrate low-carbon energy sources like renewables.
- 4.220 The plan, a joint effort by the UK government and Ofgem, emphasizes the need for consumers to shift energy consumption patterns and for the grid to utilize smart technologies for storage and demand-side response, including powerful computers in substations, to analyse data and reconfigure the network to handle increased electricity flow, especially from renewable sources.
- 4.221 The plan states that significant volumes of additional generation and demand will be added to our electricity system over the next few decades, and we will need major upgrades to our energy networks to transport the generation to consumers.

Overarching National Policy Statement for energy (EN-1)

- 4.222 This is a UK government document which came into force in January 2026 (revised) and provides the primary policy framework for examining and consenting nationally significant energy infrastructure projects.
- 4.223 It accelerates the UK's transition to a 95% clean electricity system by 2030, prioritizing urgent, large-scale, low-carbon infrastructure. It establishes a "*presumption in favour of consent*" for projects aligned with the Centralised Strategic Network Plan (CSNP), positioning energy infrastructure as a Critical National Priority (CNP) to meet net-zero 2050.
- 4.224 The Statement declares an "*urgent need*" for massive electricity transmission network upgrades to meet net-zero targets, classifying these reinforcements as "*Critical National Priority*" (CNP) infrastructure. The policy emphasizes that "*demand for electricity is likely to increase significantly... and could more than double by 2050*".

National Policy Statement for Renewable Energy Infrastructure (EN-3)

- 4.225 The National Policy Statement for Renewable Energy Infrastructure (EN-3) is a UK government document that provides the primary basis for planning decisions (development consent) for nationally significant renewable energy projects in England and Wales. The 2025 revised version,

which came into force on January 6, 2026, was updated to align with Net Zero targets and speed up infrastructure deployment.

- 4.226 The Statement states that Electricity generation from renewable sources is an essential element of the transition to Clean Power 2030 Mission, net zero and meeting our statutory targets for the sixth carbon budget (CB6). Our analysis suggests that demand for electricity is likely to increase significantly over the coming years and could more than double by 2050. This could require a fourfold increase in low carbon electricity generation, with most of this likely to come from renewables.

National Policy Statement for Electricity Networks Infrastructure (EN-5)

- 4.227 The National Policy Statement for Electricity Networks Infrastructure (EN-5) is the primary planning guidance for deciding on "*nationally significant*" electricity grid projects in England and Wales. The revised version officially came into force on 6 January 2026. It emphasizes the urgent need for new network infrastructure to support 2030 Clean Power targets, directing decision-makers to balance environmental, social, and cost factors.
- 4.228 The Statement states that a "*significant amount of new network infrastructure is required in the near term*" to achieve net-zero targets and the 2030 clean power mission. It establishes that, because "*without the development of the necessary networks... the Clean Power 2030 Mission cannot be achieved*".

Scottish Government Legislation and Policy

Climate Change (Scotland) Act 2009

- 4.229 The Climate Change (Scotland) Act 2009 established Scotland's pioneering legal framework for tackling climate change, setting mandatory targets (initially 80% reduction by 2050, later Net Zero by 2045), creating carbon budgets, requiring public bodies to act sustainably, and mandating adaptation planning, all underpinned by advice from an independent body (the Scottish Committee on Climate Change) and regular government reporting to Parliament.
- 4.230 The Climate Change (Scotland) Act 2009 was subsequently amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 to set a more ambitious target of net-zero emissions by 2045. The 2019 Act also set interim targets for 2020, 2030 and 2040. The Climate Change (Emissions Reduction Targets) (Scotland) Act 2024 further amended the 2009 Act, removing the interim targets and replacing them with a system of targets based on carbon budgets which are to be set every five years, while still retaining the 2045 net zero emissions target.

Green Industrial Strategy (2024)

- 4.231 Scotland's Green Industrial Strategy (GIS) highlights grid modernization, including substations, as crucial for its net-zero goals, focusing on unlocking massive private investment (billions) by upgrading transmission networks and strengthening connections to support offshore wind, hydrogen, and other clean energy growth, ensuring a future-ready system for economic benefits and energy independence The strategy aims to increase clean energy investment.

- 4.232 The document states that “we are working with the UK Government to enable a faster, more efficient, and strategic approach to designing and regulating the net zero energy system, in particular for accelerating grid connections and network build.” and “timely grid connections and strengthened grid infrastructure will be key to securing renewables project delivery and investor and supply chain confidence in Scotland”.

Draft Energy Strategy and Just Transition Plan (2023)

- 4.233 Scotland's January 2023 "Draft Energy Strategy and Just Transition Plan" outlined a vision for a clean, affordable energy system by 2045, focusing on massive renewable expansion, increasing energy exports, reducing fossil fuels, and ensuring a fair transition for workers and communities through significant investment in local projects, job creation, and tackling fuel poverty, all while seeking public input to achieve net-zero goals and economic benefits. Key goals included adding 20 GW of renewables by 2030 and 5 GW of hydrogen by 2030, alongside supporting vulnerable households.

Scotland's Energy Strategy Position Statement (2021)

- 4.234 The Position Statement was published in March 2021 and outlines the Scottish Government's vision for the energy system in Scotland,
- 4.235 The Statement confirms the Scottish Government's commitment to achieving net-zero greenhouse gas emissions by 2045, with a 75% reduction by 2030. It outlines a green, fair recovery from COVID-19, focusing on accelerating renewable energy (especially offshore wind), decarbonising heat in buildings, establishing a hydrogen economy, and ensuring a just transition for the workforce.

The Climate Emergency (2019)

- 4.236 A critical part of the response to the challenge of climate change was the Climate Emergency which was declared by the Scottish Government in April 2019 and by the UK Parliament in May 2019. The declaration of Climate Emergency needs to be viewed in the context in which it was declared (advice from the Climate Change Committee) and in response to commitments under the Paris Agreement and what followed from it as a result of the declaration (new emissions reduction law).
- 4.237 This declaration was followed by the passage of the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.
- 4.238 The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 195 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016. Its overarching goal is to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. However, in recent years, world leaders have stressed the need to limit global warming to 1.5°C by the end of this century.

A Vision for Scotland's Electricity and Gas Networks 2019-2030 (2019)

- 4.239 The document outlines how Scotland's energy infrastructure must transform to meet ambitious Energy Strategy targets for 2030 and beyond.
- 4.240 The vision is built on three fundamental principles to ensure the energy transition is effective and fair:

- Whole System View: Coordinating heat, transport, and electricity to ensure efficient decarbonisation;
- Inclusive Transition: Protecting vulnerable consumers and ensuring the benefits of low-carbon energy are universal; and
- Smarter Local Models: Supporting innovative, community-led energy systems that reward local flexibility.

4.2.41 Electricity Network objectives include building a secure and resilient high-voltage network.

Securing a green recovery on a path to net zero: climate change plan 2018–2032 - update

4.2.42 The "Securing a green recovery on a path to net zero: climate change plan 2018–2032 - update" outlines Scotland's 2020 strategy to meet a 75% emission reduction by 2030 and net-zero by 2045.

4.2.43 It aligns COVID-19 recovery with climate goals, featuring over 100 policies across sectors like transport, energy, and buildings to ensure a just, green transition

The Scottish Energy Strategy: The Future of Energy in Scotland (2017)

4.2.44 The Scottish Energy Strategy ('SES') was published in December 2017 and sets out the Scottish Governments vision for the future energy system in Scotland up to 2050.

4.2.45 The SES states that the UK Government holds a number of key powers that will be vital to our net zero transition, including fiscal and pricing elements of emissions trading, decisions on the future of the gas grid, investment in electricity network infrastructure, regulation on energy networks, vehicle standards and regulation of renewable energy investment.

4.2.46 The strategy also highlights the importance of developing smart grid systems and local energy markets to enhance flexibility and resilience in the energy system.

4.3 Development Plan

4.3.1 Under Section 25 of the Principal Act, planning applications must be determined in accordance with the statutory Development Plan applicable to the site of a Proposed Development, unless material considerations indicate otherwise.

4.3.2 The statutory Development Plan for Fife Council (FC) comprises:

- National Planning Framework 4 (NPF4) – adopted 13 February 2023; and
- Fife's Local Development Plan – FIFEplan (adopted September 2017).

4.3.3 Section 24(3) of the Town and Country Planning (Scotland) Act 1997 provides that in the event of any incompatibility between a provision of the National Planning Framework and a provision of a local development plan, whichever of them is the later in date is to prevail.

- 4.3.4 FC is currently preparing a new Local Development Plan (LDP2), which will replace FIFEplan. The Council are currently gathering evidence and undergoing consultations. LDP2 is scheduled for adoption in 2028/2029.
- 4.3.5 The Council also have a number of Supplementary Planning Documents (SPD). Those of relevance to the proposal are as follows:
- Low Carbon Fife Supplementary Guidance (2019);
 - Minerals Supplementary Guidance (2018);
 - Making Fife's Places Supplementary Guidance (2018); and
 - Trees and Development Guidance (adopted date unknown).
- 4.3.6 The relevant Development Plan policies are identified and summarised below.

National Planning Framework 4

- 4.3.7 From 13 February 2023, Scotland's fourth National Planning Framework (NPF4) forms part of the statutory Development Plan.
- 4.3.8 Annex B (National Developments Statement of Need) of NPF4 identifies 18 national developments that will support the delivery of the spatial strategy. These are significant developments of national importance, which are to be considered as a national development for consent handling purposes. This includes 'Strategic Renewable Electricity Generation and Transmission Infrastructure', which is outlined under Section 3 of Annex B, and states that this national development supports renewable electricity generation, repowering, and expansion of the electricity grid.

Relevant Policy

- 4.3.9 Policy 1 (Tackling the climate and nature crises) seeks to encourage, promote and facilitate development that addresses the global climate emergency and nature crisis.
- 4.3.10 Policy 2 (Climate mitigation and adaptation) seeks to encourage, promote and facilitate development that minimises emissions and adapts to the current and future impacts of climate change. It states that development proposals will be sited and designed to minimise lifecycle greenhouse gas emissions as far as possible and adapt to current and future risks from climate change.
- 4.3.11 Policy 3 (Biodiversity) states that National Development, or for development that requires an EIA will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention. This will include future management. To inform this, best practice assessment methods should be used.
- 4.3.12 Policy 4 (Natural places) seeks to protect, restore and enhance natural assets making best use of nature-based solutions. Development proposals that affect a site designated as a local nature conservation site or landscape area in the Local Development Plan will only be supported under certain circumstances.

- 4.3.13 Policy 5 (Soils) seeks to protect carbon-rich soils, restore peatlands and minimise disturbance to soils from development.
- 4.3.14 Policy 6 (Forestry, woodland and trees) seeks to protect and expand forests, woodland and trees.
- 4.3.15 Policy 11 (Energy) states that development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported including enabling works, such as grid transmission and distribution infrastructure. Development proposals will only be supported where they maximise net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities. In addition, project design and mitigation will demonstrate how the following impacts are addressed:
- *“i. impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;*
 - *ii. significant landscape and visual impacts, recognising that such impacts are to be expected for some forms of renewable energy. Where impacts are localised and/or appropriate design mitigation has been applied, they will generally be considered to be acceptable;*
 - *iii. public access, including impact on long distance walking and cycling routes and scenic routes;*
 - *iv. impacts on aviation and defence interests including seismological recording;*
 - *v. impacts on telecommunications and broadcasting installations, particularly ensuring that transmission links are not compromised;*
 - *vi. impacts on road traffic and on adjacent trunk roads, including during construction;*
 - *vii. impacts on historic environment;*
 - *viii. effects on hydrology, the water environment and flood risk;*
 - *ix. biodiversity including impacts on birds;*
 - *x. impacts on trees, woods and forests;*
 - *xi. proposals for the decommissioning of developments, including ancillary infrastructure, and site restoration;*
 - *xii. the quality of site restoration plans including the measures in place to safeguard or guarantee availability of finances to effectively implement those plans; and*
 - *xiii. cumulative impacts.*
- In considering these impacts, significant weight will be placed on the contribution of the proposal to renewable energy generation targets and on greenhouse gas emissions reduction targets.”*
- 4.3.16 Policy 12 (Zero Waste) states that development proposals will seek to reduce, reuse, or recycle materials in line with the waste hierarchy.
- 4.3.17 Policy 13 (Sustainable transport) outlines that proposals to improve, enhance or provide active travel infrastructure, public transport infrastructure or multi-modal hubs will be supported. Development proposals will be supported where it can be demonstrated that the transport requirements generated have been considered in line with the sustainable travel and investment hierarchies.

- 4.3.18 Policy 14 (Design, quality and place) states that development proposals will be supported where they are consistent with the six qualities of successful places, as of which are expanded upon at Annex D within NPF4.
- 4.3.19 Policy 18 (Infrastructure first) seeks to encourage, promote and facilitate an infrastructure first approach to land use planning, which puts infrastructure considerations at the heart of placemaking.
- 4.3.20 Policy 22 (Flood risk and water management) seeks to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding.
- 4.3.21 Policy 23 (Health and safety) seeks to protect people and places from environmental harm, mitigate risks arising from safety hazards and encourage, promote and facilitate development that improves health and wellbeing.
- 4.3.22 Policy 25 (Community Wealth Building) states that Development proposals which contribute to local or regional community wealth building strategies and are consistent with local economic priorities will be supported.
- 4.3.23 Policy 29 (Rural Development) states that development proposals in rural areas should be suitably scaled, sited and designed to be in keeping with the character of the area. They should also consider how the development will contribute towards local living and take into account the transport needs of the development as appropriate for the rural location.

FIFEplan

- 4.3.24 The relevant FIFEplan (2017) policies are identified and summarised below.
- 4.3.25 Part A of Policy 1 (Development Principles) states that the principle of development will be supported if it is either:
- *“within a defined settlement boundary and compliant with the policies for the location; or*
 - *in a location where the proposed use is supported by the Local Development Plan.”*
- 4.3.26 Part B of Policy 1 states that development proposals must address their development impact by complying with the following relevant criteria and supporting policies, where relevant (relevant policy points identified only):
- *“Mitigate against the loss in infrastructure capacity caused by the development by providing additional capacity or otherwise improving existing infrastructure;*
 - *Avoid the loss of valuable cultural, tourism, and community resources;*
 - *In the case of proposals in the countryside or green belt, be a use appropriate for these locations; and*
 - *Protect sport and recreation facilities and the amenity of the local community and businesses.”*
- 4.3.27 Part C of Policy 1 states that development proposals must be supported by information or assessments to demonstrate that they will comply with the following relevant criteria and supporting policies, where relevant:

- *“Provide required on-site infrastructure or facilities, including transport measures to minimise and manage future levels of traffic generated by the proposal;*
- *Provide measures that implement the waste management hierarchy as defined in the Zero Waste Plan for Scotland;*
- *Provide green infrastructure as required in settlement proposals and identified in the green network map;*
- *Provide sustainable urban drainage systems;*
- *Meet the requirements of any design briefs or development frameworks prepared or required for the site;*
- *Provide a layout and design that demonstrates adherence to the six qualities of successful places;*
- *Provide for energy conservation and generation in the layout and design; and*
- *Contribute to achieving the area’s full potential for electricity and heat from renewable sources.”*

4.328 Policy 3 (Infrastructure and Services) states that development must be designed and implemented in a manner that ensures it delivers the required level of infrastructure and functions in a sustainable manner. Development proposals will not be supported where they would result in:

- *“the loss of existing or proposed open space, including allotments, unless –*
- *equivalent or better alternative provision will be provided in a location that is convenient for users; or*
- *the Council accepts there is local overprovision.”*

4.329 Policy 7 (Development in the Countryside) outlines that development in the countryside will only be supported where it:

- *“is required for agricultural, horticultural, woodland, or forestry operations;*
- *will diversify or add to the above land-based businesses to bring economic support to the existing business;*
- *is for the extension of established businesses;*
- *is for small-scale employment land adjacent to settlement boundaries, excluding green belt areas, and no alternative site is available within a settlement boundary which contributes to the Council’s employment land supply requirements;*
- *is for facilities for access to the countryside;*
- *is for facilities for outdoor recreation, tourism, or other development which demonstrates a proven need for a countryside location; or*
- *is for housing in line with Policy 8 (Houses in the Countryside).”*

4.330 In all cases, development must:

- *“be of a scale and nature compatible with surrounding uses;*

- *be well-located in respect of available infrastructure and contribute to the need for any improved infrastructure; and*
- *be located and designed to protect the overall landscape and environmental quality of the area.”*

4.3.31 Policy 10 (Amenity) states that development will only be supported if it does not have a significant detrimental impact on the amenity of existing or proposed land uses. Development proposals must demonstrate that they will not lead to a significant detrimental impact on amenity in relation to.

1. Air quality, with particular emphasis on the impact of development on designated Air Quality Management Areas (see below);
2. Contaminated and unstable land, with particular emphasis on the need to address potential impacts on the site and surrounding area;
3. Noise, light, and odour pollution and other nuisances, including shadow flicker from wind turbines;
4. Traffic movements;
5. The loss of privacy, sunlight, and daylight;
6. Construction impacts;
7. The visual impact of the development on the surrounding area;
8. The loss of outdoor sports facilities, open space, green networks, protected trees, and woodland;
9. Impacts on the operation of existing or proposed businesses and commercial operations; and
10. Impacts on operation of existing or proposed waste management facilities.

4.3.32 Where potential amenity issues are identified in the relevant settlement proposals tables or are identified as part of the assessment of the impact of a development proposal, the relevant mitigation measures will be required to be implemented by the developer to an agreed timetable and specification.

4.3.33 Policy 11 (Low Carbon Fife) states that planning permission will only be granted for new development where it has been demonstrated that:

- *“The proposal meets the current carbon dioxide emissions reduction target (as set out by Scottish Building Standards), and that low and zero carbon generating technologies will contribute at least 15% of these savings from 2016 and at least 20% from 2020;*
- *Construction materials come from local or sustainable sources;*
- *Water conservation measures are in place;*
- *Sustainable urban drainage measures will ensure that there will be no increase in the rate of surface water run-off in peak conditions or detrimental impact on the ecological quality of the water environment; and*
- *All development should encourage and facilitate the use of sustainable transport appropriate to the development.”*

- 4.3.34 Policy 12 (Flooding and the Water Environment) outlines that development proposals will only be supported where they can demonstrate that they will not, individually or cumulatively:
- *“Increase flooding or flood risk from all sources (including surface water drainage measures) on the site or elsewhere;*
 - *Reduce the water conveyance and storage capacity of a functional flood plain;*
 - *Detrimentially impact on ecological quality of the water environment, including its natural characteristics, river engineering works, or recreational use; and*
 - *Detrimentially impact on future options for flood management.”*
- 4.3.35 Policy 13 (Natural Environment and Access) states that development proposals will only be supported where they protect or enhance natural heritage and access assets including:
- *“designated sites of international and national importance, including Natura 2000 sites and Sites of Special Scientific Interest (see Site Appraisal Process below);*
 - *designated sites of local importance, including Local Wildlife Sites, Regionally Important Geological Sites, and Local Landscape Areas;*
 - *woodlands (including native and other long established woods), and trees and hedgerows that have a landscape, amenity, or nature conservation value;*
 - *biodiversity in the wider environment;*
 - *protected and priority habitats and species;*
 - *landscape character and views;*
 - *carbon rich soils (including peat);*
 - *green networks and greenspaces; and*
 - *core paths, cycleways, bridleways, existing rights of way, established footpaths and access to water-based recreation.”*

4.4 National Planning Guidance, Advice and Circulars

- 4.4.1 National planning policy is supported by numerous Scottish Government Planning Circulars, Planning Advice Notes (PAN), Advice Sheets, Ministerial/Chief Planner Letters to Planning Authorities, as well as guidance documents prepared by Key Agencies of the Scottish Government.
- 4.4.2 Annex A to Scottish Government Planning Circular 3/2022: Development Management Procedures confirms that amongst other considerations, the types of documents listed below are all potential material considerations in the determination of a planning application depending on the individual context of the case.
- 4.4.3 Scottish Government PAN, which set out detailed advice in relation to relevant planning issues are:
- PAN 79: Water and Drainage (2006);
 - PAN 3/2010: Community Engagement (2010);
 - PAN 1/2011: Planning and Noise (2011);

- PAN 1/2013: Environmental Impact Assessment Regulations (2017); and
- Planning Guidance: Biodiversity (2025).

4.5 Summary

- 4.5.1 This chapter has set out the relevant statutory provisions and policy context against which the Proposed Development will be assessed from an environmental impact perspective. Policy assessments relevant to each EIA discipline are presented in **Chapters 6–11**.
- 4.5.2 The EIAR has considered all relevant policy in full and demonstrates that where adverse impacts are identified these can be appropriately mitigated.
- 4.5.3 The Applicant has also considered and sought to integrate the principles set out within other relevant planning guidance into the development design.
- 4.5.4 A separate Planning Statement, which does not form part of the EIAR, provides a detailed assessment of the proposal against the Development Plan and other material considerations.

Chapter 05: Need, Alternatives and Design

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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5. Need, Alternatives and Design Evolution

5.1 Need

- 5.1.1 The 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.
- 5.1.2 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.
- 5.1.3 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.

Need for TKUP

- 5.1.4 The principal driver for TKUP is the requirement to reinforce the transmission network to accommodate increasing power flows from renewable and low-carbon generation, reduce network constraints and support security of supply. The reinforcement has been identified as a CP2030 project and is required to support the timely delivery of wider electricity system objectives.

Role of the Overhead Line Works

- 5.1.5 The overhead line performs the primary strategic transfer function within TKUP. By uprating the existing line to operate at 400kV, it provides the transmission path through which power can be moved across the country and through which generation from surrounding areas can be collected and transferred onto the wider network. Its role is therefore to increase the carrying capability of an established transmission corridor, support higher north-to-south power flows and collect and transmit the wider system connectivity and generation needs associated with the substations.
- 5.1.6 This overhead line element is not a new linear route. It is an uprating of an existing 275kV overhead line to 400kV operation, with the principal physical changes being related to the conductors, insulators and associated fittings, together with alterations required to connect the line into the new 400kV substations at Conland, Westfield and Mossmorran.

- 5.1.7 The Westfield substation will also serve Eastern Green Link 4 ('EGL4'). EGL4 is a major electricity transmission project being developed by SPEN and National Grid, comprising a 2GW high-voltage direct current (HVDC) subsea link between Fife in Scotland and Norfolk in England. The project is designed to increase the capacity of the UK transmission network, enabling more renewable electricity generated in Scotland to be transported to areas of high demand across Great Britain. EGL4 will support the transition to a cleaner energy system while improving grid resilience, flexibility and long-term energy security.
- 5.1.8 EGL4 is planned to connect into Westfield 400kV substation, and that connection requires the extension to be completed timeously to ensure Westfield will be available in sufficient time to support load testing and staged commissioning. The timely delivery of Westfield is therefore a key programme requirement, alongside the wider TKUP need to establish a 400kV transmission corridor through the east of Scotland.

Role of the Individual Substations

- 5.1.9 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.
- 5.1.10 **Westfield substation extension** is a critical transmission hub for the east of Scotland. It 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.
- 5.1.11 **Mossmorran substation extension** is required to: (i) establish connectivity as part of the wider TKUP system, (ii) facilitate and enable contracted and consented renewable generation connections of 500MW by 2031/2032 that would otherwise be unable to connect, and (iii) provide a strategic 400kV node. Its delivery is therefore important not only for TKUP as a whole, but also for the progression of local and regional clean power connections.
- 5.1.12 **Conland substation** is required to: (i) support higher-voltage system connectivity with the SSEN Transmission network and wider SP Transmission system, (ii) ensure security of supply is maintained to the Glenrothes grid when the transmission system is uprated to 400kV, (iii) support the wider SPT transmission system, and (iv) provide capacity for connection of potential future renewable and low-carbon generation projects. Conland therefore performs an important system role as part of the reinforced corridor and as a network node serving wider operational requirements.

Need for the Westfield Substation

- 5.1.13 The principal driver for TKUP is the requirement to reinforce the transmission network to accommodate increasing power flows from renewable and low-carbon generation, reduce network constraints and support security of supply. The reinforcement has been identified as a CP2030 project and is required to support the timely delivery of wider electricity system objectives.

- 5.1.14 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 upgrading were not ultimately consented for 400kV operation, SPT would retain a need for transmission infrastructure at this location.
- 5.1.15 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.

5.2 Site Selection and Alternatives

- 5.2.1 The site selection process has been undertaken in accordance with Regulation 5 (2) (d) and Schedule 4, paragraph 2 of the EIA Regulations, which requires a description of reasonable alternatives studied and the reasons for selecting the chosen option. Regulation 5 (2) (d) and Schedule 4, paragraph 2 of the EIA Regulations, where Schedule 4, paragraph 2 states that:
- “A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.”*
- 5.2.2 An environmentally led site selection was undertaken to consider the potential extension to Westfield Substation and to identify the most appropriate location for the extension, taking into account known environmental considerations and technical considerations identified by SPEN, alongside considerations of economic viability and deliverability. The site selection process considered the requirements of the Horlock Rules, which provide guidelines for the siting and design of new substations, or substation extensions, to avoid or reduce the environmental effects of such developments. The Horlock Rules require the consideration of the overall system options and site selection; amenity, cultural or scientific value of sites; local context, land use and site planning; and design.
- 5.2.3 The guidelines set out in the Holford Rules – including the recommendation that, *“when siting substations, due account shall be taken of the effects of the terminal towers and line-connection works required, and wherever practicable screening through ground form or vegetation should be used”* - have also been considered in the site selection and design process for the substation extension.
- 5.2.4 The consideration of alternatives for the proposed development has been undertaken through a structured process:
- Identification of the Area of Search, defined primarily by operational and electrical engineering requirements associated with the existing transmission network; and

- Assessment of Site Suitability, whereby the preferred technically feasible location has been evaluated against environmental, planning and deliverability considerations to confirm its appropriateness.

- 5.2.5 This approach reflects established practice for transmission infrastructure projects, where technical and safety requirements of the electricity network are often a primary determinant of location before environmental considerations are appraised.
- 5.2.6 Accordingly, the sections below set out the Technical, Environmental and Economic considerations relating to the site for the proposed development.
- 5.2.7 The initial basis for considering the proposed substation extension was the requirement for a site area of approximately 1 hectare (100m x 100m). The development requires a level platform, typically constructed from cast concrete and enclosed by perimeter fencing.
- 5.2.8 As the design progressed, the required area increased to accommodate the full 400 kV substation infrastructure such as increased GIS building size, earthworks, access arrangements, drainage, operational clearances, utility diversions. The resulting development envelope therefore expanded to ensure sufficient space for the assets associated with the Westfield 400 kV extension

‘No Development’ Scenario

- 5.2.9 A ‘do nothing’ scenario was considered as an alternative. Under this scenario, no reinforcement of the network would take place in the Fife area, and the existing Westfield Substation and associated OHL network would continue to operate at current capacity. This would fail to address the identified need to uprate the network to maintain security of supply, meet demand, and ensure compliance with technical standards. Therefore, from a strategic network perspective, the ‘do nothing’ option is not considered a reasonable or sustainable alternative.

Establishing the Area of Search

Technical Requirements

- 5.2.10 The need for the proposed development arises from reinforcement requirements within the existing transmission network and the operational need to expand capacity at Westfield Substation. The defining constraint influencing site selection is the requirement to integrate directly with the existing overhead line (OHL) transmission infrastructure and associated switching arrangements.
- 5.2.11 In particular, the extension requires connections to the existing transmission network via the existing overhead line networks which converge at the site for YS and YJ Routes. located immediately to the west of the existing substation. This requirement arises from the configuration of the live transmission circuits and the need to maintain continuity, safety clearances and operational resilience during both construction and operation.
- 5.2.12 This approach is consistent with SPEN’s statutory duty under the Electricity Act 1989 to develop and maintain an efficient, co-ordinated and economical system of electricity transmission.
- 5.2.13 n. Connection at an alternative location would require substantial diversion of existing high-voltage OHL infrastructure, introduction of additional terminal towers and lengths of OHL, extended outages, and significant additional engineering works. Such works would introduce increased

environmental effects, higher cost, longer delivery programmes and increased risk to network security.

- 5.2.14 These operational requirements mean that proximity to the existing substation and direct alignment with, or close proximity to both YJ Route and YS Route are fundamental design parameters rather than locational preferences. Consequently, the realistic area of search is confined to land immediately adjacent to the existing Westfield Substation facility.

Identification and Assessment of the Preferred Site

- 5.2.15 Having established the technically feasible area of search, alternative land parcels within and adjacent to this area were reviewed to identify the most suitable location for the extension.
- 5.2.16 The existing Westfield Substation is surrounded by operational OHL infrastructure which limits expansion opportunities in some directions. Land to the east and south is constrained by existing transmission infrastructure and operational clearances, while land to the north is constrained by the B9097 corridor and surrounding land uses. As shown on **Figure 12.1**, the proposed EGL4 project is also located in close proximity, being in close proximity to the east.
- 5.2.17 Within the defined area of search, therefore, the land immediately west of the existing substation was identified as the preferred option as it:
- Enables direct connection to YJ Route and YS Route where they converge without additional diversion works;
 - Allows an offline construction approach, minimising disruption to the operational network;
 - Provides sufficient space for construction, drainage and mitigation measures;
 - Does not potentially impact the location of the EGL4 project; and
 - Maintains operational separation between existing and new infrastructure.
- 5.2.18 Micrositing within this western area considered existing vegetation, drainage features, local topography, and opportunities for screening in accordance with the Horlock and Holford Rules. However, given the location of the YS and YJ towers at their closest points to one another, and the location of the road, there were not many options for refinement, and an area which extends west and south-west represented the only realistically feasible option.
- 5.2.19 The selection of this site therefore represents an optimisation exercise within a technically constrained search area, rather than a comparison between geographically separate alternative sites. It also looks to review this location from an environmental and planning perspective.

5.3 The Former Westfield Opencast Mine Employment Area

- 5.3.1 The Former Westfield Opencast Mine Employment Area was reviewed as a potential alternative location following comments received within Fife Council's pre-application response. The site lies relatively close to the existing Westfield Substation and was therefore considered by the Council as an appropriate comparator to test whether a reasonable alternative location existed outwith the preferred western extension area.

- 5.3.2 In accordance with SP Energy Networks' Approach to Routeing and Environmental Impact Assessment, the identification of a preferred substation location requires a balanced consideration of technical, environmental and economic factors, alongside the licence obligations placed on SPT as transmission operator to develop, maintain and operate an efficient, co-ordinated and economical system under Section 9(2) of the Electricity Act 1989. Within this legislative framework, a new substation site immediately adjacent to the existing Westfield substation and existing line entries represents a more optimal solution than the alternative Former Westfield Opencast Mine Employment Area identified within the FifePlan Local Development Plan.
- 5.3.3 Co-locating new infrastructure beside established high-voltage assets is consistent with established industry routeing and siting principles, including the Holford Rules, which emphasise the need to minimise additional landscape and visual effects through alignment with existing transmission corridors. Similarly, the Horlock Rules, which guide the siting of substations, support the consolidation of associated infrastructure to reduce incremental environmental impacts and avoid the introduction of new visual and land-use footprint in previously unaffected areas. The adjacency of the proposed site to existing grid infrastructure minimises the requirement for new overhead line deviations, earthworks and access infrastructure, thereby lowering potential environmental disturbance and construction impacts, in line with SPEN's commitment to achieving an appropriate balance of environmental, technical and economic considerations. Furthermore, the utilisation of a site directly connected to existing transmission assets improves engineering efficiency, shortens connection distances and reduces future operational complexity, supporting SPT's licence duty to ensure network reinforcements are both technically robust and economic for consumers.
- 5.3.4 In addition, whilst the proposed substation would be industrial in appearance, it would be unmanned for the majority of its operational life, with personnel visits only likely for periodic maintenance or to address a fault. In this respect it would not align with the intent of the Fifeplan Local Plan policy 5: Employment and Property.
- 5.3.5 The review appraised the location in terms of how it performed against technical, environmental and deliverability criteria. The assessment drew upon available British Geological Survey (BGS) mapping, SEPA datasets, historic mapping records and published information relating to former opencast operations, together with engineering considerations specific to electricity transmission infrastructure.
- 5.3.6 Although the Former Westfield Opencast Mine Employment Area site benefits from a previously developed character and employment allocation, the engineering requirements of a high-voltage transmission substation differ significantly from typical commercial or industrial development. Substation platforms require stable ground conditions to maintain precise alignment tolerances for electrical equipment, minimise differential settlement, and ensure long-term operational reliability over an anticipated lifespan of decades. Consequently, ground certainty and predictable geotechnical performance are critical site selection factors.
- 5.3.7 The principal constraint associated with the former opencast site relates to ground conditions arising from historic extraction and restoration activities. Opencast mining typically results in extensive areas of reworked and backfilled material, often comprising made ground of variable composition, thickness and compaction. Such ground conditions can exhibit unpredictable settlement behaviour and may contain voids or weak zones. For development requiring heavy electrical plant and rigid structural tolerances (such as the proposed development), these

- conditions introduce elevated risks of differential settlement, structural distortion and increased maintenance requirements over time.
- 5.3.8 Development at this location would therefore be likely to require substantial ground investigation, potential excavation and replacement of unsuitable material, or adoption of engineered foundation solutions such as deep piling or ground improvement techniques. These measures would introduce additional construction complexity and extended programme durations compared with development on more naturally stable ground.
 - 5.3.9 Hydrological and hydrogeological considerations represent a further potential constraint. Former quarry and opencast sites frequently exhibit altered groundwater regimes resulting from excavation below natural ground levels and subsequent infilling. At the former Westfield opencast site, the presence of standing waterbodies and mapped indications of elevated groundwater levels suggest that groundwater control measures may be required during construction, alongside permanent drainage infrastructure during operation.
 - 5.3.10 For transmission infrastructure, which typically requires a self-draining and resilient platform capable of operating without reliance on active management systems, such conditions introduce long-term operational risk. The potential need for ongoing pumping or engineered drainage solutions would reduce operational resilience and increase maintenance requirements when compared with the preferred site.
 - 5.3.11 Additional potential constraints associated with former extraction sites include the presence of residual contamination, ground gases, and significant level variations across the site. While these matters could potentially be addressed through further investigation and mitigation, they collectively introduce uncertainty at an early stage of project development and reduce confidence in programme certainty and deliverability.
 - 5.3.12 When considered alongside the technical requirement to connect efficiently to existing transmission infrastructure, the former opencast employment area was not considered provide the same engineering or operational advantages as the preferred western extension site. Development at the quarry location would likely necessitate additional infrastructure works, increased lengths of new OHL and terminal towers, increased earthworks and more complex foundation solutions, resulting in greater environmental disturbance and higher delivery risk.
 - 5.3.13 On a comparative basis, , it performs materially less favourably when assessed against the combined technical, environmental and deliverability criteria applied throughout the site selection process. The site is accordingly discounted from further consideration as a 'reasonable alternative'.

5.4 GIS v AIS

- 5.4.1 Air Insulated Switchgear (AIS) and Gas Insulated Switchgear (GIS) are different technologies used in the electricity industry, with AIS using air for insulation, requiring a larger footprint, lower initial cost and more frequent maintenance, while GIS uses inert gas, providing a compact, reliable, and low-maintenance solution at a higher upfront cost. Considerations include space availability, economic considerations, and environmental conditions, with AIS being suitable for larger sites, and GIS preferred for space-limited, high-pollution, or harsh environments.

- 5.4.2 In this case, both options were considered. However, an offline build of a 400kv, GIS, double busbar substation was the preference due to its lower capital cost, shorter delivery programme and reduced outage requirements, which maximises security of supply during construction and minimises operational costs. As the GIS systems requires less space it is also considered the most appropriate from an environmental perspective, reducing the footprint and extent of environmental impacts.
- 5.4.3 Having established the need for network reinforcement, alternative technical approaches were considered to deliver the required capacity upgrade. This included consideration of alternative substation technologies, such as GIS versus AIS, with reference to technical suitability, operational efficiency, and environmental constraints, as detailed above. Following the selection of the preferred technology, potential locations for the substation extension were assessed, taking into account environmental, technical, and operational factors, including proximity to the existing Westfield Substation, land availability, and potential impacts on the surrounding landscape.
- 5.4.4 This approach ensures that the EIA considers both the strategic need for network reinforcement and the most appropriate technical and locational solutions to deliver it, while providing a clear rationale for why the proposed extension represents the preferred alternative.

5.5 Environmental and Planning

- 5.5.1 Following identification of the technically feasible area of search and selection of a preferred western extension site, a detailed environmental and planning review was undertaken to confirm whether any environmental constraint existed that would either preclude development or indicate that an alternative location within or adjacent to the defined search area would be environmentally preferable.
- 5.5.2 This stage therefore represents a confirmation exercise, testing the preferred site against a comprehensive range of environmental considerations. The purpose of this assessment is to demonstrate that the selected location not only satisfies technical requirements but also represents a deliverable environmental solution achievable within those constraints.
- 5.5.3 Environmental considerations were applied consistently across topics to ensure that conclusions regarding site suitability were transparent and proportionate.

Planning

- 5.5.4 The preferred site lies outwith settlement boundaries and is therefore identified as Countryside under FIFEplan Policy 7. However, electricity transmission infrastructure is recognised as essential enabling infrastructure within national policy, and the principle of development in this location reflects the operational requirement to expand an existing substation rather than introduce new infrastructure into undeveloped areas:
- The site lies approximately 1km outside the settlement boundary of Ballingry, Lochore, Crosshill, and Glencairg.
 - The area north of the existing facility, and south of the B9097, forms part of a Green Network policy area route (Westfield – Kinglassie: ref KLSGN01).

- Some of the land west of the existing substation lies within a hazard pipeline consultation zone (Shell Expro St Fergus/Mossmorran NGL Pipeline), operated by Shell UK.
 - The entire site is designated as a mineral search area, with low protection and high protection areas.
- 5.5.5 Importantly, these designations extend across the broader landscape surrounding the existing substation and do not uniquely affect the preferred site. As such, planning policy considerations did not identify a materially preferable alternative location within the area of search.
- 5.5.6 In contrast, siting development away from the established infrastructure corridor would introduce new development pressures elsewhere in the countryside, potentially increasing policy conflict. The preferred site therefore aligns with the planning principle of consolidating infrastructure where similar development already exists.
- 5.5.7 The site's location outside the settlement boundary means that, under FIFEplan Policy 7 (Development in the Countryside), the site is identified as 'Countryside'.
- 5.5.8 The entire site is a designated mineral search area on the FIFEplan. As is outlined within the Phase 1 Ground Investigation Report submitted in support of the application, a desk-based geological review indicates that the site is underlain by glacial till deposits over sedimentary bedrock of the upper limestone formation, with limited localised peat recorded toward the southern extent.
- 5.5.9 As set out in NPF4 Annex B, National Development 3 (Strategic Renewable Electricity Generation and Transmission Infrastructure), and as supported by NPF4 Policy 11 (Energy), there is an overriding need for electricity transmission infrastructure with these types of development considered to be of national importance. 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 transformational change.
- 5.5.10 As such, as required by Policy 33 (c) (i), there is an overriding need for the proposed development. Furthermore, prior extraction of the mineral cannot reasonably be undertaken. This is due to the presence of existing electrical infrastructure on the site, and timing related pressures - electrification and commissioning of the site is scheduled for October 2030, and there is no window within the construction programme for mineral extraction works. As such, the proposed development is in accordance with Policy 33 (c).

Ground Conditions

- 5.5.11 Desk-based geological review indicates that the preferred site is underlain by superficial Till deposits over sedimentary bedrock of the Upper Limestone Formation, with limited localised peat recorded toward the southern extent. These conditions are typical of the wider area and are not anticipated to introduce abnormal engineering constraints. Ground conditions therefore do not represent a limiting factor in site selection and allow standard engineering solutions to be implemented.

- 5.5.12 By comparison, the wider area presents conditions commonly associated with historic extraction and backfilling, including:
- Variable made ground of uncertain composition;
 - Potential voiding and differential settlement risk;
 - Increased requirement for deep or reinforced foundations; and
 - Uncertainty regarding long-term platform stability.
- 5.5.13 Given the need for precise tolerances and long-term stability associated with high-voltage electrical equipment, these uncertainties represent a significant comparative disadvantage. Ground conditions therefore positively informed selection of the preferred site.
- 5.5.14 The Coal Authority identifies the site as within a Coal Mining Reporting Area, but not a Development High-Risk Area. Historical mapping indicates the former Capledrae Colliery, approximately 225m north of the site.

Hydrology and Flood Risk

- 5.5.15 Hydrological review identified minor drains and unnamed watercourses to the south of the existing substation, alongside areas of potential pluvial flooding identified on SEPA mapping.
- 5.5.16 The preferred site benefits from relatively level topography and sufficient available land to incorporate drainage infrastructure within the site boundary. This enables a gravity-led drainage solution supported by Sustainable Drainage Systems (SuDS), reducing reliance on mechanical pumping and minimising long-term operational maintenance.
- 5.5.17 The ability to embed drainage mitigation within the layout was a key factor confirming environmental suitability.
- 5.5.18 In contrast, the former quarry contains large water bodies and evidence of altered groundwater regimes, which could require permanent management measures and introduce increased construction and operational risk. These factors reinforced the environmental preference for the western extension site.

Transport

- 5.5.19 The preferred site directly adjoins existing substation access arrangements connected to the B9097, an established route capable of accommodating abnormal loads and heavy goods vehicles associated with electricity infrastructure.
- 5.5.20 Utilising existing access infrastructure avoids the need for new road construction, reduces land take, and limits disturbance to surrounding land uses. Construction traffic effects are therefore concentrated within an established infrastructure corridor.
- 5.5.21 No alternative location within the area of search offered comparable access advantages. Development at a separate site would likely necessitate new access infrastructure, increasing environmental effects and land disturbance.

- 5.522 In terms of transport and access, the existing infrastructure surrounding the Westfield substation is not a constraint for development in this area. The site benefits from direct proximity to the B9097, which is an established route capable of accommodating the heavy goods vehicles (HGVs) and maintenance plant associated with energy infrastructure.

Cultural Heritage

- 5.523 No designated heritage assets are located within 1km of the site, and the proposed development would therefore have no direct impact on designated assets. Although assets exist in the wider landscape, their distance, and the intervening topography and vegetation, makes significant impact on their setting unlikely. Micro-siting in relation to designated assets is therefore not applicable.
- 5.524 The Fife County Historic Environment Record (HER) identifies seven non-designated buildings or archaeological sites within the Initial Study Area (ISA), mainly related to modern industrial activity, a possible 20th-century war camp, and isolated Roman and medieval finds. These are not considered significant enough to constrain the proposed development location.
- 5.525 No known heritage sites exist within the proposed extension area. Desk-based review, including historic mapping and aerial photography, indicates that the extension site has remained as open grassland since the mid-19th century. Therefore, the extension option is not constrained by direct effects on non-designated archaeological remains, although micro-siting provisions will be applied if previously unidentified remains are encountered.

Landscape and Visual

- 5.526 The site is situated within the Lowland Hills and Valleys (LCT 186), a character type defined by a variety of subtle landforms and expansive, medium-scale agricultural patterns. Locally, the landscape is characterised by a shallow 'bowl' or basin-like topography, with the site occupying relatively flat ground at approximately 85m aOD. This low-lying position, combined with rising ground and ridgelines to the north, south, and west, creates a sense of containment that naturally limits intervisibility with the wider landscape, confining the primary visual envelope to the immediate local context.
- 5.527 The surrounding area is heavily influenced by large-scale industrial and infrastructure elements. To the north lies the Westfield Energy Recovery Facility and associated reservoirs, while the eastern portion of the site is occupied by an existing electrical substation. The presence of OHL towers bisecting the site, alongside the nearby settlement of Ballingry to the west, provides a busy, functional, and industrialised context.
- 5.528 The site is defined by intensely managed arable farmland and a functional industrial footprint. Vegetation is primarily concentrated along field boundaries, consisting of a mix of treed hedgerows and stockproof fencing, with a notable embankment of vegetation running along the northern boundary with the B9097. While a triangular patch of rough grassland exists adjacent to the substation, providing some localised habitat variety, the overall fabric is considered to be in a modified condition with limited biodiversity value, dominated by the utilitarian presence of the substation's palisade fencing and electrical infrastructure.
- 5.529 Visual receptors are largely limited to users of the adjacent B9097 and nearby Core Paths, where views are often filtered by roadside planting. While more elevated, panoramic views are available

from the Upland Hills (LCT 182) to the north-west, the site is viewed from these distances as a small component of a wider landscape already characterised by energy infrastructure and urban development.

Summary

5.5.30 The environmental appraisal demonstrates that:

- No overriding environmental constraints affect the preferred site;
- Environmental considerations do not identify a superior alternative within the defined area of search; and
- Consolidation alongside existing infrastructure represents the option with the lowest overall environmental effect.

5.5.31 The preferred western extension site is therefore confirmed as both technically necessary and environmentally appropriate.

5.5.32 The environmental considerations are summarised in **Table 5.1** and relevant policy and environmental constraints illustrated on **Figure 6.3**.

Table 5.1: Environmental Site Selection Issues Summary

Environmental Consideration	Summary
Planning	There are allocations/designations within the FIFEplan, which should be considered including: • Green Network Policy Area Route (Westfield-Kinglassie: ref KLSGN01); • Hazard Pipe Consultation Zone (Shell Expro St Fergus/Mossmorran NGL Pipeline, operated by Shell UK); • Mineral Search Area; and • The existing Westfield Substation and surrounding area is outwith the settlement boundaries of Ballingry, Lochore, Crosshill and Glenraig.
Ground Conditions	Located within a Coal Mining Reporting Areas (but not a Development High Risk Area) but outwith past historical mining issues. Underlying geology generally comprises superficial deposits of Till underlain by sedimentary bedrock with some localised areas of peat.
Hydrology and Flood Risk	A series of drains and unnamed watercourses located to the south of the existing Westfield substation.
Transport	Existing vehicular access from the B9097 into the existing Westfield substation.
Noise	Noise sensitive receptors are located to the north-east of the existing substation.

Environmental Consideration	Summary
Cultural Heritage	No designated heritage assets within 1km of the existing Westfield substation. A number of non-designated buildings and archaeological sites located in proximity.
Landscape	Situated in a flat "bowl" at 85m aOD, the site is enclosed by ridgelines that naturally limit intervisibility and restrict the visual envelope to the local area. The baseline is defined by a busy industrial corridor, dominated by the existing substation, and prominent OHL towers.
Ecology	The site has low biodiversity value, with views primarily filtered by roadside embankments and field vegetation.

5.6 The Proposed 33kV Undergrounding of the Kelty – Cowdenbeath No.1 and No.2 Circuits

5.6.1 Other options were explored for routing the 33kV cables along the B9097 from the north-west of the substation. However, this option was not pursued due to the following factors:

- Significant ground elevation differences;
- The embankment of a dismantled railway;
- The need to cross an existing railway overbridge (constructed in the 1960s);
- The presence of three Scottish Water mains; and
- The existing road drainage system.

5.7 Temporary Drainage Scheme

5.7.1 The location and configuration of temporary SuDS associated with the construction of the substation has been informed principally by local topography, drainage characteristics and the availability of suitable land within proximity to the construction area. As such, there is limited scope for meaningful consideration of materially different locations at the EIA stage. The temporary SuDS will be positioned, as far as practicable, to make effective use of natural falls and provide appropriate treatment and attenuation of construction runoff, while avoiding unnecessary land take and environmental constraints. The detailed arrangement will therefore be refined during detailed design and construction planning, with the final solution selected to provide effective drainage while minimising environmental effects.

5.8 Design Evolution

5.8.1 The design of the proposed extension has evolved through an iterative and multidisciplinary process integrating engineering design, environmental assessment and stakeholder consultation.

Design evolution formed a core component of the alternatives process, ensuring that environmental effects were avoided or reduced wherever practicable rather than addressed solely through mitigation after design completion.

- 5.8.2 Rather than representing a fixed proposal assessed retrospectively, the final layout reflects successive refinements responding to emerging environmental information and technical constraints.
- 5.8.3 Initial layouts were informed by operational safety clearances, connection requirements to tower YJ085 and requirements for offline construction. These parameters defined the outer development envelope within which environmental optimisation could occur. The initial size parameter used for the proposed development was circa 100m x 100m, with an initial red line boundary extending only as far as the line of trees/the hedgerow to the south-west boundary as shown on **Image 5.1** below.

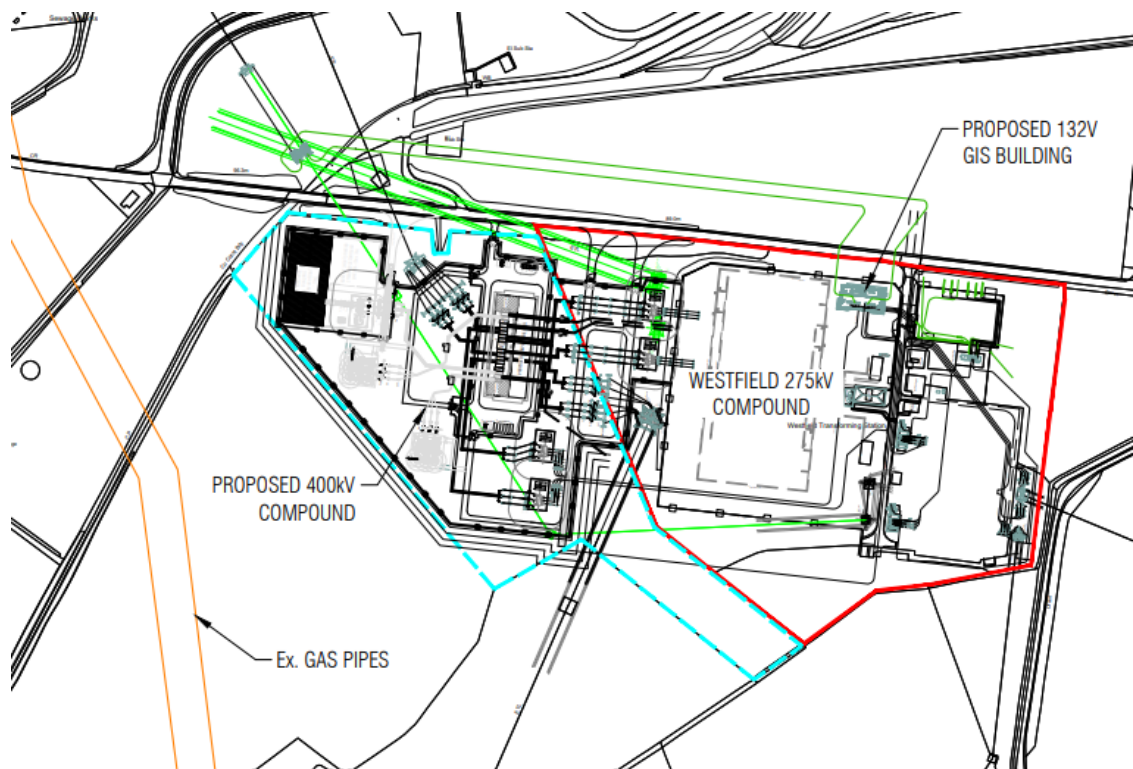


Image 5.1: Initial Westfield Substation Extension layout.

- 5.8.4 Following evolution of the substation design it became apparent that the site was not of a sufficient size to be able to accommodate the different elements of the proposed development, in particular the Customer Connections and general infrastructure. This required an increase in the red line boundary, extending to the south-west, as shown on **Image 5.2** below.



Image 5.2: Enlarged Red Line Boundary (1)

- 5.8.5 Whilst the above red line boundary was sufficiently sized to be able to accommodate the necessary infrastructure and customer connections, further iteration required a further extension to the south to accommodate proposed Sustainable Drainage solutions and proposed landscaping measures. This modest extension to the red line required an increase in the width of the 'spur' extending south-east to the existing ditch. In addition, the red line was extended east along the proposed access road to ensure all required works to facilitate access were included in the red line. This further extension is illustrated on **Image 5.3** below.

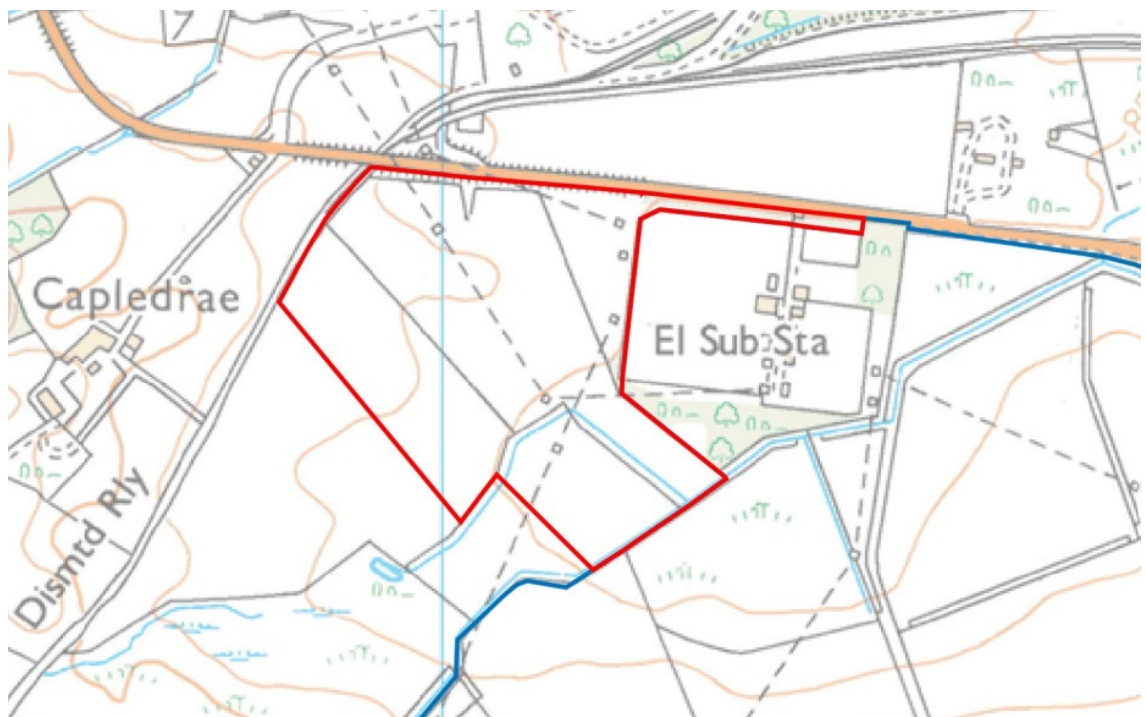


Image 5.3: Enlarged Red Line Boundary (2)

5.8.6 The final refinement of the red line boundary occurred later in the evolution of the design, and was enlarged to accommodate the changes required within the existing Westfield Substation, and specifically the reconfiguration of the 275kV elements. This red line is illustrated on **Image 5.4** below reflects the final and current red line boundary.

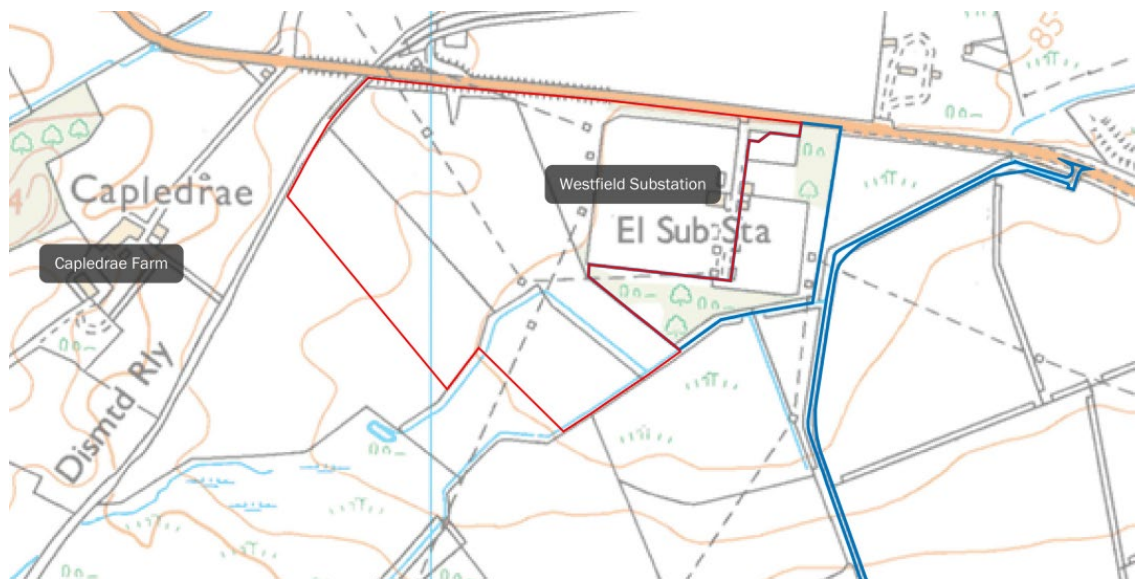


Image 5.4: Final Red Line Boundary

5.8.7 These design iterations explored alternative platform locations and infrastructure arrangements within the western area. Each iteration incorporated progressive refinements while responding to the technical constraints previously identified. The design process sought to balance engineering requirements with environmental and landscape considerations, with particular emphasis on the following objectives:

- Minimising cut-and-fill operations in order to reduce earthworks, limit landscape disturbance, and improve overall construction efficiency;
- Maximising the reuse of excavated material within the site to reduce off-site export and import of materials, thereby lowering environmental impacts associated with haulage and disposal;
- Refining the layout to retain existing vegetation belts and hedgerows wherever practicable, recognising their ecological, landscape, and visual screening value;
- Prioritising the retention of vegetation along the northern boundary to maintain established screening from the B9097 and nearby sensitive receptors;
- Using hydrological assessment findings to inform the relocation and configuration of drainage infrastructure, ensuring avoidance of sensitive features while enabling gravity-led discharge toward southern watercourses;
- Integrating Sustainable Drainage Systems (SuDS), including swales and filter drains, at an early design stage so that drainage features function not only as engineering infrastructure but also as landscape and environmental mitigation measures; and
- Evolving access arrangements to maximise the use of existing infrastructure and minimise the need for new ground disturbance. Construction working areas and temporary compounds were progressively repositioned during design development to reduce potential impacts on retained vegetation and drainage features.

- 5.8.8 Landscape mitigation measures were embedded as integral elements of the design from the outset, rather than being introduced as post-design additions. This integrated approach helped ensure that environmental considerations informed the overall layout and form of development. Key measures include:
- Landform modelling and the creation of landscaped bunding to assist visual integration and screening;
 - Retention and reinforcement of existing vegetation along the northern boundary to maintain effective screening; and
 - Careful siting and orientation of structures in response to local topography, allowing built elements to sit more naturally within the surrounding landscape.
- 5.8.9 Consultation with statutory and non-statutory stakeholders informed refinement of the layout, including consideration of environmental sensitivities and opportunities for mitigation.
- 5.8.10 The final design represents the environmentally optimised solution achievable within the operational and technical constraints of the transmission network. Environmental considerations have directly influenced layout, access, drainage and mitigation strategy, demonstrating that avoidance and reduction of environmental effects has been embedded throughout the project's development.

Chapter 06: Landscape and Visual Impact

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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6. Landscape and Visual Amenity

6.1 Introduction

- 6.1.1 This chapter has been completed by The Environmental Dimension Partnership Ltd (EDP). It considers impacts on landscape and visual amenity by outlining the existing and baseline conditions at the site and in the surrounding area, it reviews the relevant policy framework, considers the impacts of the Proposed Development on the identified baseline conditions and, where necessary, proposes mitigation measures.
- 6.1.2 Landscape and visual amenity effects are independent but related issues. Landscape effects relate to changes to the landscape fabric and the features contained within the landscape character; visual effects relate to the appearance of such changes within views and the resulting effect on visual amenity.
- 6.1.3 The landscape and visual impact assessment (LVIA) (**Technical Appendix 6.1**) examines the current on-site landscape and visual baseline conditions and evaluates the site in its broader context with reference to sensitive visual receptors, landscape designations and published landscape character. The assessment process involves an ongoing analysis of the likely landscape and visual effects of the evolving development proposals and, where 'significant' impacts cannot be avoided through an iterative design process, recommends additional mitigation measures.
- 6.1.4 The Cumulative Assessment as contained in detail within the LVIA at **Technical Appendix 6.1 (TA 6.1)** is summarised within **Chapter 12**.

6.2 The Scope of Assessment and Consultation

Scope of Assessment

- 6.2.1 The purpose of the LVIA is to *“identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people’s views and visual amenity”* (GLVIA, 2013), as part of the EIA process.
- 6.2.2 The assessment considers two separate but inter-linked environmental topics:
- Landscape character: which is the physical make up and condition of the landscape itself, and arises from a distinct, recognisable and consistent pattern of physical and social elements, aesthetic factors, and perceptual aspects; and
 - Visual amenity: which has to do with the number, distribution and character of views towards, from or within the site.
- 6.2.3 In undertaking the assessment, the following have been undertaken:
- A thorough review and analysis of relevant designations, planning policies, and background documents;
 - Assessed the existing (baseline) condition and character of the site and its setting (including the area for the undergrounding of the 33kV OHL and the temporary SuDS);

- Assessed the existing visual (baseline) context, especially any key views to and from the site;
- Described the landscape aspects of the Proposed Development that may influence any landscape or visual effects;
- Provided an analysis of the likely landscape and visual effects of the Proposed Development (including 33kV undergrounding and the temporary SuDS), which is determined by combining the magnitude of the predicted change with the assessed sensitivity of the identified landscape and visual receptors. The nature of any predicted effects is also identified (i.e. positive/negative, permanent/reversible), as is the significance and temporal nature;
- Assessed the cumulative effects in accordance with the approach described in **Chapter 12**; and
- Provided a summary and conclusion.

6.2.4 This chapter is supported by the following figures:

- **Figure 6.1:** Westfield Substation Extension Location;
- **Figure 6.2:** Site Context and Local Character;
- **Figure 6.3:** Planning Designations and Environmental Context;
- **Figure 6.4:** Landscape Character;
- **Figure 6.5:** Topography;
- **Figure 6.6:** Zone of Theoretical Visibility and Viewpoint Locations;
- **Figure 6.7:** Photoviewpoints;
- **Figure 3.2:** Illustrative Landscape Strategy; and
- **Figure 3.3:** Illustrative Cross-Section.

Consultation

6.2.5 Under The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 a request for a Scoping Opinion was submitted to Fife Council (FC) in July 2024, and a Scoping Opinion provided by FC in September 2024. No specific comments or feedback on landscape and visual matters were received in the response, but the Scoping Opinion confirmed that landscape and visual amenity should be scoped into the EIAR, and as such, an LVIA undertaken. It also confirmed the approach proposed in the scoping report was acceptable, and set out that night time effects had been scoped out of further assessment.

6.2.6 The Pre Application consultation with the Council (see **Technical Appendix 2.2**) included a number of requirements for the LVIA, in particular a ZTV out to 2km and photomontages, visualisations, wireframes and viewpoint assessments. The LVIA complies with this by providing wireframe visualisations and an assessment using agreed viewpoints. It was agreed with FC that photomontages were not required in this instance.

6.2.7 Further consultation was undertaken with FC to present the proposed representative viewpoints to be used in the assessment, and these were agreed via email in July 2024. A copy of this is provided in **Technical Appendix 6.1**.

6.3 Assessment Methodology and Significance Criteria

6.3.1 The assessment has been undertaken in accordance with the following:

- Guidelines for Landscape and Visual Impact Assessment – Third Edition (LI/IEMA, 2013) (GLVIA3);
- Landscape Institute Draft Technical Guidance Note (dTGN) 05/23 Notes and Clarifications on aspects of the 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3) (2023);
- Landscape Institute TGN 02/19 Residential Visual Amenity Assessment (RVAA);
- NatureScot (2021) Assessing the cumulative landscape and visual impact of onshore wind energy developments;
- Environmental Impact Assessment Handbook – ‘Appendix 2 - Landscape and Visual Impact Assessment’ (Scottish Natural Heritage 2018);
- Landscape Character Assessment: Guidance for England and Scotland (Scottish Natural Heritage (SNH) and The Countryside Agency 2002);
- Landscape Institute Technical Guidance Note (TNG) 06/19 Visual Representation of Development Proposals (September 2019); and
- Landscape Institute Technical Guidance Note (TNG) 02/21 Assessing Landscape Value Outside National Designations (2021).

Establishing the Baseline

6.3.2 The first stage of the assessment is to establish the baseline conditions of the site and surrounding area, which includes identifying the landscape character and key features of the landscape and whether any landscape designations affect the site. Sources examined for the desktop study have included:

- National Planning Framework 4 (NPF4) (February 2023);
- Fife’s Local Development Plan – FIFEplan (September 2017);
- Making Fife’s Places Supplementary Guidance (2018);
- Low Carbon Fife Supplementary Guidance (2019);
- Scottish Natural Heritage National Landscape Character Assessment (1998);
- Scottish Natural Heritage 2019 Landscape Character Type map and LCT Descriptions (2019) – this documentation has superseded the 1998 assessment;
- Local Ordnance Survey (OS) Maps; and
- Aerial Photographs.

6.3.3 Site appraisal has been undertaken during the assessment process, the purpose of which is:

- To confirm the extent of study areas for the landscape and visual assessments, respectively;
- To confirm status of baseline conditions identified by the desktop;

- Confirm the landscape character areas within the study area and compare these to the actual baseline condition; and
- Identify the Primary Visual Envelope of the site and record key viewpoints from within this, which will be used to inform the landscape and visual assessment of the Proposed Development.

Future Baseline (2030)

- 6.34 A number of assumptions are made to define the 'no development' scenario or future baseline of the site. The future landscape and visual baseline in this location would largely depend on natural processes, climate and land management practices. However, in terms of other developments, the nearby EGL4 development would change the immediate locality due to the scale of the proposed converter station.
- 6.35 The site's existing topography would remain unchanged without development. However, the visual perception of these landforms could change due to vegetation growth or removal, or a change in farming practices.
- 6.36 Conventional tillage practices, especially on slopes or in areas that experience heavy rainfall, can accelerate soil erosion. This can lead to the loss of topsoil, which is the most fertile layer, reducing the land's long-term agricultural productivity. Intensive farming tends to deplete soil nutrients, especially if monoculture practices are used. This may impact on future vegetation growth and potential perceptions on pastoral landscape.
- 6.37 It is assumed that current land management and natural processes will continue, and therefore, the future baseline of the site will remain largely unchanged.
- 6.38 The impact of climate change on the landscape and visual resource is assessed through the consideration of a potential future baseline if the Proposed Development was not pursued. Whilst it is unlikely that completely new direct impacts would arise as a result of climate change based on the current conditions, the geographic spread or scale of potential impacts might be changed when considered against the future baseline conditions. Considerations to the future baseline condition in landscape visual terms include:
- Changes to temperature and precipitation; the extent of change predicted would be likely, in time, to change the landscape around us, in a number of ways. However, it is unlikely that the subtle changes would lead to wholesale change to the future landscape baseline within the lifetime of the Proposed Development;
 - The site's existing topography would remain unchanged without development. However, the visual perception of these landforms could change due to vegetation growth or removal; and
 - Vegetation on-site would change with natural succession. These changes might include certain tree species or grassland becoming more dominant/prevalent but given the character of the site itself, which contains hedgerow boundaries with trees, these changes would not have a prominent impact. With the potential loss of old or mature trees within the site, their removal may alter the skyline openness, and visibility of the site, if they weren't replaced.

- 6.3.9 It is expected, that with continued baseline conditions and management in conjunction with natural processes change to the character of the site will be low. For visual effects, the future baseline under a climate change scenario would not lead to any greater, or different, effects to those predicted.

Proposed Representative Viewpoints

- 6.3.10 **Figure 6.6** provides the location of the representative viewpoints, which have supported the LVIA, overlaid upon a Zone of Theoretical Visibility (ZTV) diagram. This ZTV illustrates the worst-case potential visibility based on the maximum height parameters that are illustrated on **Figure 3.5**.

Undertaking the Assessment

- 6.3.11 The second stage of the landscape and visual assessment seeks to describe and make a judgement on:
- The effects on the Landscape Character: The effects which may arise as a result of the Proposed Development on discrete character areas and/or character types comprising features that may possess a particular quality or merit, as they sit within the EIA study area; and
 - Visual Effects: Effects that may arise as a result of the Proposed Development on views from visual receptors, such as users of local rights of way and Core Paths, and upon the amenity value of the views from surrounding receptors.
- 6.3.12 An assessment of any residual effects, which may arise following the incorporation of mitigation measures, is undertaken and the significance of these effects stated.
- 6.3.13 The final output of the exercise has been to provide text and illustrative material which:
- Establishes the baseline conditions at a point at which the site will become available for the Proposed Development;
 - Assesses the landscape and visual sensitivity to change to the type of development proposed;
 - Assesses the landscape impact of the Proposed Development on the site and relevant surrounding area;
 - Assesses the visual effects of the Proposed Development on visual receptors in the surrounding area;
 - Identifies areas of landscape and visual concern and/or benefit in relation to the construction and operation of the Proposed Development;
 - Advises on any proposals to mitigate potential significant adverse effects; and
 - Identifies the residual impacts of the Proposed Development and their significance in EIA terms.
- 6.3.14 **Table 6.1** defines the matrix that has been used to identify the level of effects to landscape and visual receptors. The detailed methodology for the assessment of effects is included **Technical Appendix 6.1**. This includes full definitions of sensitivity and magnitude of change, and the criteria used to assess them.

Table 6.1: Level of Effects Matrix

Overall Sensitivity	Overall Magnitude of Change				
	Very High	High	Medium	Low	Very Low
Very High	Very Substantial	Substantial	Major	Major/ Moderate	Moderate
High	Substantial	Major	Major/ Moderate	Moderate	Moderate/ Minor
Medium	Major	Major/ Moderate	Moderate	Moderate/ Minor	Minor
Low	Major/ Moderate	Moderate	Moderate/ Minor	Minor	Minor/ Negligible
Very Low	Moderate	Moderate/ Minor	Minor	Minor/ Negligible	Negligible

6.3.15 In some cases, the magnitude of change may be less than very low or ‘imperceptible’. Any imperceptible magnitude of change would result in a negligible effect. Where there is no change identified, there would be no effect.

6.3.16 Effects of moderate or higher are generally considered to be **significant**, and those of moderate/minor or lower are considered **not significant**. In certain cases of moderate effects, where additional factors may arise, a further degree of professional judgement may be applied when determining whether the overall change in the view will be significant or not. For example, in cases where a moderate effect is experienced by a high or very high sensitivity receptor, this may be considered to be significant. Similarly, where a moderate effect is experienced by a very low sensitivity receptor, this may not be considered significant. Where this occurs, further explanation is given within the assessment.

Geographical Scope

6.3.17 To establish the baseline and potential limit of significant effects, the study area has been considered at two geographical scales:

- First, a broad ‘study area’ was adopted, based mainly on desk-based study, allowing the geographical scope of the assessment to be defined based on the likely extent of views to/from the site, extent of landscape effects and the site’s environmental planning context; and
- Second, following initial analysis and subsequent fieldwork, the broad study area was refined down to the land that is most likely to experience landscape effects. The extent of this detailed study area is 3km from the site boundary, although occasional reference may be made to features beyond this area where appropriate. This detailed study area is illustrated on **Figure 6.1**.

Temporal Scope

6.3.18 The evaluation of effects will be considered for construction, Year 1 and Year 15 of the operation of the Proposed Development. The evaluation of residual effects at Year 15 allows for the

consideration of the screening effects of screen planting that will be incorporated as mitigation for the Proposed Development.

Assessment Limitations and Assumptions

- 6.3.19 The methodology and approach follow best practice guidance. The field assessment was undertaken by a qualified landscape architect during September 2024 and various months in 2025, and 2026 when weather conditions were generally fair to good. A site assessment has been undertaken in the late summer months to minimise the risk of adverse weather conditions curtailing views of the site. Therefore, existing vegetation was still in leaf and may have obscured views of the site. However, this assessment is based on the worst-case scenario of winter views when vegetation is not in leaf.

6.4 Legislation and Policy Context

National Planning Framework NPF4 (adopted 2023)

- 6.4.1 Policies that are specific to the site in landscape and visual terms are summarised below.

- **Policy 1 – Tackling the Climate and Nature Crises** establishes the overarching requirement that all development proposals contribute to the climate and nature crises objectives. This provides important context for the interpretation of all other NPF4 policies;
- **Policy 2 – Climate Mitigation and Adaptation** requires development to be sited and designed to minimise emissions and energy use, support climate resilience, and respond to current and future climate risks;
- **Policy 4 – Natural Places** seeks to protect, restore and enhance natural assets, making best use of nature-based solutions. The policy emphasises safeguarding biodiversity, valued natural features and landscapes;
- **Policy 5 – Soils** requires development proposals to protect soil quality and manage land sustainably, ensuring that disturbance to high-quality soils is minimised and appropriately mitigated;
- **Policy 6 – Forestry, Woodland and Trees** emphasises the protection and enhancement of existing woodland and individual trees, requiring proposals to minimise loss and to deliver compensatory planting where removal is unavoidable;
- **Policy 7 – Agriculture** seeks to protect prime agricultural land and support sustainable agricultural land use, ensuring that development does not compromise future agricultural productivity unless justified;
- **Policy 11 – Energy** intends to encourage, promote and facilitate all forms of renewable energy development onshore and offshore. The policy requires project design and mitigation to demonstrate how significant landscape and visual impacts will be addressed;

- **Policy 14 – Design, Quality and Place** supports development proposals that align with the six qualities of successful places: Healthy, Pleasant, Connected, Distinctive, Sustainable and Adaptable; and
- **Policy 20 – Blue and Green Infrastructure** aims to protect and enhance blue and green infrastructure and their networks, ensuring multifunctional benefits for people and nature.

FIFEplan

6.4.2 The site lies within the district boundary of Fife. The FIFEplan was adopted in September 2017 and includes general development policies, to which the development proposals will be tested. Policies that are relevant to the site in landscape and visual terms are summarised below.

- **Policy 1 – Development Principles** states that *“development proposals will be supported if they conform to relevant Development Plan policies and proposals, and address their individual and cumulative impacts. Such development proposals must meet one of the points in Part A and conform to all applicable requirements in Parts B and C”*. Part B of the policy states that *“development should be appropriate for its locations and safeguard the character and qualities of the landscape”*. Part C of Policy 1 states that *“development proposals must be supported by information or assessments to demonstrate that they will comply with the following relevant criteria and supporting policies”*;
- **Policy 7 – Development in the countryside** states that in all cases of development in the countryside, on landscape and visual matters, the development must *“be of a scale and nature compatible with surrounding uses”*, and *“be located and designed to protect the overall landscape and environmental quality of the area”*;
- **Policy 10 – Amenity** states that *“Development will only be supported if it does not have a significant detrimental impact on the amenity of existing or proposed land uses. Development proposals must demonstrate that they will not lead to a significant detrimental impact on amenity”*; and
- **Policy 13 – Natural Environment and Access** states that *“Development proposals will only be supported where they protect or enhance natural heritage and access assets including:..., designated sites of local importance”* such as Local Landscape Areas, vegetation that has landscape value, and landscape character and views.

Making Fife’s Places Supplementary Guidance

6.4.3 The Making Fife’s Places Supplementary Guidance (MFPSG) was adopted in 2018 and sets out FC’s expectation for the design of development in Fife. Appendix B of the document provides details and guidance on landscape site appraisals for development. The document lists 11 actions that a landscape appraisal in Fife should follow – the LVIA complies with this.

Fife’s Low Carbon Supplementary Guidance

6.4.4 The Low Carbon Fife Supplementary Guidance (2019) supports sustainable development in Fife by setting expectations for reducing carbon emissions and improving energy performance in new proposals. The guidance requires developments to incorporate low-carbon design measures, consider opportunities for district heating, and demonstrate how layout and building form minimise

energy use. It also highlights that measures such as renewable energy technologies, SuDS and green infrastructure should be sensitively integrated to avoid adverse landscape and visual impacts, ensuring low-carbon solutions are appropriately designed within their site and wider setting.

6.5 Baseline Conditions

- 6.5.1 This section provides an assessment of the 'baseline' (existing) conditions in respect of the character of the site and its landscape context. It summarises any relevant published landscape assessments that contribute to a better understanding of the landscape context.

Current Landscape Baseline (2025)

National Character Assessment

- 6.5.2 At the national level, landscape character within the site and study area is defined as Landscape Character Types (LCT) by the Scottish Natural Heritage (SNH) National Landscape Character Assessment. The original 1998 study was superseded in 2019 by the SNH '2019 Landscape Character Type map and associated Landscape Character Type Descriptions' study, which updated the character descriptions and mapping.

- 6.5.3 As shown in **Figure 6.4**, the site is located within 'LCT 186 Lowland Hills and Valleys'. The LCT 186 Lowland Hills and Valleys Location and Context is described as:

"The Lowland Hills and Valleys Landscape Character Type forms a series of low hills and valleys predominantly of boulder clay with outcrops of bedrock, the valleys closely associated with the main river systems and a number of burns draining to the coast. They form an expansive area including much of lowland Fife, running the length of the study area between the volcanic uplands and Foothills and the coastal systems, and comprising separate areas: North West Cupar, East Cupar, Tarvit Mill, Strathmiglo, North and East of Dunfermline, Fordell, West Dunfermline, South Dunfermline, South Oakley, Black Devon, Bluther Burn, Devilla Forest, Cameron, Prior Muir and Falkland".

- 6.5.4 As shown in **Figure 6.4**, there are six non-host LCTs located within 3km of the site, as follows:

- **LCT 182 Upland Hills:** Located approximately 1.2km north-west of the site. LCT 182 is a long, thin LCT, located along the high ground to the north-west of Ballingry. Connectivity between the site and LCT are divorced by the settlement of Ballingry and the surrounding hill slopes. Some intervisibility is possible from panoramic locations on the edge of the LCT, where views of Ballingry, the existing substation, and Westfield Energy Recovery Facility (which is located in the broader Fife Energy Park), are also experienced. Key characteristics include *"Extensive, panoramic and elevated views across substantial distances and many other landscape types"*, so LCT 182 will be assessed further for potential impacts arising from the Proposed Development;
- **LCT 183 Hill Slopes:** Located approximately 1km north-west of the site. LCT 183 is a long, thin LCT, located along the rising slopes of the high ground to the north-west of Ballingry. The edge of the LCT runs along the settlement boundary of Ballingry, so connectivity between the site and LCT are very limited. Some minor intervisibility is possible from locations on the edge of the LCT, where breaks in the woodland occurs. However, views of Ballingry, the existing substation, and Westfield Energy Recovery Facility are also experienced. Although it is

unlikely that the Proposed Development would have any discernible effects on the character of LCT 183, due to its proximity and elevation it is assessed within the LVIA;

- **LCT 185 Pronounced Hills and Crags:** Located approximately 1.2km north-east of the site. LCT 185 is a large LCT, located on the northern side of the Westfield Energy Recovery Facility. Several fields, reservoirs, and the infrastructure associated with the wider Fife Energy Park (which includes the Westfield Energy Recovery Facility) are located between the site and LCT, so intervisibility and connectivity between the site and LCT are limited. Key characteristics include “*Some extensive views across other Landscape Character Types*”, so LCT 185 will be assessed further for potential impacts arising from the Proposed Development;
- **LCT 191 Lowland Loch Basins:** Fife: Separated into two areas across the Study Area, the area to the west is located approximately 1.25km from the site. This area is a small, isolated part of the LCT, located on the west side of the settlement of Ballingry, so intervisibility and connectivity between the site and LCT are very limited. A second area of LCT 191 is located approximately 0.2km north of the site. It is a long, thin and small area, sandwiched between three LCTs within the Study Area. Agricultural fields and Westfield Energy Recovery Facility are located between the site and the northerly part of the LCT, restricting connectivity, with intervisibility also limited by vegetation. Although the primary characteristics of this LCT are the Loch basins, with little emphasis on the relationship to the wider landscape outside of the LCT, or reference to important views associated with the site. Its proximity means it is assessed within this LVIA;
- **LCT 383 Rugged Lowland Hills:** Located approximately 1.5km north-west of the site. LCT 383 is a long, thin LCT, located on the northern hill slopes of the high ground to the north-west of Ballingry. Intervisibility and perceptual connectivity between the site and LCT are *de minimis*, limited to small pockets of theoretical visibility in the extreme south-eastern tip and one area in the centre. Due to the leevatd nature of the LCT it is assessed in the LVIA; and
- **LCT 390 Lowland Basins:** Located approximately 0.5km north of the site. LCT 390 is a large, expansive LCT. Connectivity between the site and LCT are separated by surrounding fields, as well as another LCT. Intervisibility is predominantly obscured by topography, with very limited intervisibility experienced on the most southernly edge of the LCT. Due to proximity, this LCT is assessed within the LVIA.

The Site Character

- 6.5.5 Site visits were conducted in 2024 and 2025 to assess the site conditions. The parts of the site not within the existing substation comprise predominantly agricultural land, including arable fields surrounded by hedgerows and fencing. There is a patch of rough grassland near the existing substation, and large overhead line towers are present in the eastern and southern parts of the site. The site is heavily influenced by electrical infrastructure in the form of the neighbouring substation and the network of OHLs.
- 6.5.6 The landscape quality varies, with the arable land being intensively farmed and poor in biodiversity, while field boundaries feature some vegetation. The eastern parts of the site comprise an existing substation, with the boundary to the open parts of the site formed by metal palisade fencing. Existing field boundaries with vegetation comprise the boundaries to the south and north-west, and a grass verge along the northern edge adjacent to a road.

- 6.5.7 Surrounding land use includes a mix of arable and pasture farmland, with smaller fields, a quarry and the Westfield Energy Recovery Facility. The topography is generally flat at approximately 85m aOD but the landscape gradually rises to ridgelines and higher points to the south and west. Overall, the 'non substation' parts of the site comprise an agricultural landscape on the edge of industrial and residential development, with limited visibility due to surrounding topography.
- 6.5.8 The area required for undergrounding of the 33kV OHL and the temporary SuDS comprises agricultural land, a small area of trees at the northern end and crosses a farm access track. The route also crosses a ditch and a watercourse between field parcels.

Identified Landscape Receptors

- 6.5.9 Landscape receptors have been identified that will be potentially impacted by the proposals and therefore appraised as part the assessment. Landscape receptors can include the constituent elements of the landscape (landscape features and fabric) and the character of the landscape in different areas. It also includes a consideration of the aesthetic and perceptual factors, which contribute to landscape character. The landscape receptors identified include those within the site and within the detailed 'Study Area'. They are summarised as follows.

Landscape Features and Fabric

- Arable farmland within the site;
- Rough grassland within the site;
- Arable and pasture farmland surrounding the site;
- Internal treed hedgerows;
- Hedgerows and vegetation along the boundaries of the site; and
- Topography.

Landscape Character

Host Landscape Character Areas

- 6.5.10 The landscape character of the site is considered representative of the host LCT (LCT 186), in particular the presence of open farmland with a variable pattern of post and wire fences and hedgerows with trees, as well as roadside planting. The subtlety of the landform influences the extent of visibility to and from the site, and the presence of woodland, settlement, and roadside planting within the wider Study Area also adds to the changing visibility across the landscape.
- 6.5.11 There are several notable landscape detractors in the immediate vicinity of the site, including a substation and associated overhead lines, and infrastructure associated with the Fife Energy Park to the north. The presence of industrial development and dense settlement within the LCT alters not only the visual experience of the landscape but also effects the smells and sounds of the landscape, impacting the perceptual experiences in and around the site.

Non-Host Landscape Character Areas

- 6.5.12 The site is located outside of LCT 182, with the boundary of the LCT over 1km from the site, and the settlement of Ballingry in the space between. Therefore, the majority of the key characteristics of the LCT are unrelated to the site, and the site does not form part of the setting to the LCT. One of the

key characteristics focuses on views from the LCT *“Extensive, panoramic and elevated views across substantial distances and many other landscape types”*. The eastern edge of the LCT affords these panoramic views, which includes the site, as well as views of the existing substation and Fife Energy Park.

- 6.5.13 Located approximately 1km north-west of the site, LCT 183 is a long, thin LCT, located along the rising slopes of the high ground to the north-west of Ballingry. The edge of the LCT runs along the settlement boundary of Ballingry, so connectivity between the site and LCT are very limited. Some minor intervisibility is possible from locations on the edge of the LCT, where breaks in the woodland occurs. However, views of Ballingry, the existing substation, and Westfield Energy Recovery Facility are also experienced.
- 6.5.14 The site is located outside of LCT 185, with the boundary of the LCT over 1km from the site, and the Fife Energy Park in the space between. Therefore, the majority of the key characteristics of the LCT are unrelated to the site, and the site does not form part of the setting to the LCT. One of the key characteristics focuses on views from the LCT *“Some extensive views across other Landscape Character Types”*. The western edge of the LCT affords these extensive views, which somewhat includes the site, as well as views of the top of the existing substation and Fife Energy Park.
- 6.5.15 LCT 191 is separated into two areas across the Study Area, the area to the west is located approximately 1.25km from the site. This area is a small, isolated part of the LCT, located on the west side of the settlement of Ballingry, so intervisibility and connectivity between the site and LCT are very limited. No impacts on this part of the LCT is predicted so it is not considered further.
- 6.5.16 A second area of LCT 191 is located approximately 0.2km north of the site. It is a long, thin and small area, sandwiched between three LCTs within the Study Area. Agricultural fields and Westfield Energy Recovery Facility are located between the site and this northerly part of the LCT, restricting connectivity, with intervisibility also limited by vegetation. The primary characteristics of this LCT are the Loch basins, with little emphasis on the relationship to the wider landscape outside of the LCT.
- 6.5.17 Located on elevated ground to the north-west of the site, from LCT 383, there is very limited theoretical intervisibility from this LCT, with this limited to the extreme south-eastern part and a small patch in the LCT’s interior. There will be limited actual change, which would be evident in the context of existing industrial and energy infrastructure.
- 6.5.18 Located approximately 0.5km north of the site. LCT 390 is a large, expansive LCT. Connectivity between the site and LCT are separated by surrounding fields, as well as another LCT. Intervisibility is predominantly obscured by topography, with very limited intervisibility experienced on the most southernly edge of the LCT.

Receptor Sensitivity

- 6.5.19 The sensitivity of a landscape resource is the product of the inherent value attached to the landscape and its susceptibility to the type of development proposed in a particular location. The overall sensitivity of the landscape character receptors to be assessed are summarised in **Table 6.2**. Further detail is provided within **Technical Appendix 6.1**.

Table 6.2: Landscape Character Receptor Summary

Receptor	Value	Susceptibility	Overall Sensitivity
The site and its Immediate Context	Medium	Medium/Low	Medium
Host LCT 186 Lowland Hills and Valleys	Medium/Low	Low	Medium/Low
Non-host LCT 182 Upland Hills	High	Low	Medium
Non-host LCT 185 Pronounced Hills and Craggs	Medium	Very Low	Low
Non-host LCT 183 Hill Slopes	High	Low	Medium
Non-host LCT 191 Lowland Loch Basins - Fife	Low	Low	Low
Non-host LCT 383 Rugged Lowland Hills	Medium/High	Low	Medium
Non-host LCT 390 Lowland Basins	Medium	Medium	Medium

Current Visual Baseline (2025)

- 6.520 Visual amenity (as opposed to ‘visual character’ previously described above) is not about the visual appearance of the site, but has to do with the number, distribution and character of views towards, from or within the site. An analysis of visual amenity allows conclusions to be reached about who may experience visual change, from where and to what degree those views will be affected by the Proposed Development. This section identifies those visual receptors which have been subject to detailed consideration in the assessment of effects.
- 6.521 The assessment of visual amenity begins with a computer-generated zone of theoretical visibility (ZTV), which indicates areas that may experience visual change based solely on digital landform height data, without considering buildings or vegetation. This ZTV (as shown on **Figure 6.6**) is refined through a field assessment conducted by an experienced Landscape Architect, identifying a zone of primary visibility (ZPV) where views of the Proposed Development are typically open and clear. Beyond the ZPV is a zone of filtered visibility, where the proposal may be perceptible but not immediately obvious.
- 6.522 The extents of the ZPV are as follows:
- **North:** The infrastructure and vegetation associated with the Fife Energy Park, alongside the level change between the site and adjacent B9097 road and the vegetation along this road, heavily obscures views of the site, limiting views to adjacent receptors;
 - **East:** Views from the east are curtailed by the existing substation and vegetation associated with the B9097, as well as surrounding woodland. Limiting views to adjacent receptors;
 - **South:** Views from the south are predominantly screened by the local ridgeline with plantation running along the hill-top, limiting views of the site to receptors within 1km of the site; and

- **West:** To the west, a gentle increase in topography towards the settlement of Ballingry limits views to receptors within 1km.

6.5.23 Within the ZPV and wider area, the people ('receptors') likely to experience visual change can be considered as falling into a number of discernible groups.

Users of Long Distance Walking Routes

6.5.24 **Long Distance Walking Routes (LDWR)** are designed routes across the countryside and generally expand across large distances, connecting several settlements and landmarks. People using LDWRs are predominantly using the routes for the purposes of walking within the rural landscape, with views experienced from the LDWR an important aspect to the enjoyment of walking the route.

6.5.25 **Fife Pilgrim Way (including Core Paths R410, R519, R520, R817):** The Fife Pilgrim Way LDWR was formed in 2019 and connects West Fife with East Fife via routes used by medieval pilgrims. The LDWR passes through the southern section of the Study Area, entering from the west, below Ballingry, and from the east, on the edge of Fife Energy Park (**Figure 6.6**). The route includes several Core Paths, and for the purposes of this assessment, Core Paths that share the route with the Fife Pilgrim Way are assessed under the LDWR route. The LDWR is separated in seven sections along its route, providing individual segments for walkers to complete. The section that passes through the Study Area is 'Section 3: Crosshill to Glenrothes', which is 14km in length and starts on the settlement edge of Crosshill, and terminates in Glenrothes. **Photo viewpoints EDP 7, 8, 9 and 10** show a range of views from this route. The route is assessed in terms of the sections affected (east and west) and overall.

Core Path Users

6.5.26 Under the Land Reform (Scotland) Act 2003, everyone has the statutory right of access to all land and inland waters (unless specifically excluded by the Act), and although there are no footpaths or bridleways marked on the 1:25,000 scale map (public rights of way (PRoW) are unaffected by the Act), local councils have a duty to produce Core Path plans which represent those paths that councils consider to be key in their areas.

6.5.27 The Core Paths within, or in proximity, to the Study Area are shown on **Figures 6.3 and 6.6**. Within the Study Area there are a number of Core Paths, and those deemed to potentially experience views of the site are reviewed below.

6.5.28 **Core Path R580 (Old Railway Route)** is located approximately 150m north-west of the site. The Core Path starts and terminates on the edge of Ballingry, providing part of a circular route on the eastern edge of the settlement. Partial views of the site are experienced from the closest section of the Core Path, where topography levels out and field boundaries are formed by post and wire fencing. Users of the Core Path also experience views of the existing substation, OHL, and Fife Energy Park (**Photoviewpoint EDP 1**). Views from the Core Path closer to Ballingry experience more elevated views towards the site, but these are partially obscured by vegetation and landform (**Photoviewpoint EDP 2**).

6.5.29 **Core Path R581 (Old Drove Road Link)** is located approximately 0.5km west of the site. It is a short Core Path, connecting Core Path R580 and R817.

- 6.5.30 **Core Path R583 (Vane Farm) Core Path R828 (Dunmore Fort Spur)** is located 2.2km north-west of the site on high ground in the Lomond Hills Regional Park. The majority of the Core Path is located within woodland, so views east are sporadic and filtered. A 250m section runs through a clearing that affords expansive views east across the landscape. Elevated views of the site are experienced from this section of the Core Path, which includes views of Ballingry, the existing substation, and the Fife Energy Park (**Photoviewpoint EDP 11**).
- 6.5.31 **Core Path R828 (Dunmore Fort Spur)** is located 1.8km north-west of the site on high ground in the Lomond Hills Regional Park. The Core Path is a 580m length of path that connects R583 and Dunmore Fort and runs along a ridgeline. Panoramic views of the wider landscape are afforded from this Core Path. Elevated views of the site are experienced from this Core Path, which includes views of Ballingry, the existing substation, and the Fife Energy Park (**Photoviewpoint EDP 12**).

Road Users

- 6.5.32 **The B9097** runs adjacent to the site's northern boundary, connecting settlement to the south of the site with the M90 Motorway, to the north of the site. The road is elevated above the site, and an embankment of vegetation separates the road from the site. Views of the main part of the site are predominantly screened due to the site being located on lower ground, roadside vegetation, and the existing substation (**Photoviewpoint EDP 5**). Views towards the site open up from the road to the north, where it rises with the landform (**Photoviewpoint EDP 4**).
- 6.5.33 **The B920** runs through the centre of Ballingry, before leaving the settlement to the north-west of the site. Oblique views towards the site are afforded from the section of the B920 outside of the settlement, although sporadic roadside vegetation breaks up these views (**Photoviewpoint EDP 2**).
- 6.5.34 **The Unnamed Road (B920 to Auchmuirbridge)** is located approximately 1.3km north of the site, connecting the B920 to Auchmuirbridge. The road is located on higher ground, affording sporadic expansive views west across the landscape. The vegetation associated with the B9097 and landform obscure views of the site from the Unnamed Road (**Photoviewpoint EDP 6**).

Residential Dwellings/Groups

- 6.5.35 For the purposes of the LVIA, residential receptors have been grouped where they share similar locational characteristics and potential viewing experiences of the site. These receptor groups are defined as follows:
- **Group A – Ballingry (eastern settlement edge):** The settlement edge of Ballingry occupies elevated ground to the west of the site;
 - **Group B – Middleburn Cottages:** A small group of residential receptors located to the north of the site, at the junction of the B9097 and B920, on elevated ground;
 - **Group C – Western boundary receptors (south of B9097):** A group of residential receptors located adjacent to the western boundary of the site, from where relatively open views across the site are available;
 - **Group D – Capledrae:** A small group of residential receptors located on the northern side of the B9097, to the north-east of the existing substation; and

- **Group E – Pitkinny Forest (farmstead receptors):** A group of residential receptors associated with a farmstead complex located to the south of the site, on elevated ground to the north of Pitkinny Forest.

6.5.36 A precautionary approach has been adopted whereby all residential receptor groups are considered to be of high sensitivity to change, reflecting the importance of the wider landscape setting to visual amenity. This approach is applied at the level of receptor groups and settlements, rather than individual properties or internal aspects of dwellings.

Industrial Properties

6.5.37 Several industrial properties are located within the immediate context of the site:

- **Westfield Substation:** Located within the site and adjacent to the site's eastern boundary. Views of the open parts of the site are partially obscured by the existing high security fencing along the boundary of the substation, as well as internal buildings and infrastructure, and the field boundary vegetation in the site, although some views would be available; and
- **Westfield Energy Recovery Facility:** Located adjacent to the northern boundary, Westfield Energy Recovery Facility is an operational development with various infrastructure, dissected by large areas of woodland and trees. Views towards the site are predominantly screened by dense vegetation and the fact that the site sits 6m below road level.

6.5.38 It is unlikely that views of the Proposed Development would result in any significant effects on users of the Energy Recovery Centre or the substation, however they are included in the assessment for completeness.

Representative Viewpoints

6.5.39 A number of viewpoints have been selected that are considered representative of the nature of the views from each of the receptor groups. The selection of the representative viewpoints is based on the principle that the appraisal needs to test the 'worst case' scenario, and in selecting these viewpoints, they have sought to include:

- A range of viewpoints from all points of the compass, north, south, east and west;
- A range of viewpoints from distances at close quarters at the site boundary and up to distant viewpoints at 2.3km and more from the site (up to 4km); and
- Viewpoints from all the above receptor groups.

6.5.40 The representative photoviewpoints are shown on **Figure 6.6** and listed in **Table 6.3** together with an assessment of their sensitivity.

Table 6.3: Summary of Representative Photoviewpoints

PVP No.	Location	Grid Reference	Distance and Direction of View	Reason(s) for Selection and Sensitivity of Receptor
1	View from Core Path R580/01/R580/02 to the west of the site. Also represents other PRoW to the west of the site. Also represents other Public Right of Ways (PRoW) to the west, and CP R581 (northern end).	318549, 697248	459m; north--east	Core Paths Users - Medium Sensitivity
2	View from Core Path R580/03 to the west of the site. Also represents edge of Ballingry settlement	318269, 697350	671m; east-north--east	Core Paths Users - Medium Sensitivity Residents at Ballingry - High Sensitivity.
3	View from B920 Road to the north-west of the site. Also represents views from the edge of Ballingry	318088, 697884	782m; east	Minor Road Users - Medium/Low Sensitivity Residents at Ballingry - High Sensitivity.
4	View from B9097 Road to the north of the site. Also represents general views from the north	318484, 698079	532m; south--east	Minor Road Users - Medium/Low Sensitivity
5	View from B9097 Road to the east of the site. Also represent general views from the east.	319386, 697747	32m; west-south--west	Minor Road Users - Medium/Low Sensitivity
6	View from unnamed road to the north of the site. Also represent general views from the north	319972, 699610	2km; south-south--west	Minor Road Users - Medium/Low Sensitivity
7	View from Core Path R410/02/Fife Pilgrim Way to the east of the site	320377, 699131	3.9km; south--west	Fife Pilgrim Way Users - Medium/High Sensitivity
8	View from Core Path R520/01/Fife Pilgrim Way to the south-east of the site.	320377, 697066	1.1km; west-north--west	Fife Pilgrim Way Users - Medium/High Sensitivity
9	View from Core Path R519/04/Fife Pilgrim Way to the south of the site	319909, 696868	820m; west-north--west	Fife Pilgrim Way Users - Medium/High Sensitivity
10	View from Core Path R817/05/Fife Pilgrim Way to the south-west of the site. Also represents southern end of R581.	318811, 696262	1.2km; north	Fife Pilgrim Way Users - Medium/High Sensitivity
11	View from Core Path R583/01/Forestry Commission Open Land to the north-west of the site	316548, 697817	2.3km; east	Core Path Users in Lomond Hills Regional Park - Medium/High Sensitivity

PVP No.	Location	Grid Reference	Distance and Direction of View	Reason(s) for Selection and Sensitivity of Receptor
12	View from Core Path R828/01/Forestry Commission Open Land to the north-west of the site	316839, 698266	2.1km; east-south-east	Core Path Users in Lomond Hills Regional Park – Medium/High Sensitivity

Summary of Visual Receptors to be Assessed

6.5.41 **Table 6.4** details the visual receptors that experience views of the site and have the potential to experience larger than negligible effects from the type of development proposed.

Table 6.4: Visual Receptor Sensitivity Summary

Receptor	Value	Susceptibility	Overall Sensitivity
Users of the Fife Pilgrim Way LDWR (Including Core Paths R410, R519, R520, R817)	Medium/High	High	Medium/High
Fife Pilgrim Way West	Medium/High	High	Medium/High
Fife Pilgrim Way East	Medium/High	High	Medium/High
Core Path R580 Users	Medium	Medium	Medium
Core Path R581 Users	Medium	Medium	Medium
Core Path R583 Users	Medium/High	Medium/High	Medium/High
Core Path R828 Users	Medium/High	Medium/High	Medium/High
B9097 Road Users	Medium	Low	Medium/Low
B920 Road Users	Medium	Low	Medium/Low
Unnamed Road Users	Medium	Low	Medium/Low
Group A Residents (Properties on the eastern edge of Ballingry)	High	High	High
Group B Residents (Middleburn Cottages)	High	High	High
Group C Residents (Properties south of B9097)	High	High	High
Group D Residents (Capledrae)	High	High	High
Group E Residents (Properties north of Pitkinny Forest)	High	High	High

6.6 Assessment of Likely Significant Effects

- 6.6.1 **Technical Appendix 6.1** provides a full and robust assessment of all identified landscape and visual receptors relevant to the Proposed Development. It sets out the detailed methodology, baseline analysis, receptor sensitivity and predicted magnitude of change, leading to the significance of effects for each receptor. The appendix therefore forms the primary evidence base for the landscape and visual impact assessment, with this chapter presenting a summary of the key findings.

Construction

Construction Landscape Effects

- 6.6.2 Construction activities, movement of site traffic, lighting, noise and sounds will be ever-present during the construction process and, to a lesser degree, during the works to decommission the existing 275kV substation elements, temporary SuDS works and 33kV cable undergrounding. This is not unusual and will be carefully controlled by a conditioned construction method statement. Recommendations for protection of retained trees and hedgerows – where this is possible – in accordance with relevant British Standards such as BS 5837, will ensure that the rooting areas of retained trees and hedgerows are not adversely affected by the construction process.
- 6.6.3 In this regard the AIA sets out the anticipated tree loss and retention, which is graphically illustrated on the Tree Protection Plan provided as **Figure 3.7** of the EIAR. The assessment below is based upon this tree loss and retention. There is no tree loss anticipated to result from the undergrounding of the 33kV, with felling at the northern end of the cable trench already having been undertaken as part of the SPD works related to the EGL project.
- 6.6.4 As would be expected for any development on a largely greenfield site, there will be a change to the character of the site itself, particularly during the construction phase. Activities would be limited to the site (including the 33kV undergrounding and temporary SuDS sites) and to the surrounding road network, but tranquillity would be notably reduced within these areas at times, albeit the adjacent substation provides a precedent for this type of infrastructure. Indirect effects of the Proposed Development would also be felt – although to a much lesser extent – on the landscape surrounding the site.
- 6.6.5 Internal changes would be typical for substation construction project, and involve activities across the whole site, including the creation of permanent SuDS basins on the southern parts of the site. The project also involves a number of temporary operations (limited to SuDS and the undergrounding of the 33kV OHL). Temporary areas and the 33kV OHL undergrounding works will be fully reinstated following the cessation of the construction phase.
- 6.6.6 There will be a short-term and temporary but high magnitude of change on the site, as construction (and 275kV decommissioning) activities, as well as the undergrounding of the 33kV OHL, will result in an alteration to the site but will not represent a total loss of features or character, resulting in major/moderate adverse and **Significant** effect on the site during construction.
- 6.6.7 The magnitude of change would be short-term and temporary, and reduce to medium for the LCT, resulting in moderate to moderate/minor adverse and **Not Significant** effects on the host Lowland Hills and Valleys LCT. All effects will only extend only for the duration of the construction process.

- 6.6.8 Across all assessed non-host Landscape Character Types (LCTs), the Proposed Development (and associated 33kV undergrounding and temporary SuDS) would result in only limited and largely short-term landscape effects during construction. Although some theoretical visibility is indicated in the ZTV, actual views would be substantially reduced by distance, existing tree cover, industrial context, and intervening landform. Construction-related changes – such as movement, lighting and noise – would be perceptible but localised and temporary. In each case, the magnitude of change ranges from very low to low, combining with low or medium sensitivity to result in effects that are moderate/minor to minor/negligible and consistently **Not Significant**.

Construction Visual Effects

- 6.6.9 The Fife Pilgrim Way (FPW) within the ZTV is considered across two sections: FPW West (FPWW) and FPW East (FPWE), with users of Core Paths assessed as part of the wider long-distance walking route.
- 6.6.10 For FPWW, the route is located within approximately 1km of the Proposed Development, where views are intermittent due to screening by vegetation and landform, but where available, the site is visible in the context of existing electrical infrastructure, including OHLs, substations and the WERF. Receptors using the route have a medium/high sensitivity. During construction, cranes, plant and associated activity, including works related to the decommissioning of the 275kV infrastructure and the 33kV undergrounding, would be visible and audible from some sections of the route. These changes would be temporary and short term, experienced across a moderate geographical extent, and would give rise to a medium magnitude of change. This would result in a moderate to major/moderate and **Significant** effect for users of the most affected sections of FPWW, as illustrated by Photoviewpoints EDP 9 and 10.
- 6.6.11 For FPWE, the route is largely located on lower ground, with the Proposed Development generally screened from view. Where limited elevated views are available, such as at Photoviewpoint EDP 7, the distance to the site means that construction activity would be barely perceptible. Consequently, the magnitude of change would be very low, resulting in a minor to moderate/minor and **Not Significant** effect.
- 6.6.12 Overall, while there would be localised moderate and significant effects for users within parts of FPWW during construction, these would be limited to users of short sections of the route in close proximity to the site. Users of the majority of the FPW would experience little or no change. As such, the overall effect on the route during construction would be low, resulting in a moderate to moderate/minor and **not Significant** effect.
- 6.6.13 For users of Core Path R580 (Old Railway Route), the construction of the electrical infrastructure, buildings, fencing, and latterly, the decommissioning works and landscaping proposals, will change the view variously through the construction stages, whilst cranes and other construction plant will also be noticeable at times (as would the undergrounding of the 33kV OHL), and lead to a high scale of impact of short term duration. This considers the embedded mitigation set out later in this chapter and in **TA 6.1**, but combined with the loss of the trees within the main parts of the site and on its peripheries (which will make changes more visible), the high scale of impact resulting from close range views across the open parts of the site changed from agricultural land to a substation would lead to a high magnitude of change and a locally major/moderate adverse and **Significant** effect for users in those areas at the northern end of the route near Capeldrae (see Photoviewpoints EDP 1

- and 2). The extent of the route impacted to this level would be approximately half the route between Capeldrae and Main Street, Ballingry.
- 6.6.14 For users along the remaining sections of the route a variety of factors would reduce the scale of change and proportion of views affected. This includes the surrounding context, and the extent of vegetation and built form bordering the route and the orientation of views, which would lead to differing scales of impact arising. This in turn would lead to magnitudes of change between very low and medium, and minor to moderate effects, which would generally be **Not Significant**.
- 6.6.15 CP R581 is located approximately 0.5km south-west of the site. Construction impacts for users are likely to be similar to those for CP R580, for which it is assessed at this stage that the construction of the electrical infrastructure, buildings, fencing, and latterly, the decommissioning works and landscaping proposals, will change the view variously, whilst cranes and other construction plant will also be noticeable at times (as would the undergrounding of the 33kV OHL), and lead to a high scale of impact of short term duration. This considers the embedded mitigation set out later in this chapter and in TA 6.1, but combined with the loss of the trees within the open parts of the site and on its peripheries (which will make changes more visible), the high scale of impact resulting from close range views across the open parts of the site being changed from agricultural land to a substation would lead to the potential for a high magnitude of change and a locally major/moderate adverse and **Significant** effect at times for the worst affected parts of the route. Based upon an assumed worst case informed by site assessment this is likely to be experienced by those using the northern half of the route only.
- 6.6.16 The screening along this route as experienced on the ground would mean the magnitude of change for users of the wider route would be lower, with a low magnitude of change and moderate/minor and **not Significant** effect.
- 6.6.17 CP R583 is located 2.2km north-west of the site on high ground in the Lomond Hills RP. The majority of the CP is located within woodland (recently felled but anticipated to be replanted given it is a commercial crop), so views east are sporadic and filtered. Where there are views within the clearing – as illustrated by **Photoviewpoint EDP 11** – there is an open view across the low-lying ground, which includes the existing substation, the Westfield Energy Recovery Facility, the settlement of Ballingry and numerous wind farms and OHL, which mean the changes predicted do not prominently conflict in character terms. Impacts arising from the construction phase (including decommissioning elements and undergrounding of the 33kV OHL) would be visible, and possibly audible, and would lead – given the expanse and variety in the view – to short term impacts which would encompass a small field of view when viewing in just one direction. This would lead to a medium magnitude of change, and a local moderate to major/moderate adverse effect which is **Significant**.
- 6.6.18 Considering effects on users of the overall route, the single view shown by **PVP EDP 11** would be unusual along this vegetated route, and a single view, in a single direction, would not lead to the same magnitude of change when considering users of the route overall (which in itself is quite short). Considering the short term scale of change, and geographical extent of this change, along with the existing characteristics of the view and the proposed change, the magnitude of change would be very low and the effect minor to moderate/minor, and **Not Significant**.
- 6.6.19 CP R828 is located 1.8km north-west of the site on high ground in the Lomond Hills RP. Views would be similar to those from CP R583, and the proposed substation extension, the undergrounding of the 33kV OHL, and decommissioning works of the 275kV elements would be visible in a view which

already contains extensive electrical infrastructure, including the existing substation, OHLs and the Westfield Energy Recovery Facility. Residential development at Ballingry is also visible, as are a number of wind turbines.

- 6.6.20 Changes arising from the construction phase would extend for a short term duration, and be evident across a small part of the view given the distance and orientation of views. The mitigation set out later in this chapter and in TA 6.1 would assist in limiting the impact. The construction phase elements would be visible from the whole route, and would lead – given the expanse and variety in the view – to a low magnitude of change, and a moderate/minor to major/moderate adverse effect which is **Significant**. This would apply to users of the whole of this short route. For users of the B9097, at the construction stage, views from, and the experience of using, the road would be felt extensively, but only locally, with a greater number of vehicles (including HGVs) using the road for a short period. Delays might be experienced, although appropriate controls would mitigate this in line with best practice. At this stage the construction of the substation extension (including decommissioning elements and the undergrounding of the 33kV OHL), including cranes, vehicle movements, earthworks and erection of infrastructure would be visible at close range and across a wide panorama when looking south. The scale of impact would be high, extend for a short-term duration but would be prominent in views and change the character of the immediate landscape noticeably.
- 6.6.21 The magnitude of change for users over a short length of the route would therefore be very high, leading to locally major to major/moderate adverse and **Significant** effects. This level of effect would dissipate as distance from the site increases, and the overall effect on users of the route would be lower due to the lack of visibility of construction elements from the remaining parts of the route – some cranes or higher structures might be visible beyond the immediate site context, but this would be limited and in the context of the OHL features, not uncharacteristic. Overall, the magnitude of change from this receptor would be low and the effect moderate/minor to minor adverse and **Not Significant**.
- 6.6.22 The B920 runs through the centre of Ballingry, before leaving the settlement to the north-west of the site. Oblique views towards the site are afforded from the section of the B920 outside of the settlement, although sporadic roadside vegetation breaks up these views, as shown on **Photoviewpoint EDP 2** (this view being from a CP). In these limited views there would be impacts as predicted for users of CP R580. At the construction stage, changes to the view will be noticeable in some locations where gaps in settlement and vegetation allow, and although the embedded mitigation previously set out would help reduce some impacts, these would remain a medium and short term scale of impact, which would be geographically limited in extent and lead to a worst case medium magnitude of change as a result of changes from an open field to a substation development. Combined with the loss of vegetation within the site (which will make changes more visible), the medium magnitude of change would lead to a moderate to moderate/minor adverse and **Not Significant** effect.
- 6.6.23 These effects would only be evident for users at the very northern end of the route near to the junction with the B9097, with other views restricted where the route runs through Ballingry. With limited, to no, change in these areas, the overall magnitude of change to the route arising from the changes described above would be low and the effect minor to moderate/minor and **Not Significant**.
- 6.6.24 These effects would only be evident for users at the very northern end of the route near to the junction with the B9097, with other views restricted where the route runs through Ballingry. With

limited, to no, change in these areas, the overall magnitude of change to the route arising from the changes described above would be low and the effect minor to moderate/minor and **Not Significant**.

- 6.6.25 For users of the unnamed road (B920 to Auchmuirbridge) cranes and other high vehicles would potentially be visible, but not extensively so and at a distance of over 1.5km would lead to a low scale of impact, across a small geographical extent and for a short-term duration. This would result in a low magnitude of change and a minor to moderate/minor adverse effect which would be **Not Significant**.
- 6.6.26 Workers at the Westfield Substation would experience clear and direct views of both the decommissioning of the 275 kV elements and the construction of the proposed extension, resulting in a high scale of change over a small geographical extent and short-term duration. This would give rise to a medium magnitude of change and a moderate/minor neutral effect, which is **Not Significant**.
- 6.6.27 Workers at the adjacent Westfield Energy Recovery Facility would experience very limited visibility of construction activity due to intervening features, including tree planting, resulting in a very low magnitude of change and negligible, neutral, and **Not Significant** effects.
- 6.6.28 For residential dwellings, the following construction effects are predicted. These effects arise from changes including activities involving tall vehicles and noise, which would be experienced to differing degrees dependent on property orientation, distance and screening:
- **Group A:** During construction (including 275kV decommissioning), construction activities and plant may be visible from parts of the settlement edge, as would operations related to the undergrounding of the 33kV OHL. These would be perceptible but generally not prominent within the context of existing infrastructure and the distances involved. Construction would introduce temporary change within the site, resulting in a localised alteration to the view over a short-term duration. Taking account of the generally filtered nature of views and the influence of existing infrastructure, the magnitude of change during construction is considered to be medium, resulting in moderate/major adverse and locally **Significant** effects. This represents a reasonable worst case, with more limited, or no, effects predicted across the wider settlement or settlement edge;
 - **Group B:** During construction (including decommissioning of the 275kV elements), construction activity and plant may be partially visible, introducing movement and temporary change within the site. This would be perceived in the context of existing infrastructure and at a distance of approximately 800m. While the works would be noticeable, they would not be prominent or out of character with the baseline view, especially given large parts of the site are screened by the adjacent elevated alignment of the B9097 as it runs next to the site, and also partially by the vegetation aligning the road (which is to be retained). Given the extent of visibility, distance, and the influence of existing infrastructure, the magnitude of change during construction is considered to be medium, resulting in major/moderate adverse effects, which would be locally **Significant** in limited instances;
 - **Group C:** During construction, activity within the site would be clearly visible, and the introduction of construction plant and the emerging substation extension would represent a noticeable change from the baseline of open ground. The removal of on-site vegetation would locally increase openness and reduce existing filtering of views towards the current

substation, but the decommissioning works related to the existing 275kV elements of the substation would not represent a notable change. The undergrounding of the 33kV OHL would be a visible aspect of the proposals from this location. While these changes would be evident, they would be experienced in the context of existing infrastructure and would not be uncharacteristic of the receiving landscape. The scale of change would be notable but localised, and temporary in duration. The resulting magnitude of change is considered to be high/medium, leading to major to major/moderate adverse and locally **Significant** effects;

- **Group D:** During construction, limited and intermittent visibility of activity and associated traffic may occur. However, given the extensive screening (see image above), the oblique nature of views and the influence of the existing substation, any change would be minimal and localised to this group as a whole. The magnitude of change at this stage is therefore considered to be low to very low, resulting in moderate to moderate/minor adverse effects, which would be **Not Significant**; and
- **Group E:** These elevated farmstead properties have largely obscured north-facing views due to large agricultural buildings. Construction activity may be faintly perceptible at over 800m distance, but the scale and extent of change would be small. This results in a low to very low/negligible magnitude of change and moderate to moderate/minor, **Not Significant** adverse effects.

Operational

Landscape Effects on the Site

- 6.6.29 The Proposed Development would involve localised land regrading, alterations to the existing ditch, and the loss of agricultural grassland, along with the removal of vegetation along the northern boundary and a mature internal tree line. The undergrounding of the 33kV OHL and temporary SuDS works would be complete and would be fully reinstated, with only the terminal circa 10m high H-Poles representing residual change. These changes would replace the current agricultural character of the western parts of the site with a substation platform, associated hardstanding, SuDS features and boundary landscaping. While this represents a clear shift in site character, the development remains consistent with the adjacent substation context, and the landscaping scheme – supported by off-site biodiversity enhancements – seeks to compensate for vegetation losses where retention is not possible. At this point the 275kV elements of the existing Westfield Substation will also have occurred and changed the appearance of the eastern parts of the site (within the substation area), although not markedly.
- 6.6.30 At Year 1, the notable loss of open field and landscape features in the western parts of the site, combined with the introduction of industrial infrastructure (and notwithstanding the minor changes within the existing substation arising from the decommissioning works), would lead to a high magnitude of change and a major/moderate adverse, **significant** effect on the site's fabric and character. By Year 15, the establishment of landscape mitigation on the western and southern boundaries would soften the development, providing better integration with the semi-industrial surroundings. The magnitude of change would reduce to medium, resulting in a moderate adverse, **significant** effect.

Landscape Effects on Landscape Character Areas

- 6.6.31 Naturally, the host LCT 186 Lowland Hills and Valleys containing the site and the immediate context would be subject to the greatest change, although this is predicted to diminish with distance from the site as a result of the presence of intervening landform and features. The Proposed Development would introduce industrial development to a small area of the LCT where existing and proposed industrial/energy development is already present and a prominent feature of the landscape (i.e. the existing substation and OHLs), whilst the related 33kV undergrounding and temporary SuDS works would result in similar short-term change. Through proximity, the site relates to these existing industrial uses, although is also related to the more rural, open, rolling landscape to the south of the site.
- 6.6.32 Based on the above, impact would be medium to long-term, would extend across a small geographical part of the LCT and would represent a permanent change. The magnitude of change at Year 1 for the LCT 186 Lowland Hills and Valleys is assessed as low, resulting in minor to moderate/minor adverse and **not Significant** effect. By Year 15, the impact would be long-term, remain at a small geographical scale, and the magnitude of change would reduce to very low, as the landscape mitigation would have established, softening and integrating the new substation into the surrounding semi-industrial landscape. The resultant effects at Year 15 have been judged to be minor to minor/negligible adverse and **Not Significant** for LCT 186 Lowland Hills and Valleys.
- 6.6.33 Non-Host LCTs are assessed individually below.
- 6.6.34 LCT 182 – Upland Hills: At both Year 1 and Year 15, views of the development would remain distant and limited by landform and tree cover, resulting in a low magnitude of change over a small geographical area. With medium sensitivity, this leads to a moderate/minor, **Not Significant** effect at both stages.
- 6.6.35 LCT 183 – Hill Slopes: Year 1 and Year 15 effects would be similar, with restricted visibility due to vegetation and distance of 1.5–3km. The low magnitude of change across a small area combines with medium sensitivity to produce a moderate/minor, **Not Significant** effect at both timeframes.
- 6.6.36 LCT 185 – Pronounced Hills and Crags: Despite theoretical visibility, actual change would remain very limited due to screening and distance. The very low magnitude of change remains the same at Year 1 and Year 15, leading to a minor/negligible, **Not Significant** effect.
- 6.6.37 LCT 191 – Lowland Loch Basins (Fife): Given the industrial context and restricted visibility, Year 1 and Year 15 would both experience a low magnitude of change across a very small area. With low sensitivity, this results in a minor, **Not Significant** effect at all stages.
- 6.6.38 LCT 383 – Rugged Lowland Hills: The ZTV illustrates extremely limited theoretical visibility from this LCT, with this limited to the south-eastern parts nearest the site, and a very discrete area in its central parts near Vane Hill – the vast majority of the LCT would be unchanged. This would give rise to a very low magnitude of change at Years 1 and 15, resulting in a minor and **Not Significant** effect.
- 6.6.39 LCT 390 – Lowland Basins: Only minimal visibility occurs from the southern edge of this LCT, giving rise to a very low magnitude of change at both Year 1 and Year 15 across a very small geographical extent. Combined with medium sensitivity, this leads to a minor, **Not Significant** effect at all h stages.

Visual Effects

- 6.6.40 As set out previously, mitigation planting would, over time, help to soften views of the Proposed Development (and the associated 33kV undergrounding) for route users, particularly as a result of the proposed bunding and tree planting, although this would be limited in the short term due to the lack of maturation of the planting and the influence of topography. The decommissioning of the 275 kV elements would also slightly alter the appearance of the existing substation, although this change would not be readily noticeable.
- 6.6.41 For users of FPWW at Year 1 on the most affected sections of the route (notably between Photoviewpoints EDP 8, 9 and near EDP 10) would experience a low/medium magnitude of change. This reflects the introduction of additional infrastructure within views, albeit in the context of considerable existing electrical infrastructure, resulting in a moderate and **Significant** effect. However, by Year 15, the establishment of mitigation planting would reduce the prominence of the Proposed Development, leading to a low magnitude of change and a moderate to moderate/minor adverse effect which is **Not Significant**.
- 6.6.42 For users of FPWE, the Proposed Development would remain barely perceptible at this distance during operation, resulting in a very low magnitude of change and a minor to moderate/minor and **Not Significant** effect at both Year 1 and Year 15.
- 6.6.43 For users of the route overall, operational effects across the full extent of the Fife Pilgrim Way would be limited due to the extremely small proportion of the route affected. While localised moderate and significant effects may occur at Year 1 within FPW West, these reduce over time, and the overall effect at both Year 1 and Year 15 would be very low, resulting in a minor to moderate/minor and **Not Significant** effect.
- 6.6.44 The Core Paths within, or in proximity, to the Study Area are shown on **Figures 6.3** and **6.7**. The effects on those deemed to potentially experience views of the site are assessed below.
- 6.6.45 Core path R580 is located approximately 150m west of the site, affording partial, close-proximity views of the proposed substation extension, adding to the existing industrial context of the substation, overhead lines (OHL), and the Westfield Energy Recovery Facility. The decommissioning works within the existing substation would be largely screened from view. Views from this route are represented by Photoviewpoints EDP 1 and 2.
- 6.6.46 Year 1: the Proposed Development would be visible adjacent to the existing substation (which would have changed in appearance slightly due to the decommissioning of the 275kV elements), and in the context of prominent OHL infrastructure (electricity towers and conductors), wind turbines and also the Westfield Energy Recovery Facility (including a chimney which is clearly visible in PVPs EDP 1 and 2). In such views the presence of the Proposed Development would not be uncharacteristic, but would be openly visible, particularly in views like that shown for PVP EDP 1 (and the wireframe for this viewpoint at Appendix EDP 5 of **TA 6.1**). For users in locations with open views, this leads to a high magnitude of change and a locally major adverse and **Significant** effect.
- 6.6.47 However, for the route overall, due to varied screening and the existing industrial context, the magnitude of change is considered low, resulting in a major/moderate and **Significant** effect. Such effects would only be evident where the substation was available in open, previously rural views (albeit with existing detractors), with users on the majority of the route experiencing lesser scales of

- change, with an overall magnitude of change of low, and an effect of moderate/minor and **Not Significant** on the route overall.
- 6.6.48 Year 15: the proposed landscaping will have matured, filtering and softening the substation's context alongside the retained vegetation along the site's western boundary for users with open views. The magnitude of change in those areas most susceptible to an impact, i.e., the northern end of the route near to PVPs EDP 1 and 2, would reduce to high/medium, leading to a major/moderate to moderate and **Significant** long-term effect. Views from the Core Path closer to Ballingry would see users experience more elevated views towards the site, but these are partially obscured by vegetation and landform (Photoviewpoint EDP 2).
- 6.6.49 Therefore, on balance for users of the Core Path as a whole the magnitude of change at Year 15 is considered to be low/medium and the effect moderate to moderate/minor and **Not Significant**. This results from a minor loss or alteration to one key characteristic, this being the open rural view (albeit with detractors) away from the settlement.
- 6.6.50 Core Path R581 is located approximately 0.5km south-west of the site. Views toward the site are generally heavily filtered by vegetation and landform, including the decommissioning works within the existing substation.
- 6.6.51 Year 1: Similar to R580, the visible substation extension would not be uncharacteristic in the view (existing OHL, wind farms, Westfield Energy Recovery Facility). For users in the most open and proximate sections (likely the northern end), the magnitude of change would be high, resulting in major/moderate adverse and **Significant** effects. However, due to the assumed screening along the majority of the route, the overall magnitude of change is low, leading to a moderate and **Not Significant** effect. Such elevated effects would only be evident where the substation was visible for users in open, previously rural views (albeit with detractors), and as for the construction effects, users of the majority of the route would experience lesser scales of change, with an overall magnitude of change of low, and an effect of moderate/minor and **Not Significant** on the route overall.
- 6.6.52 Year 15: The matured landscaping would lessen the visual change, slightly filtering and softening the context. For users with the most open views, the magnitude of change reduces to medium, resulting in a moderate adverse and **Significant** effect. On balance for users of the Core Path as a whole the magnitude of change at Year 15 is considered to be low and the effect moderate/minor and **Not Significant**. This results from a minor loss or alteration to one key characteristic, this being the open rural view (albeit with detractors) away from the settlement. Users of the majority of the route are likely – based on aerial and site review – to have screened or heavily filtered views.
- 6.6.53 Core Path R583 is located 2.2km north-west of the site, largely within woodland, offering only sporadic and filtered views. Where open views occur, the site is seen in the context of existing infrastructure (substation, OHL, Energy Recovery Facility, wind farms).
- 6.6.54 Year 1: The substation extension and decommissioned substation area would be visible but broadly characteristic of the existing baseline, adding to the feel of an energy infrastructure landscape. In the limited open view locations, the magnitude of change is low/medium, resulting in a moderate/minor to major/moderate adverse and borderline **Significant** effect. Considering the whole route, where open views are rare, the overall magnitude of change is very low, leading to a minor to moderate/minor and **Not Significant** effect.

- 6.6.55 Year 15: Landscaping maturation would reduce the change. In the limited open view locations, the magnitude of change reduces to low, leading to a moderate to moderate/minor adverse and **Not Significant** long-term effect. Due to the infrequency of open views, the overall magnitude of change for the route is considered very low, resulting in a moderate and **Not Significant** effect.
- 6.6.56 Core Path R828 is a short path located 1.8km north-west of the site, running along a ridgeline and offering panoramic views similar to R583, where the site is seen in a widely industrialised context.
- 6.6.57 Year 1: The substation extension and minor internal substation changes would be visible in a view already containing extensive electrical infrastructure, making the development not uncharacteristic. The scale of change in the wider panoramic view would be small. The magnitude of change is assessed as low to very low, resulting in a moderate to minor adverse and **Not Significant** effect. This level of effect is deemed applicable to users of the whole of this short route.
- 6.6.58 Year 15: The Proposed Landscaping would slightly reduce the scale of impact. The magnitude of change is assessed as very low, leading to a minor to moderate/minor adverse and **Not Significant** effect for users of the entire route.
- 6.6.59 The B9097 runs adjacent to the site's northern boundary and is elevated, offering close-range, prominent views, especially when travelling towards the site from the west.
- 6.6.60 Year 1: The substation extension and reconfigured existing substation will be visible at close range over an increased length (c.300m), despite some screening from retained hedgerow. The new infrastructure replacing agricultural land leads to a high magnitude of change and a moderate to major/moderate adverse and **Significant** effect locally. For the overall route, as elevated effects dissipate quickly with distance, the overall magnitude of change is low, resulting in a moderate/minor to minor adverse and **Not Significant** effect.
- 6.6.61 Year 15: Due to proximity and elevation, the proposed landscaping will not substantially reduce the visible scale of impact locally. The development remains equally visible, though landscaping to the south and west will offer a general softening. This leads to a medium/high magnitude of change and a moderate/minor to major/moderate and **Not Significant** adverse effect locally (on the basis of the low sensitivity of the receptor). For the route overall, which only experiences high effects over a short length, the overall magnitude of change is low, resulting in a moderate/minor to minor adverse and **not Significant** effect.
- 6.6.62 The B920 runs through Ballingry before heading north-west of the site, affording oblique, sporadic views towards the site primarily outside the settlement.
- 6.6.63 Year 1: The Proposed Development will be visible in the context of the existing substation, OHL, and other energy infrastructure, so the change is not uncharacteristic. Open visibility occurs only from limited locations, particularly at the northern end near the B9097 junction. The magnitude of change in these limited spots is medium, leading to moderate/minor to moderate adverse and **Not Significant** effects. Considering the route overall, which is largely restricted by the settlement, the magnitude of change is low, resulting in a minor to moderate/minor and **Not Significant** effect.
- 6.6.64 Year 15: The Proposed Landscaping will have matured, slightly filtering the substation and softening its context. The scale of change reduces slightly, leading to a low magnitude of change and a minor to moderate/minor adverse and **Not Significant** effect in visible locations. As these effects are

- restricted to a very short length of the route, the overall magnitude of change for the entire route is assessed as very low, resulting in a minor to minor/negligible adverse and **Not Significant** effect.
- 6.6.65 The unnamed Road (B920 to Auchmuirbridge) is located approximately 1.3km north of the site on higher ground. Views of the site are significantly obscured by intervening vegetation and landform, with only potential partial visibility of the taller elements (up to 17m).
- 6.6.66 Year 1: The scale of change reduces after the construction phase due to the removal of tall plant. The resulting view is not dissimilar to the existing, which is not uncharacteristic given the baseline. The geographical extent of visibility is very small, leading to a very low magnitude of change and a minor to minor/negligible adverse and **not Significant** effect. This very low level of effect applies to the worst-case views and the entire route.
- 6.6.67 Year 15: Some increased softening from landscaping may occur, but the scale of change and extent remain minimal. This leads to a very low magnitude of change and a minor to minor/negligible adverse and **Not Significant** effect on users of the route overall.
- 6.6.68 For workers at industrial facilities, at Year 1, workers at the Westfield Substation would experience a low magnitude of change, as the proposed extension would appear consistent with the existing substation character, albeit extending into adjacent open land. This would result in a minor/negligible neutral effect which is **Not Significant**. This level of effect would remain unchanged at Year 15 and beyond.
- 6.6.69 For workers at the Westfield Energy Recovery Facility, intervening features would limit visibility of the development, resulting in a very low magnitude of change and negligible, neutral, and **Not Significant** effects at both Year 1 and Year 15.
- 6.6.70 For residential dwellings, the following operational effects are predicted. These effects arise from changes including the introduction into the view of additional electrical infrastructure, albeit in a view in which such features are already a key part:
- **Group A:** This group of properties is located on elevated ground to the west of the site, approximately 600m to 700m distant. Views are generally obscured by landform and vegetation, but where visible, views already contain the existing substation and OHLs.

At Year 1, the Proposed Development would be visible in the foreground of the existing substation, alongside OHL towers, and read as part of the established energy infrastructure landscape that exists. While the absence of mature planting would allow relatively open views in some locations, proposed bunding would provide limited screening. The scale of change would be moderated by the existing context and extent of views, resulting in a low magnitude of change and moderate adverse, **Not Significant** effects in a worst-case scenario. Elsewhere on the settlement edge or the wider settlement, effects would be limited or nil.

By Year 15, established planting, together with bunding and existing vegetation on the western site boundary, would filter and partially screen views, improving integration into the landscape. The magnitude of change would reduce to low/very low, resulting in moderate to moderate/minor adverse effects that are **Not Significant** in EIA terms.
 - **Group B:** Located to the north of the site at the B9097/B920 junction, approximately 0.8km distant. Views are partially screened by roadside vegetation and are dominated by large OHL pylons.

At Year 1, the proposed substation would be visible in association with existing electrical infrastructure and would be partly contained within lower-lying ground beyond the road B9097 corridor. Retained roadside vegetation would continue to filter views, while the loss of some on-site vegetation would partially increase openness. Proposed planting would begin to establish, assisting in integrating the development over time. The scale and extent of change would be limited and experienced within an established infrastructure context. The resulting magnitude of change is considered to be low, leading to moderate adverse effects, which are **Significant**.

By Year 15, mitigation planting would have established, although its influence on views from this receptor group would be limited due to its location. Retained roadside vegetation would continue to provide filtering and contribute to the integration of the development within the landscape. The development would remain perceptible but would be experienced as part of the established infrastructure landscape context. The magnitude of change would reduce to low to very low, resulting in moderate/minor to moderate adverse effects, which would be **Not Significant**.

- **Group C:** This property group are closest to the site, and experience some open views across the site, albeit broken up by sporadic vegetation. Views of the existing substation, OHL towers and Westfield Energy Recovery Facility provide an existing industrial context.

At Year 1, the Proposed Development would be perceptible as a closer component of the wider existing substation complex. Although mitigation planting would not yet be fully established, retained vegetation on the western site boundary and the existing infrastructural context would assist in moderating the perception of change. The development would introduce a visible but not uncharacteristic alteration to the view, with change experienced across a limited horizontal extent considering the grouping as a whole. The magnitude of change is considered to be medium at this point, resulting in major/moderate adverse effects, which would be locally **Significant** in worst-case views, but more limited elsewhere for the group.

By Year 15, mitigation planting would have established and would provide additional filtering and softening of views, helping to integrate the development into the landscape context and partially reinstate the vegetation framework evident in the baseline. While the development would remain visible due to its proximity, it would be experienced as part of the established and mature infrastructure context, set within vegetated confines. The magnitude of change would reduce to medium/low, resulting in moderate to major/moderate adverse effects, which would be locally **Significant** in EIA terms.

- **Group D:** Located on the northern side of the B9097, east of the existing substation. Views are predominantly obscured/fragmented by the existing substation and roadside vegetation, despite the close proximity of the receptor.

At Years 1 and 15, visibility of the Proposed Development would be very limited due to the combined influence of intervening built form, vegetation and the road corridor, which would screen some views due to its elevation. Any change would be barely perceptible. The magnitude of change would be very low (negligible), resulting in moderate/minor adverse effects, which would be **Not Significant**.

- **Group E:** Located to the south of the site, over 800m distant on elevated ground. Views are significantly limited by large agricultural buildings within the farmstead complex.

Year 1 & Year 15: Due to the distance and extensive screening offered by farm buildings, the scale and geographical extent of change would be limited. The resulting magnitude of change is considered to be low to very low/negligible throughout. On a precautionary basis, this would give rise to moderate/minor adverse effects at Years 1 and 15, which would be **Not Significant**.

- 6.6.71 Visual effects on workers at Westfield Substation and the nearby Westfield Energy Recovery Facility are assessed as **Not Significant**. During construction, workers at Westfield Substation would experience a medium magnitude of change associated with decommissioning of the existing 275 kV infrastructure, construction of the substation extension and undergrounding of the 33 kV OHL. This would result in a moderate/minor neutral effect, reducing at Year 1 to a minor/negligible neutral effect as the development would be similar in character to the existing substation. This effect would persist to Year 15 and beyond.
- 6.6.72 Workers at the Westfield Energy Recovery Facility would experience limited change due to its existing industrial context and intervening screening, including tree planting north of the B9097. A very low magnitude of change is anticipated, resulting in a negligible neutral effect. All identified effects would be **Not Significant**.

6.7 Embedded Mitigation

Construction Phase

- 6.7.1 The inherent design mitigation that has been evaluated as part of the construction stage assessment and the decommissioning of the 275kV elements is outlined below and are included within an outline CEMP, which would be secured by a planning condition:
- Lighting will be controlled through the implementation of best practice measures, informed by the Institution of Lighting Professionals (ILP) 'Guidance Note 1 for the reduction of obtrusive light', including the use of sufficient lighting units for the task in hand to avoid the need for tall, wide beam lighting units and the reduction of fixed lighting outside working hours; and
 - Measures such as minimising the use of artificial lighting, and the use of hoods, cowls and timers to restrict light spill only to where it is required and for as long as it is required.

- 6.7.2 The above measures are considered inherent as they are commonplace and it is not likely that any development would come forward without a CEMP.

Operational Phase

- 6.7.3 The inherent design and mitigation that has been evaluated as part of Operational Phase (Year 1 and Year 15) stage assessment is outlined below and illustrated on the Illustrative Landscape Strategy at **Figure 3.2**:
- The location of the Proposed Development adjacent to the existing substation, and therefore in a landscape context where this type of development is commonplace;
 - Where possible, retain and enhance existing vegetation and trees by incorporating these into the layout and gapping up with native species;

- Provision of landscaping proposals to soften the appearance of the Proposed Development in local views. In particular this includes the following:
 - Two 2m-high landscape bunds proposed west and south of the substation to reduce material removal and filter views;
 - Existing scrub and grassland in the south-west corner will be retained, protected, and enhanced to improve habitat condition;
 - GIS building will be coloured Moorland Green (BS12B21) to integrate with the context; and
 - New hedgerow planting around site peripheries to introduce habitats consistent with the local context.

6.7.4 The above measures have been designed into and follow a best practice approach to design. They are therefore considered inherent design mitigation.

6.8 Consideration of Further Mitigation

6.8.1 Following the identification of a number of residual significant effects, the potential for further mitigation has been carefully considered. At this stage of the design and assessment process, all feasible and practicable mitigation measures have already been incorporated into the project layout and landscape strategy. These embedded measures include the optimisation of infrastructure positioning, the refinement of platform levels, and the inclusion of structural planting aimed at reducing visual prominence and integrating the substation into its surroundings.

6.8.2 An appraisal of possible additional mitigation has been undertaken; however, no further measures have been identified that would materially reduce the level of residual effects without compromising the safe and functional operation of the substation or conflicting with other environmental constraints. Options such as further earthworks, screening structures, or additional planting were evaluated but were found either to have negligible benefit, to introduce new adverse effects, or to be technically unviable within the site context.

6.8.3 Notwithstanding this, opportunities for long-term enhancement will continue to be explored as the detailed design progresses. This includes refinement of planting specifications and careful selection of native species. While these measures will contribute positively to the wider landscape, they are not expected to alter the significance of the assessed effects and are therefore presented as enhancement rather than additional mitigation.

6.8.4 On this basis, a dedicated section on additional mitigation has been included in the LVIA, confirming that although further practicable mitigation has been considered, none is deemed feasible or effective in reducing the identified significant residual effects beyond those already embedded in the design.

6.9 Summary of Residual Effects

6.9.1 For landscape and visual matters, Residual Effects are those defined at operation (with additional mitigation) at Year 15 when the Proposed Development is built, and mitigation planting has matured. Effects during operation at Year 15 are long-term and permanent.

6.9.2 Likely significant effects at Year 15 would be limited to receptors within the site and along its boundaries, and in selected areas in the local landscape as detailed above. This includes the character of the site and its immediate context, users of Core Paths and nearby residential receptors. A summary of the predicted significant and not significant effects on the landscape and visual resource is provided in **Tables 6.5** and **6.6** respectively.

Table 6.5: Summary of Landscape Effect

Receptor	Sensitivity	Magnitude of Change		Effects	
Construction Stage					
Landscape Receptor	Sensitivity	Magnitude of Change		Effect	
The site and its Immediate Context	Medium	High		Major/Moderate adverse and Significant	
Host LCT 186 Lowland Hills and Valleys	Medium/ Low	Medium		Moderate to Moderate/ Minor adverse and Not Significant	
Non-host LCT 182 Upland Hills	Medium	Low		Moderate/minor and Not Significant effect.	
Non-host LCT 183 Hill Slopes	Medium	Low		Moderate/minor and Not Significant effect.	
Non-host LCT 185 Pronounced Hills and Craggs	Low	Very Low		Minor/negligible and Not Significant effect.	
Non-host LCT 191 Lowland Loch Basins - Fife	Low	Low		Minor and Not Significant effect.	
Non-host LCT 383 Rugged Lowland Hills	Medium	Very Low		Minor and Not Significant effect.	
Non-host LCT 390 Lowland Basins	Medium	Very Low		Minor and Not Significant effect.	
Operational Stage					
Landscape Receptor	Sensitivity	Magnitude of Change at Year 1	Level of Effect at Year 1	Magnitude of Change at Year 15	Level of Effect at Year 15
The site and its Immediate Context	Medium	High	Major/ Moderate adverse and Significant	Medium	Moderate adverse and Significant
Host LCT 186 Lowland Hills and Valleys	Medium/ Low	Low	Minor to Moderate/ Minor adverse and	Very Low	Minor to Minor/ Negligible adverse and

Receptor	Sensitivity	Magnitude of Change		Effects	
			Not Significant		Not Significant
Non-host LCT 182 Upland Hills	Medium	Low	Moderate/ minor and Not Significant effect.	Low	Moderate/ minor and Not Significant effect.
Non-host LCT 183 Hill Slopes	Medium	Low	Moderate/ minor and Not Significant effect.	Low	Moderate/ minor and Not Significant effect.
Non-host LCT 185 Pronounced Hills and Craggs	Low	Very Low	Minor/ negligible and Not Significant effect.	Very Low	Minor/ negligible and Not Significant effect.
Non-host LCT 191 Lowland Loch Basins - Fife	Low	Low	Minor and Not Significant effect.	Low	Minor and Not Significant effect.
Non-host LCT 383 Rugged Lowland Hills	Medium	Very Low	Minor and Not Significant effect.	Very Low	Minor and Not Significant effect.
Non-host LCT 390 Lowland Basins	Medium	Very Low	Minor and Not Significant effect.	Very Low	Minor and Not Significant effect.

Table 6.6: Summary of Visual Effects

Visual Receptor	Sensitivity	Magnitude of Change Construction	Level of Effect Construction	Magnitude of Change Year 1	Level of Effect at Year 1	Magnitude of Change Year 15	Level of Effect at Year 15
Users of Fife Pilgrim Way LDWR (Including Core Paths R410, R519, R520, R817)							
FPWW	Medium/ High	Medium	Moderate to major/ moderate adverse and Significant	Low/ Medium	Moderate adverse and Significant	Low	Moderate to moderate/ minor adverse and Not Significant
FPWE	Medium/ High	Very Low	Minor to moderate/ minor adverse and Not Significant	Very Low	Minor to moderate/ minor adverse and Not Significant	Very Low	Minor to moderate/ minor adverse and Not Significant
FPW Overall	Medium/ High	Low	Moderate to moderate/ minor and Not Significant	Very Low	Minor to moderate/ minor adverse and Not Significant	Very Low	Minor to moderate/ minor adverse and Not Significant
Users of Core Path R580 (Old Railway Route)							
Northern End	Medium	High	Major/ Moderate adverse and Significant	High	Major/ Moderate adverse and Significant	High/ Medium	Moderate to major/ Moderate adverse and Significant
Route Overall	Medium	Low	Moderate/minor and Not Significant	Low	Moderate/minor and Not Significant	Low/Medium	Moderate to Moderate/ Minor adverse and Not Significant
Users of Core Path R581 (Old Drove Road Link)							
Northern End	Medium	High	Major/ Moderate adverse and Significant	High	Major/ Moderate adverse and Significant	Medium	Moderate adverse and Significant
Route Overall	Medium	Low	Moderate/minor and Not Significant	Low	Moderate/minor and Not Significant	Low	Moderate/ minor and Not Significant
Users of Core Path R583 (Vane Farm)							
PVP EDP 11	Medium/ High	Medium	Moderate to Major/ Moderate and Significant	Low/ Medium	Moderate/ Minor to Major/ Moderate and borderline Significant	Low	Moderate to Moderate/ Minor adverse and Not Significant

Visual Receptor	Sensitivity	Magnitude of Change Construction	Level of Effect Construction	Magnitude of Change Year 1	Level of Effect at Year 1	Magnitude of Change Year 15	Level of Effect at Year 15
Route Overall	Medium/ High	Very Low	Minor to Moderate/ Minor and Not Significant	Very Low	Minor to Moderate/ Minor and Not Significant	Very Low	Minor to Moderate/ Minor and Not Significant
Users of Core Path R828 (Dunmore Fort Spur)	Medium/ High	Low/Medium	Moderate/ Minor to Major/ moderate adverse and Significant	Low/ Very Low	Moderate to Minor adverse and Not Significant	Very Low	Minor to Moderate/ Minor adverse and Not Significant
Users of B9097 Road							
Local to Site (PVP EDP 5)	Medium/ Low	Very High	Major to Major/ Moderate adverse and Significant	High	Moderate to Major/ Moderate adverse and Significant	Medium/ High	Moderate/minor to Major/ Moderate adverse and Not Significant
Route Overall	Medium/ Low	Low	Minor to moderate/ minor adverse and Not Significant	Low	Minor to moderate/ minor adverse and Not Significant	Low	Minor to moderate/ minor adverse and Not Significant
Users of B920 Road							
Northern End of Route	Medium/ Low	Medium	Moderate to Moderate/ Minor adverse and Not Significant	Medium	Moderate to Moderate/ Minor adverse and Not Significant	Low	Minor to moderate/ minor adverse and Not Significant
Route Overall	Medium/ Low	Low	Minor to moderate/ minor adverse and Not Significant	Low	Minor to moderate/ minor adverse and Not Significant	Very Low	Minor to minor/ negligible adverse and Not Significant
Users of Unnamed Road							
Worst case locations	Medium/ Low	Low	Minor to moderate/ minor adverse and Not Significant	Very Low	Minor to minor/ negligible and Not Significant	Very Low	Minor to minor/ negligible adverse and Not Significant
Route Overall	Medium/ Low	Very Low	Minor to minor/ negligible adverse and Not Significant	Very Low	Minor to minor/ negligible and Not Significant	Very Low	Minor to minor/ negligible adverse and Not Significant
Residents							

Visual Receptor	Sensitivity	Magnitude of Change Construction	Level of Effect Construction	Magnitude of Change Year 1	Level of Effect at Year 1	Magnitude of Change Year 15	Level of Effect at Year 15
Group A Residents	High	Medium	Major/ moderate adverse and Significant	Low	Moderate adverse, Not Significant	Low/ Very Low	Moderate to Moderate/ Minor adverse, Not Significant
Group B Residents	High	Medium	Major/ Moderate adverse, Significant	Low	Moderate adverse, Significant	Low/ Very Low	Moderate to Moderate/ Minor adverse, Not Significant
Group C Residents	High	High/Medium	Major to Moderate/ Major adverse and Significant	Medium	Major/ Moderate adverse, Significant	Medium/ Low	Moderate to Major/ Moderate adverse, Significant
Group D Residents	High	Low/Very Low	Moderate to Moderate/ Minor adverse, Not Significant	Very Low to Negligible	Moderate/ Minor to Negligible adverse, Not Significant	Very Low to Negligible	Moderate/ Minor to Negligible adverse, Not Significant
Group E Residents	High	Low/Very Low	Moderate to Moderate/ Minor adverse, Not Significant	Very Low to Negligible	Moderate/ Minor to Negligible adverse, Not Significant	Very Low to Negligible	Moderate/ Minor to Negligible adverse, Not Significant

6.10 Summary

- 6.10.1 The nature of the proposals and topography/juxtaposition of the site and the surrounding landscape provides a notable level of enclosure to the site, and precedent of the kind of development proposed, which limits its zone of influence greatly and as such, significant residual effects are contained within close proximity to the site.
- 6.10.2 In summary, the following receptors are likely to experience significant residual effects during construction:
- The site character and its immediate surroundings (parts of LCT 186);
 - Users of small sections of The Fife Pilgrim Way West (including Core Paths R410, R519, R520, R817) but **not** the route overall;
 - Users of sections of Core Paths R580 and R581, but **not** the routes overall;
 - Users of sections of Core Path R828 and R583 (PVPs EDP 11 and 12) but **not** on the routes overall;
 - Users of sections of the B9097 as the route passes the site, but **not** the road overall; and
 - Residential Groups A to C.
- 6.10.3 During operation the likely residual (Year 1) significant effects would be on the following landscape and visual receptors:
- The site character and its immediate surroundings (parts of LCT 186);
 - Users of short sections of The Fife Pilgrim Way West (including Core Paths R410, R519, R520, R817) but **not** the route overall;
 - Users of sections of Core Paths R580 and R581, but **not** the routes overall;
 - Users of sections of Core Path R583 (PVPs EDP 11) but **not** on the route overall;
 - Users of sections of the B9097 as the route passes the site, but **not** the road overall; and
 - Residential Groups B to C.
- 6.10.4 During operation the likely residual (Year 15) significant effects would be on the following landscape and visual receptors:
- The site character and its immediate surroundings (parts of LCT 186);
 - Users of sections of Core Paths R580 and R581, but **not** the routes overall; and
 - Residential Group C.

Chapter 07: Ecology and Biodiversity

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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7. Ecology and Biodiversity

7.1 Introduction

- 7.1.1 This chapter, prepared by EDP, presents an assessment of the likely significant effects of the Proposed Development on Important Ecological Features (IEF), which includes all features that are considered to be important and those that could be affected by the project, relating specifically to species populations, habitats and designated sites. It is not considered necessary to carry out the detailed assessment for features that are sufficiently widespread, unthreatened and resilient to development related impacts that will remain viable and sustainable, and these features, alongside the reason for scoping out of the EIAR, are outlined in **Technical Appendix 2.2**. This chapter has been prepared with reference to The CIEEM Ecological Impact Assessment Guidelines 2018; (last updated in September 2024).
- 7.1.2 This chapter evaluates the importance of the nature conservation interest (terrestrial) and the likely significant effects predicted as a result of the Proposed Development. It outlines the methodologies used to assess likely significant effects on protected habitats, flora and fauna both within the footprint of the Proposed Development and the surrounding area. It presents an assessment of the likely significant effects on sensitive ecological receptors, along with suggested mitigation measures to avoid or reduce the likely significant effects; and an assessment of the residual likely significant effects of the Proposed Development after mitigation measures have been implemented.
- 7.1.3 In addition, the cumulative effects of the Proposed Development and other relevant schemes have been considered and are presented in **Chapter 12**. The intra-effects have also been considered, and none have been identified in relation to the Proposed Development.

7.2 Scope of Assessment and Consultation

- 7.2.1 The scope of the Ecological Impact Assessment (EclA) has been determined by current ecological investigations of the site and a formal EIA Scoping Opinion. The Scoping Report was submitted to Fife Council (FC) in July 2024, and a Scoping Opinion provided by FC in September 2024. The feedback provided on ecological impacts determined that not enough information was provided at the time of submission of the Scoping Report and therefore NatureScot recommended and FC required that ecological likely significant effects are scoped into the EIAR.
- 7.2.2 The views of the FC and NatureScot were sought as part of the general pre-application consultation, with detail provided in respect to likely ecological sensitivities pertaining to the site and necessary survey scope. The response in relation to NatureScot and Natural Heritage, as provided in **Technical Appendix 2.2**, has been addressed and summarised in **Table 7.1** below, alongside the response from FC.

Table 7.1: Scoping Responses – Ecology and Biodiversity

Consultee/ Source	Advice/Requirement	Applicant Response
NatureScot	Provide clear description of habitats/species, impacts, and mitigation	Detailed ecological surveys have been undertaken in accordance with best practice to identify presence or potential presence of protected and notable species and habitats. The Technical Appendix 7.1 sets out baseline conditions, assesses potential impacts and defines appropriate mitigation measures
NatureScot	Biodiversity should be scoped into the EIA	Biodiversity has been scoped into the EIAR and is fully assessed within this chapter
NatureScot	Include a section outlining positive effects for biodiversity	The Proposed Development includes habitat creation and installation of habitat features (e.g. bat boxes), with positive effects to biodiversity assessed within this chapter
FC - Natural Heritage	Neutral grassland and habitats require assessment	Habitat surveys have been undertaken and all habitats, including neutral grassland, are assessed within Technical Appendix 7.1 .
FC - Natural Heritage	Low potential for protected species (e.g. badger)	Surveys have been undertaken to confirm presence/potential presence of protected species and inform mitigation, where required.
FC - Natural Heritage	Identify mitigation and compensation measures	Mitigation has been defined through Technical Appendix 7.1 and embedded within the design, with no adverse impacts on key ecological receptors identified
FC/NPF4 Policy 6	Avoid impacts on ancient woodland, veteran trees and high-value habitats	There is no loss or adverse impact to ancient woodland, ancient/veteran trees, or woodland/hedgerows with high biodiversity value as a result of the Proposed Development
FC/Woodland Policy	Justify woodland removal and provide compensatory planting	Limited woodland removal is required to facilitate the Proposed Development, which delivers public benefits through upgrading the local electricity network to secure future energy supplies. Landscaping is proposed on site.
FC/NatureScot	Provide biodiversity enhancement and landscape proposals using native species	Biodiversity enhancements are incorporated through habitat creation and native planting, supported by a Landscape Strategy and Landscape and Ecology Management Plan (LEMP)

723 An Ecological Appraisal has been produced, provided at **Technical Appendix 7.1** to this EIAR, to outline the findings of the detailed surveys and recommendations for mitigation, in conjunction with this EIAR.

7.3 Assessment Methodology and Significance Criteria

731 This section identifies the key ecological issues considered as part of the EIA, describes the methods used to establish baseline conditions and assesses the magnitude and significance of the likely ecological effects of the Proposed Development.

732 The chapter is based upon the findings of a desk study and detailed ecological investigations undertaken between 2023 and 2025 with respect to designated sites, non-designated sites, habitats, breeding birds, bats, otter (*Lutra lutra*), water vole (*Arvicola amphibius*), badger (*Meles meles*), greatcrested newt (*Triturus cristatus*); reptiles and fish. Those surveys scoped out include further detailed botanical surveys, wintering birds, pine martin (*Martes martes*), red squirrel (*Sciurus vulgaris*), due to a lack of suitable habitat present within the site to support these ecological receptors. The initial survey scope and findings of the walkover surveys were shared with FC as part of a pre-application consultation during 2024. The detailed findings of the ecological surveys undertaken of the site are set out within **Technical Appendix 7.1** to this EIAR. SPT is committed to achieving Biodiversity Net Gain (BNG) and a statement on biodiversity enhancement has been provided in **Technical Appendix 7.2**.

Establishing the Baseline

733 A summary of desk study, and survey methodologies are provided below and set out in full detail in **Technical Appendix 7.1**.

734 The desk study, undertaken in November 2023, involved utilising free online mapping resources, as well as collating biodiversity information from the following sources:

- Fife Nature Records Centre (FNRC);
- NatureScot Site Link;
- Multi-Agency Geographic Information for the Countryside (MAGIC) website;
- National Biodiversity Network (NBN) Atlas website;
- Habitat Map of Scotland (HabMoS);
- Aerial mapping; and
- A review of the FIFEplan (adopted 2017).

735 The desk study involved obtaining the following information (within the following spatial parameters):

- International statutory designations (20km radius around the site);
- National and Local statutory designations (2km) and non-statutory local sites (1km radius around the site);

- All other protected species, Priority Species and other notable species records (1km radius around the site); and
- All other Priority Habitat records (1km radius around the site).

736 These search areas are considered sufficient to cover the potential Zone of Influence (Zol) of the Proposed Development in relation to designated sites, habitats and species.

737 In addition, the following suite of surveys has been carried out within the site:

- An Extended Phase 1 Habitat survey on 16 July 2024;
- Breeding bird surveys, with three visits completed between late April and June 2024;
- Ground level roost assessment of trees for bat roosting suitability, undertaken on 16 July 2024 with a further survey for trees associated with the 33kV OHL carried out on 11 August 2026;
- Emergence surveys of potential roost features on trees to confirm presence/infer absence of roosting bats prior to removal, surveys have been undertaken on 29 August and 23 September 2025;
- Nighttime Bat Walkover (NBW) surveys conducted each season in spring (28 May 2024), summer (10 July 2024) and autumn (17 September 2024) to assess importance of a bat assemblage utilising the site for foraging/commuting/roosting;
- Automated detector surveys conducted seasonally in May, July and September 2024 to assess importance of a bat assemblage utilising the site for foraging/commuting;
- Otter and water vole surveys were undertaken on 19 March and 16 July 2024, and July 2026;
- Badger survey to assess usage of the site by this species on 16 July 2024;
- Habitat Suitability Index (HSI) Assessment of on-site waterbodies (P34) on 24 July 2024 to determine habitat suitability for great crested newt;
- Reptile surveys undertaken between 25 June and 07 October 2024; and
- Fish Survey to assess the in-stream habitat for salmonids, lampreys and eels, undertaken on the 1 May 2026.

738 The methodology used for these surveys is further detailed in Section 2 of **Technical Appendix 7.1**.

Assessment of Effects Methodology

739 The assessment of the likely significant effects on ecological receptors is based on both the 'sensitivity' of a receptor and the nature and magnitude of the impact that the Proposed Development will have on it. Effects on biodiversity may be direct (e.g. the loss of species or habitats), or indirect (e.g. effects due to noise, dust or disturbance, on receptors located within or outside the application area).

Receptor Sensitivity

7310 The evaluation methodology has been adapted from the Guidelines to allow for consistency in approach across the different assessment chapters. A key consideration in assessing the effects of any development on flora and fauna is to define the areas of habitat and the species that need to be

considered. This requires the identification of a potential Zol, which is defined as those areas and resources that may be affected by biophysical changes caused by project activities, however remote from the site.

- 7.3.11 The Guidelines recommend that the value or potential value of an ecological resource or feature be determined within a defined geographical context and recommends that the ecological features are valued using the scale set out in **Table 7.2**, with examples provided of criteria used when defining the level of value.

Table 7.2: Scale of Value

Sensitivity of Receptor	Examples
International and European	European sites including SPAs, SACs, proposed SACs and Sites of Community Importance (SCI). Proposed SPAs (pSPA), and Ramsar sites (designated under international convention) and proposed Ramsar sites; and Areas of habitat or populations of species which meet the published selection criteria based on discussions with NatureScot for designation as a European site, but which are not themselves currently designated at this level.
National (UK context)	A nationally designated site including SSSIs and National Nature Reserves (NNR); Areas (and the populations of species which inhabit them), which meet the published selection criteria guidelines for selection of biological SSSIs but which are not themselves designated based on discussions with NatureScot; Scottish Biodiversity List habitats and species, Red listed and legally protected species that are not addressed directly in Part 2 of the 'Guidelines for Selection of Biological SSSIs' but can be determined to be of national importance using the principles described in Part 1 of the guidance; and Areas of Ancient Woodland e.g. woodland listed within the Ancient Woodland Inventory and ancient and veteran trees.
Scotland National/UK Regional	Regularly occurring Scottish Biodiversity List habitats or populations of Scottish Biodiversity List species, Red listed and legally protected species may be of regional (Scotland) importance in the context of published information on population size and distribution.
Council Area (FC)	LNRs and Non-statutory Designated sites including Wildlife Sites of Council Area Importance; and Areas which meet the published selection criteria for those sites listed above (for habitats or species, including those listed in relevant Local Biodiversity Action Plans) but which are not themselves designated.
Local	Scottish Biodiversity List habitats and species, Red listed and legally protected species that based on their extent, population size, quality etc are determined to be at a lesser level of importance than the geographic contexts above;

Sensitivity of Receptor	Examples
	Common and widespread semi-natural habitats occurring within the study area in proportions greater than may be expected in the local context; and Common and widespread native species occurring within the study area in numbers greater than may be expected in the local context.
Less than Local	Common and widespread semi-natural habitats and species that do not occur in levels elevated above those of the surrounding area.
Negligible	Areas of heavily modified or managed land uses (e.g. hard standing used for car parking and as roads etc.) that offer no value to biodiversity.

7.3.12 Within this chapter, any ecological feature of Local level or higher, or those features that are of Less than Local level but are afforded legal protection, are considered an Important Ecological Feature (IEF)

Characterisation of Effects

7.3.13 The Guidelines state that the assessment of likely significant effects should be undertaken in relation to the baseline conditions within the ZOI that are expected to occur if the development were not to take place. Having identified the activities that could have likely significant effects, it is then necessary to describe the resultant changes and to assess the impact on important ecological features.

7.3.14 The Guidelines recommend that the process of identifying likely significant effects should make explicit reference to aspects of ecological structure and function on which the feature depends. Likely significant effects must be assessed in the context of the baseline conditions within the ZOI during the lifetime of the proposed development.

7.3.15 When describing changes/activities and impacts on ecosystem structure and function, reference should be made, where appropriate, to the following parameters:

- Beneficial or adverse;
- Extent (i.e. the spatial or geographical area over which the likely significant effect may occur during a representative range of conditions);
- Magnitude (i.e. the size, amount, intensity or volume. Magnitude is quantified where possible and provided in absolute or relative terms);
- Duration (which is defined in relation to ecological characteristics such as the lifecycle of a species as well as human timeframes);
- Timing and frequency (timing may change the result of the likely significant effect if it coincides with sensitive life-stages or seasons, and the number of times an activity occurs will influence the resulting effect); and
- Reversibility (an effect is considered reversible if it can be counteracted by mitigation or if spontaneous recovery is possible).

7.3.16 In order to characterise the likely significant effect, it is necessary to take into account all the above parameters where applicable.

7.3.17 The assessment also considers the magnitude, and in order to characterise the magnitude of each likely significant effect on each feature, the following parameters are taken into account, where relevant:

- The magnitude of change;
- The spatial extent over which the likely significant effect would occur;
- The temporal duration of the likely significant effect;
- Whether the likely significant effect is reversible and over what timeframe; and
- The timing and frequency of the likely significant effect.

Significance of Effect

7.3.18 Following the classification of a likely significant effect, a clear statement is made as to whether it is 'significant' or 'not significant' in the context of EIA regulations. For the purpose of EclA, a significant effect is an effect that either supports or undermines biodiversity conservation objectives for IEFs or for biodiversity in general. The effects on the general biodiversity of the site are identified and discussed within **Technical Appendix 7.1**, with the effects on the IEF's assessed within the EIAR.

7.3.19 The significance of a likely significant effect is considered, using professional judgement, within the context of the geographical-based ecological importance of the feature, on a range of scales from International to Local. For example, the significance of a potential effect on a habitat of local ecological importance is considered to be significant, or not significant, at a Local level.

7.3.20 CIEEM guidelines recommend that significance is not defined as 'major', 'moderate' or 'minor' in the context of biodiversity due to the complexities of ecological processes. Therefore, for the purpose of EclA, all likely significant effects identified within the assessment are considered to be significant within the context of EIA Regulations. However, to allow for the likely significant effects identified in this chapter to be considered alongside those addressed across the EIA, a 'conversion' has been undertaken, as set out in **Table 7.3**. Converted effects of Major and Moderate and Minor are considered 'significant' in the context of EIA regulations.

Table 7.3: Effects Significance Conversion

EclA Significance	Conversion
International	Major
National	Major
/Regional	Moderate
Council Area	Moderate
Local	Minor
Less than Local (Site)	Negligible

- 7.3.21 Since the purpose of an EIA is to focus on likely significant effects, it is not reasonable to expect the assessment to include every ecological feature that may be affected, since effects will not be significant where features are not legally protected and are less than Local level importance. The assessment therefore focuses on IEFs, based on professional judgement, experience and contextual information, of Local Ecological Value or above, or those of Less than Local level that are afforded legal protection. **Technical Appendix 7.1** gives greater consideration of less than Local value features not scoped into the assessment.
- 7.3.22 Where the likely significant effect upon an IEF is considered to be less than local level, the effect is considered to be 'Negligible' and this is 'Not Significant'.
- 7.3.23 The following terms have also been used, to aid the description of the effect:
- Beneficial – positive effects;
 - Adverse – negative effects;
 - Short/Medium/Long Term – length of the effect;
 - Permanent – effect cannot be reversed;
 - Temporary – effect can be reversed ;
 - Direct – effects that are a direct result of the Proposed Development; and
 - Indirect – effects that may be 'knock-on' effects of direct effects.

Assessment Limitations and Assumptions

- 7.3.24 The baseline surveys that were carried out at the site followed standard industry guidance at the time of completion and therefore provide a robust basis for the identification of IEFs. However, no surveys can provide absolute confidence about the presence or absence of species at a site, or a completely accurate knowledge about the distribution of species across a site as surveys represent only a snapshot in time and many species are transient in nature.
- 7.3.25 The assessment is based on baseline survey results that are accurate at the time of survey. However, the baseline can change due to the mobility of some species, changes in land management and natural processes of vegetation succession. As all pertinent habitat and species surveys were completed in 2024 and 2025 it is considered that the baseline data are up to date for the purpose of conducting a thorough assessment.
- 7.3.26 The methodology and approach follow best practice guidance. Details pertaining to limitations within the survey methodology and results are provided within **Technical Appendix 7.1**.
- 7.3.27 There were no significant limitations relating to access, seasonality or weather conditions for the majority of the surveys. For the Extended Phase 1 Habitat Survey, the initial walkover was carried out on the 19 March 2024, which is outside of the optimal season for this survey type. In response, a further habitat survey was carried out on the 16 July 2024, during the peak growing season, to account for any species potentially missed during the first walkover.
- 7.3.28 The first two breeding bird surveys were undertaken later in the morning than guidance recommends due to unfavourable weather conditions earlier in the morning. As such, this could have impacted bird activity levels recorded. However, this is not considered to be a significant limitation to the

- surveys as the low numbers of common and widespread species recorded were aligned with those recorded on the third survey.
- 7329 During the July and May NBWs, light rain was recorded, however, the conditions were dry for the majority of both surveys, and light rain will not deter the invertebrate prey species so bats will still continue to forage and commute.
- 7330 An aerial inspection scheduled for 27 February 2025 was not undertaken due to health and safety concerns, as the trees were unsafe to climb, and consequently, emergence surveys were carried out. Based on the context of the Site, the habitats present and the results from the activity surveys, which included a stationary observation point facing the trees and static detectors deployed along the line of trees, in the absence of climbing inspections, all trees were classified as Potential Roost Features (PRFs). Therefore, two emergence surveys were carried out per tree to determine the presence of roosting bats and three NBW with the stationary observation periods facing these trees to observe where bats are potentially emerging from, as per the Bat Conservation Trust guidelines.
- 7331 For the otter and water vole surveys, it was not possible to access the banks of the watercourse fully during the July survey, due to dense and overgrown vegetation, particularly where the watercourse extends into the south of the site. As the watercourse is generally very open and the vegetation present is not suitable for holt creation, the surveys are still deemed adequate for determining presence/likely absence, and if the species are utilising the site, then this would be apparent through obvious mammal paths in the vegetation. It should also be noted that this survey provides a snapshot of otter presence at the time of survey, and activity levels and presence can change over time.
- 7332 For water voles, March is a sub-optimal time to undertake such surveys. However, the March survey was undertaken alongside the habitat survey, during which it was noted that vegetation at the Site has the potential to become dense during the optimal period. As such, the March visit provided an opportunity to assess habitat suitability and identify more permanent evidence of water vole presence, such as burrows, which can become obscured later in the season. No burrows or other evidence was recorded during the March or the July survey. The habitat is considered to be of moderate suitability, primarily due to its connectivity to the wider landscape, and the desk study returned no records of water vole within 1km of the Site. Therefore, this is not considered to be a significant limitation.
- 7333 The single pond within 250m of the site boundary was very shallow at the time of survey and therefore, was unsuitable to undertake an eDNA survey to determine the presence of great crested newt. However, given that an HSI survey was also undertaken, suitability of the pond to support a breeding population of great crested newts can still be assessed.
- 7334 The majority of the reptile surveys were undertaken under suitable weather conditions with temperatures being between 9°C and 18°C and no rain. Two surveys were carried out when temperatures were over 18°C, and two surveys were started 10 minutes before the optimal time of day for reptile surveys (08:30 to 11:00 or 16:00 to 18:30). Given that these surveys are to determine presence/absence and the majority of the surveys were completed within optimal conditions, this not likely to significantly impact the outcome and recommendations of the assessment.
- 7335 Due to localised water scarcity and the drought conditions experienced at the time of the fish survey, the watercourse may be subject to drying out or changes in water temperatures resulting in fish

mortalities. Salmonid fish may seek deeper water during drought conditions and drop into the lower sections of the survey area, which would therefore impact the absence of fish, or potential presence in areas where salmonids are not usually found.

7.4 Legislation and Policy Context

74.1 All relevant Legislation, Guidance Documents and Standards which have been used to inform or guide the assessment are summarised below and provided in detail within **Technical Appendix 7.1:**

Legislation

- Conservation (Natural Habitats &c.) Regulations 1994;
- Wildlife and Countryside Act 1981;
- Nature Conservation (Scotland) Act 2004;
- Wildlife and Natural Environment (Scotland) Act 2011;
- Protection of Badgers Act 1992; and
- The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003.

Guidance Documents

- Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 Habitat survey;
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust (2023);
- Common Bird Census Method (1983);
- Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature (2003);
- The Water Vole Mitigation Handbook (Mammal Society Mitigation Guidance Series) Mammal Society (2016);
- Surveying Badgers. Occasional publication of Mammal Society, Number 9. Mammal Society (1989);
- Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155 (2000);
- Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10, Froglife, Halesworth;
- Guidance on Ecological Impact Assessment in Scotland; and
- NatureScot Standing Advice for various Protected Species including birds, badgers, bats, beavers, great crested newt, mountain hare, otter, pine martin, red squirrel, reptiles, water vole and wildcats.

Standards and Policy

- The Scottish Biodiversity List;
- Scottish Government Planning Guidance: Biodiversity (2023); and
- CIEEM advice note on the lifespan of ecological reports and surveys.

742 A summary of the primary biodiversity policy requirements is provided below.

National Planning Policy

The National Planning Framework 4 (NPF4)

743 The NPF4 includes:

- Policy 2, which sets out the Scottish Government's intentions to minimise the lifecycle of greenhouse gas emissions, adapt to current and future risks to climate change and to reduce emissions and improve adaptations to climate change for existing infrastructure;
- Policy 3, which sets out the intentions to protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks;
- Policy 4, which sets out the intentions to protect, restore and enhance natural assets making best use of nature-based solutions;
- Policy 6, which sets out the intentions to protect and expand forests, woodland and trees; and
- Policy 11, which sets out the intention to support all forms of renewable, low-carbon and zero emissions technologies, including enabling works such as grid transmissions and distribution infrastructure. It also sets out the expectation that design and mitigation will demonstrate how impacts on biodiversity, including birds, will be addressed.

Local Policy

FIFEplan (adopted September 2017)

744 Specific policies within the Fife Local Plan, which relate to biodiversity are detailed below; these are taken from the FIFEplan (adopted September 2017):

- Policy 13 states that development proposals will only be supported where they protect or enhance natural heritage and access assets including: designated sites of international, national and local importance, woodlands, biodiversity in the wider environment, and protected and priority habitats and species.

7.5 Baseline Conditions

751 This section provides an assessment of the 'baseline' (existing) conditions in respect of designated sites, habitats and species present.

Current Baseline (2025)

752 A detailed account of valued IEFs including designated sites, habitats and protected and notable species present within and around the site is provided in **Technical Appendix 7.1**. Those species, or species assemblages, of sufficient value for inclusion as IEFs in the assessment, are summarised in **Table 7.4**. All IEFs of less than ‘Local’ geographic value have been scoped out of the EIA, unless they require further consideration owing to their legal status and/or are considered more holistically with respect to biodiversity enhancement policy requirements.

Table 7.4: Summary of Important Ecological Features

Feature	Summary Description and Relationship with Site	Sensitivity of Receptor
Statutory Designations		
Loch Leven SPA/Ramsar/SSSI	A eutrophic lake designated for important winter populations of waterfowl. 2.1km north-west.	International
Firth of Forth SPA/Ramsar/SSSI	A complex of estuarine and coastal habitats designated for important winter populations of waterfowl. 10.6km south-east.	International
Outer Firth of Forth and St Andrews Bay Complex SPA/Ramsar	A larger estuarine/marine site designated for important winter populations of waterfowl. 10.7km south-east	International
Forth Islands SPA/SSSI	Three volcanic islands supporting a nationally important seabird colony. 14.4km south	International
Turflundie Wood SAC	A pond cluster designated for its population of great crested newt. 15.9km north	International
Pitkeathly Mires SAC	Upland mires with the presence of transition mires and quaking bogs. 17.9km north-north-east	International
Non-statutory Designations		
Ballingry Meadow Wildlife Site	The site is designated for the presence of botanically rich neutral and marshy grassland. 320m west.	Council Area
Habitats		
Hedgerow/Line of trees/Broadleaved semi-natural woodland	A boundary hedgerow is present, separating the two fields from north to south along the centre of the site. A small patch of woodland/trees and scrub habitat to the west of the existing substation.	Local

Feature	Summary Description and Relationship with Site	Sensitivity of Receptor
Running Water	A watercourse is present along the southern boundary of the site, which branches off and extends into the site	Local
Species		
Bird Assemblage	Assemblage of limited diversity and abundance, including low numbers of conservation concern and Priority Species.	Less than Local (included due to legal protection)
Bat Assemblage	Commuting and foraging in low numbers by a small number of species plus 11 trees with PRFs present suitable for roosting bats, and a further 5 trees associated with the corridor of the 33kV OHL due to be retained. The emergence surveys recorded no roosting bats.	Local
Otter	A single old otter spraint was recorded within the small stream of running water along the southern boundary of the site.	Local
Fish	The presence of salmonid fry and parr habitat recorded in the west of the site, but limited suitability for salmonids, eels and lampreys in the south of the site and to the east of the site boundary.	Local

Future Baseline (2030)

753

A number of assumptions are made to define the 'no development' scenario or future baseline of the site. The future Ecology and Biodiversity baseline for the habitats within this site would largely depend on natural processes, climate and land management practices. The existing habitat and species composition of the site is expected to remain largely unchanged without development due to a continuation of the existing land management regime.

- 754 The habitats within the site are of limited ecological value, and in the case of the hedgerows, these features will deteriorate over time without management, and therefore are expected to offer the same, or fewer, opportunities based on a continuation of the current land management. There is no connectivity between on-site hedgerows and woodland and surrounding habitats, meaning they are isolated from the potential colonisation by species whose numbers could increase in response to new Scottish Government Policy which seeks to increase woodland cover by 3% by 2032¹ such as red squirrel and pine marten. However, should vegetation be left to naturally succeed without intervention, the habitats recorded within the site are not likely to change beyond the potential colonisation of the grasslands by scrub, but these changes are not expected to be notable beyond up to a local context.
- 755 Impacts from climate change may alter the ecological resources within the site. However, significant changes are unlikely within the development's lifetime. Overall, both current and future conditions suggest minimal changes in the site's habitats and species resources due to climate impacts.

7.6 Assessment of Likely Significant Effects

- 761 An assessment of likely significant effects of the Proposed Development on those IEFs identified above has been undertaken based on the basis that all habitats, with the exception of the watercourse and boundary vegetation, will be lost. The Illustrative Landscape Strategy (**Figure 3.2**) and the description of the development (**Chapter 3**) have also been used and referenced, where appropriate.

Embedded Mitigation

- 762 Ecological input has been provided throughout the iterative design process, so the development layout reflects some important measures to avoid and mitigate for ecological impacts. However, the assessment has had to be completed on a precautionary basis given uncertainty regarding future management to habitats onsite and therefore the long-term delivery of habitat enhancements within the Site. On this basis, the embedded mitigation considered as part of the assessment of effects includes the following:
- Retention/buffering of valuable boundary habitats (including habitats known to support protected/notable species) – specifically the stream to the south and the scrub to the north, which will be buffered to protect commuting and foraging by birds, bats and otter;
 - A Construction Environmental Management Plan (CEMP), detailing a range of standard measures to avoid or mitigate environmental impacts during construction, including controls over working hours; avoiding the use of artificial lighting in sensitive areas; suppression of dust, vibration and noise; and prevention of surface water pollution;
 - Compliance with wildlife legislation including obtaining relevant mitigation licences for works affecting certain legally protected species, i.e. EPS licences in respect of roosting bats and sensitive working methodologies for the protection of nesting birds;

¹ [Why are we expanding Scotland's woodlands? | Scottish Forestry](#)

- A surface water drainage strategy, including the incorporation of Sustainable Drainage System (SuDS) features, to maintain existing greenfield run-off rates and to improve water quality through intercepting pollutants; and
- Landscape and Ecology Management Plan (LEMP) or equivalent document, setting out the long-term management, maintenance and monitoring of retained, created and enhanced habitats.

Construction

763 General construction impacts, which may result in effects (both positive and negative) on IEFs are listed in **Table 7.5**.

Table 7.5: Likely Effects caused by General Construction Impacts

Effect	Possible Causes/Mechanisms
Habitat loss	Felling of trees, removal or disturbance of vegetation or soils by heavy plant, materials storage/stockpiling, etc. during site preparation and construction.
Habitat degradation	Pollution by dust, fuels, lubricants, hydraulic fluid, cement or silt resulting in toxic effects to plants/animals. Damage to soils or vegetation by physical damage, soil compaction (resulting in changes in flora), change in hydrology resulting in the drying of wetland areas or reductions in local populations of wetland animals or plants.
Habitat fragmentation	Temporary or permanent reduction in habitat connectivity through severance of habitat corridors or isolation of patches of habitats, e.g. by severance of hedgerows or watercourses, or through installation of features or land use that presents a barrier or hostile environment (such as A roads, urban areas, bridges or culverts).
Killing, injury, or disturbance of animals	Digging, vegetation/tree removal, movement of vehicles/heavy plant, and entrapment of animals in trenches, pits or pipes.
Displacement of animals	Visual, noise or vibration-related disturbance from vehicles/heavy plant, lighting, digging or piling.

764 An appraisal of likely significant effects upon wider species interests of Less than Local value with no legal protection, that were identified as having no significant effect is provided in **Technical Appendix 7.1**, including appropriate mitigation measures.

Statutory Designated Sites

765 No statutory ecological designations are located within the site and therefore would not be subject to direct habitat loss during construction.

766 The closest statutory designation is Loch Leven SPA/Ramsar/SSSI, which is located 2.1km northwest of the site. There is no hydrological connectivity between the Proposed Development and Loch Leven. As such, indirect impacts associated with construction, such as dust, pollution, or

run-off are not anticipated. The desk study found no recent records indicating the regular presence of notable wintering bird species associated with this designation within the site itself. Given the abundance of suitable arable and grassland habitats in the wider area, the loss of habitat associated with the Proposed Development is unlikely to displace any wintering bird species potentially using the site.

- 767 The Proposed Development involves an extension to an existing electricity substation and the decommissioning of the 275kV elements of the existing substation. It will not generate impacts associated with increased air pollution, recreational pressure, noise disturbance, or traffic that could affect Loch Leven or its qualifying features. Based on the lack of hydrological or physical connectivity and the nature of the qualifying features, no significant effects on this designated site are anticipated.
- 768 For all other statutory designations within the ZOI, due to their spatial separation and the limited scale and scope of the Proposed Development, being confined to a substation extension and the decommissioning of the 275kV elements of the existing substation, no impacts are expected in relation to air quality, recreation, noise, traffic or hydrological change.
- 769 No significant effects are therefore anticipated on any statutory designated sites during the construction phase (**Not Significant**).

Habitat Regulations Assessment

- 7610 Not only do impacts on international designations need to be considered under the EIA regulations and in respect of planning policy, but in accordance with Conservation (Natural Habitats, &c) Regulations 1994 (as amended 2019). Under these Habitat Regulations, all competent authorities must consider whether any plan or project could affect a European site before it can be authorised or carried out. This includes whether it will have a 'Likely significant effect', and if so they must carry out an 'appropriate assessment' (AA), a process known as a Habitats Regulations Appraisal (HRA) in Scotland. European sites include Special Protection Areas (SPAs) and Ramsar sites designated for their importance to bird populations, such as Loch Leven. Where potential for likely significant effects cannot be excluded, the HRA process must be undertaken to assess implications for the conservation objectives of the site. A HRA comprises several stages of assessment as outlined below:
- Stage 1: What is the plan or project? - The applicant should provide the competent authority with sufficient information to carry out the HRA;
 - Stage 2: Is the plan or project directly connected with or necessary to site management for nature conservation? - for the majority of proposals this will be 'no' and Stage 3 should be considered by the competent authority;
 - Stage 3: Is the plan or project directly connected with or necessary to site management for nature conservation? - this represents a screening stage to determine whether the AA is required;
 - Stage 4: Undertake an appropriate assessment of the implications for the site in view of its conservation objectives – where the plan or project is considered to have likely significant effects on the qualifying interest(s) of a European site an AA is required.

- Stage 5: Can it be ascertained that the proposal will not adversely affect the integrity of the site? - for a plan or project to be consented the AA must ascertain that the plan or project will not adversely affect the integrity of a European site;
- Stage 6: Are there alternative solutions? - If it can't be ascertained that the proposal will not adversely affect the integrity of a European site it can only proceed if there are no alternative solutions and imperative reasons of overriding public interest;
- Stage 7: Would a priority habitat or species be adversely affected?; and
- Stages 8 and 9: Are there any imperative reasons for overriding public interest? - here it cannot be ascertained that a plan or project will not adversely affect the integrity of a European site, and there are no alternative solutions, a plan or project can only proceed if there are imperative reasons of overriding public interest for doing so.

7.6.11 A copy of the HRA proforma² has been provided as **Technical Appendix 7.3** to provide the competent authority with the detail required for the Proposed Development to carry out the HRA for Loch Leven SPA/Ramsar/SSSI, and subsequently the AA if required.

Non-statutory Designated Sites

7.6.12 No non-statutory ecological designated sites are located within or adjacent to the site and therefore no direct habitat loss during construction is anticipated.

7.6.13 The only non-statutory designation within the proposals ZOI is Ballingry Meadow Wildlife Site is located 320m to the west of the site and is designated for the presence of botanically-rich neutral and marshy grassland. Given the nature of the Proposed Development, reasons for the site's designation and spatial separation, there is not considered to be a risk of direct effects on the Local Wildlife Site (LWS) during construction. In addition, the substation construction will not generate recreational pressure or other indirect effects, such as dust deposition, water or air pollution that could damage the designated habitats, particularly given the delivery of industry standard prevention measures via a CEMP. As such, no significant effects are anticipated on non-statutory designations (**Not Significant**).

Habitats

Hedgerow/Line of Trees/Broadleaved Semi-natural Woodland

7.6.14 The development will result in the direct loss of 0.16km of native hedgerow, 0.18km of a line of trees and 0.09ha of woodland habitat. While these habitats are species-poor and the extent of direct loss is very small, on a precautionary basis, this is considered to constitute a direct, permanent, adverse effect at a Local level, which is considered to be a minor adverse effect (**Significant**).

Running Water

7.6.15 The Proposed Development will not result in the loss of the watercourse network to the south of the site, and a 50m buffer will be instated from the development footprint. However, there will be a direct impact due to the realignment of the watercourse to facilitate the Proposed Development, which extends into the site from the watercourse. Impacts from the realignment of the watercourse in the

² Habitats Regulations Appraisal (HRA) | NatureScot

absence of mitigation will result in a permanent, which is considered to be a minor adverse effect at a Local level (**Significant**).

- 7616 Additionally, there may be impacts through wider ranging factors such as dust deposition or polluted water run-off, which could also result in negative impacts to the species using these habitats. Embedded mitigation, namely the delivery of protection and pollution control measures via the CEMP, will ensure the extent and magnitude of such indirect short term, temporary and reversible impacts is reduced to negligible levels (**Not Significant**).

Fauna

Birds

- 7617 Given the small size of the site and the suitability of the surrounding countryside, it is considered that birds present will not be significantly impacted by the Proposed Development. The impact will be on the legislative protection afforded to all breeding birds only. Where there is the removal of suitable nesting habitat for breeding birds in the form of hedgerow, woodland and unmanaged grassland, there is a risk of losing, damaging or disturbing active nests during the breeding season (April – August Inclusive). Compliance with legislation to protect nesting birds, such as precautionary measures adopted during the clearance of suitable habitats as detailed within the Construction Environmental Management Plan (CEMP) in **Technical Appendix 3.1**, will ensure the protection of breeding birds and **no significant** effects are anticipated (**Not Significant**).

Bats

- 7618 The Proposed Development will result in the loss of 11 trees identified as having suitability to support roosting bats. As aerial inspections were not possible due to health and safety concerns, all trees have been assumed as PRF based on the context, habitat suitability and survey results to date, which recorded no roosting bats in any of trees during the emergence surveys. All 11 trees will be lost as a result of the Proposed Development. The loss of these potential bat roosts is considered to constitute a direct, permanent, adverse effect at a Local level, which is considered to be a minor adverse effect (**Significant**).
- 7619 Commuting/foraging behaviour was largely concentrated along the line of trees through the centre of the site and the hedgerow/woodland habitat within and adjacent to the site. The removal of the line of trees, hedgerow and part of the woodland habitat is required as part of the Proposed Development. As such, there will be an impact on currently used foraging/commuting pathways, disrupting connectivity and reduce the suitability of the site for use by commuting bats. There will also be the loss of 11.56ha of improved grassland and 1.18ha of semi-improved grassland. The grassland habitats are considered to be of low value for foraging bats, and their loss will therefore only result in a small reduction in suitable foraging resource.
- 7620 The embedded mitigation, including protection measures set out in the CEMP and LEMP, supported by the legal compliance to the protection afforded to bats will limit the risk of potential impacts to foraging and commuting bats. Therefore, the loss of commuting and foraging resources on the bat assemblage as a result of the Proposed Development will have **no significant** effects on the bat assemblage (**Not Significant**).

7621 In terms of light disturbance during construction, there are no plans to carry out construction activities overnight and only when daylight hours are reduced during Autumn/Winter could the lighting for site compounds potentially cause disturbance to foraging/commuting or roosting bats if the retained scrub or any off-site trees are illuminated. However, given the existing operational substation is already lit, the increase in potential light spill will be minimal and the common and widespread bat species present will already be habituated to some levels of artificial lighting. In light of this, **no significant** effects are anticipated as a result of light disturbance (**Not Significant**).

Otter

7622 The watercourse along the southern boundary and the network within the site, which is hydrologically connected to various other streams and ditches within the wider landscape, will be retained and therefore the proposed works will not fragment any population of otter dispersing across the wider landscape.

7623 In addition, the watercourse within the site will be realigned as part of the development proposals. Given the presence of a more suitable habitat in the form of the watercourse along the southern boundary,, maintained connectivity to the wider landscape throughout construction, and the lack of holts identified, the works will have **no significant** effects on the population of otter (**Not Significant**).

7624 In the absence of mitigation, there is a risk of direct killing or injury through construction traffic and trapping in open excavations, given that otter have been identified using the watercourse on the southern boundary of the site to disperse through the landscape. In addition, there is a low risk of indirect disturbance through water pollution and noise, for otters using the watercourse as a commuting resource during construction. However, the extent and magnitude provides limited temporary impacts and will be further reduced through the delivery of industry standard protection measures via a CEMP, and therefore there are no adverse effects, and **no significant** effect is anticipated (**Not Significant**).

7625 Increased light-spill during construction has the potential to impact commuting and foraging otters. However, as discussed for bats, the existing operational substation already emits light, which otter using the watercourse are likely to be habituated to, and the construction footprint is predominantly located within the north of the site which would minimise the light spill along the watercourse . Given the limited extent and magnitude of potential light spill impacts, therefore **no significant** effects are anticipated as a result of light disturbance (**Not Significant**).

Fish

7626 There will be impacts to the watercourse network for the realignment, where salmonid fry (trout) has been identified, in addition to the in-channel works associated with the rerouting and undergrounding of the 33kV OHL where salmonid parr (trout) and suitable habitat for salmonids has also been identified. In the absence of mitigation, there is the potential for harm to individual salmonids present which constitute a direct, permanent, adverse effect at a Local level, which is considered to be a minor adverse effect (**Significant**).

7627 The remaining section of watercourse that runs along the south-east boundary of the site, will be retained with a 50m buffer from the development footprint and therefore, the proposed works will avoid impacts to potential salmonid fry and parr present and will maintain connectivity for dispersal

throughout the existing watercourse network, and therefore the works will have **no significant** effects on the population of salmonids (**Not Significant**).

- 7.6.28 There is a risk of impacts through water pollution and surface water run-off, for salmonid parr and fry present using the watercourse network during construction. The extent and magnitude of the construction activity will provide limited temporary impacts, that will be further reduced through the delivery of industry standard protection measures via a CEMP. However, there is still a risk of indirect, adverse effect at a Local level, which is considered to be a minor adverse effect (**Significant**).

Operational

- 7.6.29 General operational impacts, which may result in effects (both positive and negative) upon IEFs are listed in **Table 7.6**.

Table 7.6: Likley Effects Caused by General Operational Impacts

Effect	Possible Causes/Mechanisms
Habitat Degradation	Pollution of watercourse through surface run-off.
Displacement of Animals	Lighting and noise (from substation operation) disturbance. Habitat loss and degradation (see above) may also displace resident animals.

Statutory and Non-Statutory Sites

- 7.6.30 Owing to the nature of the Proposed Development and spatial separation of the designations, no direct or indirect significant effects are anticipated to either statutory or non-statutory designated sites.

Habitat

Running Water

- 7.6.31 There may be impacts through changes in the quality or volume of water run-off during the operation of the substation. Any such degradation of habitats could also result in adverse impacts to the species using the watercourse through reduced water quality, changes in flow characteristics, and associated loss of habitat. However, in light of the delivery of industry standard embedded mitigation, including SuDS, the CEMP and a LEMP, there will be negligible direct or indirect adverse impacts. Therefore, would be **Not Significant**.

Fauna

Birds

- 7632 There will be no impacts to breeding birds through loss, damage or disturbance of nests, there are **No Significant** effects during operation of the Proposed Development on breeding birds.

Roosting Bats

- 7633 Similar to the construction phase, retained scrub and off-site trees adjacent to the site, may be subject to increased disturbance through lighting during the operation phase of the development. However, given the operation of the existing substation and limited value of the assemblage present, the existing assemblage are likely to be habituated to this type of disturbance. Therefore, the limited increase in light spill will have a negligible impact on the bat assemblage (**Not Significant**).

Otter

- 7634 The watercourse will be reinstated and connectivity to the wider landscape will be maintained during operation. However, there is limited potential for increased lighting during operation to impact otter. As the construction footprint is predominantly located approximately 200m north of the watercourse along the southern boundary of the site and given the presence of existing lighting associated with the substation, there will be no additional light pollution along the watercourse. Accordingly, no significant adverse effects on the otter population are predicted during the operational phase. (**Not Significant**)
- 7635 The indirect effects of water pollution due to run-off from the substation could result in negative impacts to the otter using the stream due to an associated reduction in food availability or refuge suitability. However, the implementation of the SuDS and LEMP will ensure that any such indirect, permanent adverse effects are mitigated to negligible significance (**Not Significant**)

Fish

- 7636 The indirect effects of water pollution due to run-off from the substation could result in negative impacts to salmonids using the watercourse network. However, the implementation of the SuDS and LEMP will ensure that any such indirect, permanent, adverse effects are mitigated to negligible significance (**Not Significant**)

Additional Mitigation

- 7637 The following mitigation measures will be employed to reduce the significant effects identified within the assessment of likely significant effects. The following measures will be applied to reduce the level of residual effect:
- The Illustrative Landscape Strategy enclosed as **Figure 3.2** sets out the habitat creation and planting measures designed to mitigate potential ecological effects associated with the development. These measures include, primarily, the establishment of wildflower grassland (6.01ha), areas of scrub (0.24ha) and the planting of 20 individual trees. Low growing tree species have been specified to avoid conflict with adjacent electrical infrastructure. This mitigated minor adverse effect of loss of commuting and foraging habitat for the local bat assemblage to negligible significance;

- An Ecological Construction Method Statement (ECMS) that details a range of species-specific measures to avoid or mitigate ecological impacts during construction, including identification of biodiversity protection zones with appropriate fencing and signage; sensitive timing and working methods to be adopted during both enabling and construction works to minimise harm to protected species;
- The attenuation basins are incorporated to manage surface water run-off, thereby reducing the risk of pollution entering the watercourse along the southern boundary of the site. A sensitive Lighting Strategy is to be produced, which will protect light sensitive species and those areas/habitats that are important to these species. This includes the hedgerow network and the off-site woodland, and any new habitats created; and
- Provision of a range of durable bird and bat boxes to be erected on mature trees on adjacent SPT owned land within the green infrastructure areas that will not be subject to light spill. This will be done in advance of construction activity to provide alternative habitat to suitable habitat lost within the site. SPT own the land immediately south of the existing 275kv substation, which will retain existing mature trees that can be used for this purpose. This could be controlled by an appropriately worded condition.

Assessment of Residual Effects

Construction Phase

7.6.38 Overall, negative effects during construction would be avoided or reduced through mitigation incorporated into the plans and delivered through industry standard methodologies employed during the construction phase via a CEMP, or equivalent documents, secured through planning conditions as well as mitigation licences, if required for roosting bats or through mitigation strategies **(Not Significant)**.

Habitats

7.6.39 The proposed development will result in an overall reduction of habitats present within the site, including woodland, hedgerows, a line of trees and a section of watercourse that will be rerouted. On-site mitigation will include the creation of grassland and low-height tree planting, the provision of SuDS and the creation of a new section of watercourse that will maintain connectivity to the wider watercourse network, seeded with wildflower mix and allowed to naturally be re-colonised by riparian vegetation. The above measures will reduce residual adverse effects from the loss of higher distinctiveness habitats on site to negligible **(Not Significant)**. In order to meet the requirement for the proposed development to restore and enhance biodiversity assets and to follow the mitigation hierarchy, offsite enhancements, specifically for these highly distinctive habitats, will also be utilised.

Fauna

7.6.40 Overall, subject to the mitigation measures outlined above being implemented, no significant, negative residual effects are anticipated on breeding birds, foraging and commuting bats and otters during the construction phase of development **(Not Significant)**.

Bats

7.6.41 In order to mitigate the loss of the 11 trees that have potential roost opportunities, the following measures will be implemented :

- Pre-commencement check to confirm that roosting bats are absent and that no additional PRFs are present;
- Where features cannot be fully inspected, a soft felling methodology will be employed for removal of trees, as prescribed by a non-licensed method statement (NLMS) to be included in the ECMS. This will involve slowly cutting the tree above and below each feature at the discretion of the supervising bat licensed ecologist and slowly lowering the feature so that it can be inspected;
- If roosting bats are confirmed, all works will cease and a European Protected Species (EPS) Licence will be obtained, and appropriate mitigation must be implemented prior to tree removal;
- If any additional trees are subsequently assessed as having potential roost features for individual bats (PRF-I), they will need to be subject to precautionary checks prior to felling, as outlined in an ECMS. In such cases, a minimum of one bat box per feature lost will be provided as mitigation; and
- The loss of the PRFs suitable for individual bats (PRF-I) in the 11 trees lost as a result of the Proposed Development will be replaced through the provision of bat boxes, on mature trees adjacent to the site, or the construction of a dedicated bat/wildlife house, which is to be detailed in the LEMP.

7.6.42 The above information should be detailed in the ECMS, secured by a pre-commencement planning condition. With the above measures implemented, the impacts of the loss of potential roosting opportunities on the bat assemblage is **Not Significant**.

Fish

7.6.43 With regards to fish, to comply with Environmental Authorisations (Scotland) Regulations 2018 (ESAR) from the Scottish Environment Protection Agency (SEPA), where salmonid habitat has been identified in the section of realignment and in the crossing points of the 33kV OHL, mitigation will be required. The Forth District Salmon Fishery Board³ requires that where works could cause fish to become stranded, injured or killed then a fish rescue and fish exclusion is required for potential salmonid fish within the affected sections of watercourse prior to the completion of works. This will involve the isolation or dewatering of the affected area, a search of the isolated area for fish, the capture and identification of fish, followed by the release of fish into an appropriate unaffected section of the same watercourse. This will therefore remove residual adverse effects resulting from the risk of harm to individual salmonids during construction (**Not Significant**).

7.6.44 Prior to commencement of proposed works, engineering safeguards, such as a temporary silt traps, will be installed to form an intercept for silt and other potential pollutants. Additional pollution prevention measures such as straw bales, 'Terram' and booms will be kept on-site at all times for the duration of proposed works for deployment in the event of a spill and to prevent/reduce runoff to wetland habitats should proposed works result in excessive mobilisation of contaminated materials.

³ The Forth District Salmon Fishery Board has powers under the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 to protect and improve fisheries and increase salmon stocks - <https://forthdsfb.org/>

7645 The above information should be detailed in a specific Fish Method Statement, secured by a pre-commencement planning condition. With the above mitigation measures implemented, the impacts of water pollution and surface water run-off on salmonid populations is **Not Significant**.

Operational Phase

7646 Similarly, negative effects during operation would be largely avoided or reduced through mitigation incorporated into the plans and delivered through industry standard methodologies employed during the operation phase via a Biodiversity Enhancement Plan or equivalent documents secured through planning conditions for biodiversity offsetting.

Habitats

7647 The post-development landscaping could potentially deliver positive effects for some habitats and species. However, its long-term retention will depend on future site maintenance requirements. Off-site habitat enhancement and creation to deliver enhancement in biodiversity based on a worst-case scenario of no landscaping being delivered within the site, will ensure there are no residual impacts to habitats.

Fauna

7648 The inclusion of appropriate drainage, attenuation basins designed for wildlife, individual tree and scrub planting, new hedgerows and wildflower grassland enhancements will ensure that there will be no significant adverse effects to species and their associated habitats.

7.7 Future Monitoring of Significant Environmental Effects

771 As detailed above, subject to the appropriate delivery of the proposed mitigation, including the BEP and associated habitat monitoring requirements to ensure appropriate establishment and management over the long-term, there are no anticipated residual environmental effects that will require monitoring. Off-site delivery of biodiversity gains will require an appropriately worded planning condition in place to ensure that these are implemented and monitored appropriately.

772 Should it transpire subsequently through update surveys prior to commencement that protected species licensing is required, then monitoring obligations will be agreed with NatureScot as part of the terms of licence.

7.8 Enhancements and Positive Effects to Biodiversity

781 Enhancement measures are proposed to deliver additional biodiversity benefits beyond those required for mitigation. These include the SuDS features incorporated within the Proposed Development that will be designed to provide ecological functionality alongside their primary role in surface water management. This will include the creation of habitat conditions suitable for aquatic and marginal species, thereby contributing to local biodiversity enhancement.

782 The applicant has completed a BNG exercise to understand biodiversity losses and determine the amount of off-site offsetting required to deliver 10% BNG, based on targeted, local biodiversity enhancement measures on a like-for-like or better principle. In accordance with this approach, any

biodiversity gains arising from on-site landscaping proposals will not be counted towards the BNG calculation and will be delivered in addition to the minimum requirement.

- 783 The Applicant will enter formal service agreements with partner organisations to provide off-site biodiversity enhancement measures, at a location to be confirmed within FC area, in accordance with SPEN RIIO T3 Business Plan to achieve 10% biodiversity net gains overall. Details will be set out within a Biodiversity Enhancement Plan (BEP). This will ensure that the proposals more than fulfil policy requirements should a worst-case scenario of minimal habitat retention, enhancement and creation occur within the site. The detailed BNG assessment and delivery mechanism can be secured by planning condition.

7.9 Summary

- 791 This chapter assesses the impacts and consequential ecological effects that may occur to IEFs from the Proposed Development. IEFs include designations, habitats, protected and Priority Species. The assessment includes a summary of the current baseline and predicted future ecological conditions and identifies measures to avoid, mitigate and/or compensate, where appropriate, for significant effects that may arise as part of the Proposed Development.

- 792 The assessment has been informed by baseline investigations (desk studies and a series of detailed ecological surveys). The assessment has been undertaken using professional judgement and experience, and in accordance with industry standard guidance.

- 793 The IEFs taken forward for detailed assessment included designated sites of up to international importance:

- Loch Leven SPA/Ramsar/SSSI (International);
- Outer Firth of Forth and St Andrews Bay Complex SPA/Ramsar (International);
- Firth of Forth SPA/Ramsar/SSSI (International);
- Forth Islands SPA/SSSI (International);
- Turflundie Wood SAC (International);
- Pitkeathly Mires SAC (International);
- Ballingry Meadow Wildlife Site (Council Area);
- Semi-natural woodland/native hedgerow/line of trees (Local);
- Running water (Local); and
- Protected or Priority Species of up to Local Importance:
 - Breeding Birds (Less than Local – Protected Species);
 - Roosting Bats (Local);
 - Otter (Local); and
 - Fish (Local).

- 794 Likely significant adverse effects, in the absence of mitigation, are restricted to the direct loss of woodland, hedgerow, trees, watercourse and associated bat foraging, commuting and roosting

resources and impacts to fish populations during construction (**Local Level – Minor Adverse effect/Significant**).

- 7.95 In order to mitigate for potential impacts during the construction phase, a range of industry standard measures describing key working methods and timings to avoid/minimise ecological effects during construction will be delivered through an ECMS, which would detail any protected species licences and species-specific method statements, and, where required, will specify where work will require supervision by a suitably qualified ecologist. Licences, if required, would be obtained in advance of construction, and mitigation measures would be further refined and agreed during the licencing process.
- 7.96 Embedded mitigation has sought to retain the scrub habitat along the northern boundary, and the development footprint has been spatially separated from the retained watercourse to the south. Where the removal of habitats cannot be avoided, mitigation i.e. scrub, hedgerow and wildflower grassland will be planted within the site., Offsite habitat units will also be provided to ensure there is No Net Loss in biodiversity in line with NPF4 policy requirements. In parallel with this approach, SPT promote 10% biodiversity net gain to accord with the SPEN RIIO T3 business plan commitments. The establishment, maintenance and long-term management of the retained, enhanced and created habitats on-site will be delivered via a BEP or other equivalent documentation. The landscaping at site will be additional to the provision of off-site biodiversity enhancement. Any trees planted at site will need careful consideration to ensure they do not undermine site security.
- 7.97 In summary, with appropriate mitigation and design, the construction and operation of the Proposed Development is not anticipated to have any significant residual effects on Important Ecological Features.

Chapter 08: Traffic and Transport

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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8. Traffic and Transport

8.1 Introduction

- 8.1.1 This chapter has been prepared by Stantec UK and sets out the likely significant effects of the Proposed Development on traffic and transport conditions.
- 8.1.2 This chapter assesses the likely environmental effects of the Proposed Development with respect to traffic and transport. This chapter also describes the methods used to assess the effects; the baseline conditions currently existing at the site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been adopted.

8.2 Scope of Assessment and Consultation

- 8.2.1 A request for an EIA Scoping Opinion was submitted to Fife Council (FC) in July 2024 (planning reference 24/01927/SCO). FC stated that the assessment of Traffic and Transport was to include construction phase only. The decommissioning phase has also been included within this assessment for robustness.
- 8.2.2 This chapter therefore only assesses the impact of the construction phase and the decommissioning phase.
- 8.2.3 In relation to the underground cabling proposals which will be subject to a separate planning application, the construction traffic associated with the underground cabling works is not proposed during the peak construction period and therefore, no further traffic impact assessment has been undertaken. In addition, the underground cabling construction works does not require any additional access points and construction associated with the underground cabling shall take place within land owned by SPEN. As a result of the above, the underground cabling construction has not been included as part of this assessment.

8.3 Legislation and Policy Context

- 8.3.1 The following guidance, standards, and policy have been reviewed or referenced within this chapter:
- Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Traffic and Movement (July 2023);
 - National Planning Policy 4 (February 2023); Transport Scotland's National Transport Strategy (February 2020);
 - Fife Council Local Development Plan (2017); and
 - Fife Council Local Transport Strategy (2023 – 2033).

Institute of Environmental Management and Assessment **Guidelines for the Environmental Assessment of Traffic and** **Movement (July 2023)**

- 8.32 IEMA Guidelines for the Environmental Assessment of Traffic and Movement (July 2023) has been used to provide good practice advice on how to carry out the assessment of traffic and movement of people as part of an Environmental Impact Assessment (EIA).
- 8.33 The IEMA Guidelines set out that the impact of traffic and movement is dependent on a wide range of factors including:
- Current state of traffic and movement environment;
 - Volume of Proposed Development traffic;
 - Vehicle speeds and road network operational characteristics;
 - Traffic composition (e.g. percentage of Heavy Goods Vehicles); and
 - Future cumulative Proposed Development traffic.
- 8.34 The perception, experience and health effects of changes in traffic by humans, and the impact of traffic changes on various ecological systems, will also vary according to such factors as:
- Severance;
 - Non-Motorised User Amenity;
 - Fear and Intimidation;
 - Road Safety;
 - Driver Delay;
 - Pedestrian Delay (incorporating delay to all non-motorised users); and
 - Hazardous Loads/Large Loads.
- 8.35 The methodology utilised for the assessment of transport effects reflects the guidance contained within the IEMA Guidelines.

National Planning Framework 4 (February 2023)

- 8.36 National Planning Framework 4 was adopted in February 2023 and has been produced to set out a long-term spatial strategy including a set of national planning policies to form part of the statutory development plan. The document sets out the spatial principles, regional priorities, national developments and national planning policy. The document replaces the NPF3 and Scottish Planning Policy (2014).
- 8.37 The document sets out six spatial principles which include:
- Transition – we will empower people to shape their places and ensure the transition to net zero is fair and inclusive;

- Conserving and recycling assets – we will make productive use of existing buildings, places, infrastructure and services, locking in carbon, minimising waste, and building a circular economy;
- Local living – we will support local liveability and improve community health and wellbeing by ensuring people can easily access services, greenspace, learning, work and leisure locally;
- Compact urban growth – we will limit urban expansion so we can optimise the use of land to provide services and resources, including carbon storage, flood risk management, blue and green infrastructure and biodiversity;
- Rebalanced development – we will target development to create opportunities for communities and investment in areas for past decline, and manage development sustainably in areas of high demand; and
- Rural revitalisation – we will encourage sustainable development in rural areas, recognising the need to grow and support urban and rural communities together.

8.3.8 Through applying the spatial principles, the national spatial strategy supports the delivery of:

- Sustainable places;
- Liveable places; and
- Productive places.

Transport Scotland's National Transport Strategy (February 2020)

8.3.9 The Transport Scotland's National Transport Strategy sets out a strategy for the whole transport system in Scotland, on which it provides the strategic framework foundations for which future decisions for investment and infrastructure is to be made.

8.3.10 The strategy sets out a vision which states: *"We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, business and visitors."*

8.3.11 In order to achieve this vision, the strategy sets out four objectives including:

- Reducing inequality;
- Taking climate action;
- Helps deliver inclusive economic growth; and
- Improves our health and wellbeing.

Fife Council Local Development Plan (2017)

8.3.12 The Fife Council Local Development Plan (LDP) was adopted in September 2017 and outlines the strategies and policies associated with planning across the Fife region. The document provides the strategic framework for the years 2014 to 2026 to meet future environmental, economic, and social needs.

Fife Council Local Transport Strategy (2023–2033)

- 8.3.13 The Local Transport Strategy for Fife 2023–2033 sets out FC's vision for transport in Fife over the next ten years. The strategy is to tackle important issues and invest in the transport system.
- 8.3.14 The vision of the transport strategy is that by 2033, Fife's transport system supports communities with affordable, seamless and sustainable access to all aspects of our daily lives. To meet the vision, the strategy sets out four priorities:
- Fair access to daily activities;
 - Safe and secure travel for all;
 - A just transition to net zero; and
 - A resilient transport network.

8.4 Assessment Methodology and Significance Criteria

Assessment Methodology

Approach

- 8.4.1 The traffic and transport impacts of the Proposed Development have been assessed in line with the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Traffic and Movement (July 2023).
- 8.4.2 Within the IEMA Guidelines, two broad rules are suggested which can be used as a screening process to limit the scale and extent of the assessment which in turn assists identifying links to be assessed. These are:
- *“Rule 1: include highway links where traffic flows will increase more than 30% (or the number of heavy goods vehicles (HGVs) will increase by more than 30%); and*
 - *Rule 2: Include highway links of high sensitivity where traffic flows have increased by 10% or more.”*
- 8.4.3 Where the predicted increase in traffic flows is lower than the thresholds set out above, the IEMA Guidelines suggest the significance of the effects can be stated to be negligible and further detailed assessments are not warranted. Furthermore, increases in traffic flows below 10% are generally considered to be insignificant in environmental terms given that daily variations in background traffic may vary by this amount.
- 8.4.4 The extent of transport impacts has been determined using pre-defined significance criteria for each mode of travel. Those criteria have been based on the net change in journeys as a result of the Proposed Development and the infrastructure improvements delivered as part of the proposals. The significance criteria establishes the magnitude of any beneficial or adverse effects that the Proposed Development will have on the transport network.
- 8.4.5 The environmental impact criteria identified later within this section are therefore considered within the study area for the following thresholds:

- On links with All Vehicle or HGV traffic flow changes in any assessment year of +30%; and
- On links with Medium or High sensitivity receptors, with All Vehicle or HGV flow changes greater than 10%.

Receptor Sensitivity

8.4.6 The IEMA Guidelines provides a list of sensitive receptors that should be considered within the assessment. The sensitive receptor user groups are summarised below:

- Non-motorised users;
- Public Right of Way users;
- Motorists and freight vehicles;
- Public Transport; and
- Emergency Services.

8.4.7 Further to the user groups, the following sensitive receptors should also be considered:

- People at home;
- People at work;
- Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors);
- Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools);
- Retail areas;
- Recreational areas;
- Tourist attractions;
- Collision clusters and routes with road safety concerns; and
- Junctions and highway links at (or over) capacity.

8.4.8 Categories of receptor sensitivity have been defined from the principles set out in the IEMA Guidelines, and include the following:

- The need to identify particular groups or locations which may be sensitive to changes in traffic conditions;
- The list of affected groups and special interests set out in the guidance; and
- The identification of links or locations where it is felt that specific environmental problems may occur.

8.4.9 These categories have been used to outline in broad terms the sensitivity of receptors to traffic for the categories of impact assessed in this chapter, although in detail, each receptor assessed will have a different sensitivity to each specific impact. The sensitivity of receptors has been summarised in **Table 8.1**.

Table 8.1: Sensitivity of Receptors

Sensitivity	Description	Examples of Locations for Receptor Use
Negligible	No receptors to be impacted and road network not affected	Open spaces (fields), or locations with excellent footway provision where receptors are situated further away from road networks.
Low	Receptors with low sensitivity to traffic flows used minimally, relative to other receptors in the study area.	Open spaces (fields), tourist or visitor attractions, nature conservation areas, historic buildings, churches and residential areas with adequate footway provision.
Medium/Moderate	Receptors with medium sensitivity to traffic flow, relative to other receptors in the study area.	Hospitals, surgeries and clinics, parks and recreation areas, congested junctions, unsegregated cycleways, community centres, conservation areas, shopping areas, and roads with narrow footways.
High	Receptors with the greatest sensitivity to traffic flow changes and are used at a large level, relative to other links in the study area.	Schools, colleges, other educational institutions, playgrounds, retirement/care homes for the elderly, social rented accommodation, roads with no footways, and accident blackspots.

Magnitude of Change/Impact

- 8.4.10 A 'Magnitude of Impact' value is determined by considering Severance, Road Vehicle Driver and Passenger Delay, Non-motorised user Delay and Amenity, Fear and Intimidation, and Road User and Pedestrian Safety, which are the topics identified in the IEMA Guidelines for assessment. **Table 8.2** gives an overview of the topics considered in the assessment.

Table 8.2: Magnitude of Impact Assessment Topics

Assessment Topic	Typical Description
Severance	The perceived division within a community when separated by a major transport infrastructure.
Road Vehicle Driver and Passenger Delay	Assessment of junction capacity and delay is undertaken through the use of standard practice analytical tools and junction analysis programs.
Non-motorised Amenity and Delay	Changes in traffic patterns affecting pedestrians'/cyclists' ability to cross. The pleasantness of pedestrians'/cyclists' journeys encompassing other factors.
Road User and Pedestrian Safety	Assessment of existing road link records and whether there will be an increase in incidents for all road users, including pedestrians and cyclists.
Fear and Intimidation	The composition and volume of traffic and whether it would be perceived as intimidating by pedestrians and cyclists.

- 8.4.11 As part of the scoping stage, it was agreed that the only assessment topic (identified in Table 8.2) to be included as part of the Traffic and Transport Chapter was severance, subject to exceeding the threshold for a 30% increase. If the threshold was not exceeded, severance would not be required to be included as part of the final assessment.
- 8.4.12 Notwithstanding this decision, for clarity and in line with IEMA Guidelines, a summary of each assessment topic methodology has been provided below.

Severance

- 8.4.13 The IEMA Guidelines states at paragraph 3.13 that “*severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery.*” Furthermore, at paragraph 3.16 the guidance states, “*Changes in traffic flow of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance respectively*”. However, the guidance acknowledges that the measurement and prediction of severance is extremely difficult. The assessment of severance pays full regard to specific local conditions, in particular the location of pedestrian routes to key local facilities and whether or not crossing facilities are provided.
- 8.4.14 The potential effects as set out later in this chapter are based on an assessment, which takes into account the IEMA’s thresholds. **Table 8.3** summarises these thresholds.

Table 8.3: Severance Threshold

Magnitude	Traffic Flow (AADT) Increase
Major	>90%
Moderate	60 – 90%
Minor	30 – 60%
Negligible	<30%

Road Vehicle Driver and Passenger Delay

- 8.4.15 Delay to drivers can be estimated through capacity assessments at key points on the local road network. The addition of new development-generated traffic could result in an increase in the number of vehicles using key junctions. This may lead to additional delays depending on the existing operation, levels of background traffic and development-generated traffic.
- 8.4.16 Paragraph 3.19 of the IEMA Guidelines states that “*Traffic delays to non-development traffic can occur at several points on the network surrounding a development site including:*

At the site entrance where there will be additional turning movements

On the highways passing the development site where there is likely to be additional traffic and the flow might be affected by additional parked cars

At other key intersections along the highway which might be affected by increased traffic

- *At side roads where the ability to find gaps in the traffic may be reduced, thereby lengthening delays.”*

8.4.17 Values for delay due to these elements can be determined through the use of ‘industry-standard’ junction modelling software packages (the ARCADY and PICADY modules of TRL’s Junctions 11 program for major/minor priority junctions and roundabout and LinSig for traffic signal control junctions), or other suitable programs. The IEMA Guidelines further states at paragraph 3.20 that *“These delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system”*.

8.4.18 **Table 8.4** shows the magnitude-scale applied to the category ‘Road Vehicle Driver and Passenger Delay’ at junctions, based on professional judgement, for the purpose of this assessment. It should be noted that **Table 8.4** is used in this assessment for advisory purposes only. The magnitude of effect of the considered links is determined in a more holistic approach to determine the likely effect of the Proposed Development on road user and passenger delay.

Table 8.4: Driver Delay at Junctions – Magnitude of Effect

Magnitude	Definition
Major	Average vehicle delay increases of more than 2 minutes as a result of the Proposed Development during the peak periods.
Moderate	Average vehicle delay increases are between 1 and 2 minutes as a result of the Proposed Development during the peak hour periods.
Minor	Average vehicle delay increases between 45 and 60 seconds as a result of the Proposed Development during the peak hour periods.
Negligible	Average vehicle delay increases are less than 45 seconds as a result of the Proposed Development during the peak hour periods.

Non-motorised User Delay and Amenity

8.4.19 Non-motorised user delay for a particular walking journey can be increased by changes to traffic flows and can affect the ability of pedestrians to cross a road. This can affect an individual’s desire to make a particular walking journey and may prove to be a barrier in active travel. Changes in the volume, speed or composition of traffic are most likely to affect pedestrian delay, with the level of severity dependent on the general level of pedestrian activity and the physical condition of crossing points.

8.4.20 It is important to note that qualitative aspects such as the quality of the pedestrian and cycle environment, and the trip generators served by these environments, also influence the propensity for individuals to walk and cycle. Sense of personal security and safety, gradient, permeability, legibility and maintenance of these infrastructures aid in encouraging their use and discouraging the use of non-car modes. These, in addition to the quantitative aspects of assessment such as changing traffic flows, are therefore an important consideration in this chapter for a number of the criteria.

8.4.21 The determination of what constitutes a material impact on pedestrian delay is generally left to the judgement of the assessor and knowledge of local factors and conditions. IEMA Guidelines, paragraph 3.26 states *“Given the range of local factors and conditions that can influence pedestrian delay (e.g. a discrete delay may have a lesser impact in an urban environment than a rural setting), it is not considered wise to set down definitive thresholds. Instead, it is recommended that the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect”*.

8.4.22 **Table 8.5** shows the magnitude-scale applied to links with insufficient or no pedestrian facilities at desire lines and links subject to pedestrian footfall. It is noted that these levels apply where no crossing facility is provided. Professional judgement is to be used to determine the magnitude of impact where appropriate signalised crossing points are provided.

Table 8.5: Non-motorised User Delay – Magnitude of Effect

Magnitude	Definition
Major	Link subject to a change in two-way flow of 5,600+ vehicles per hour.
Moderate	Link subject to a change in two-way flow of 3,500-5,600 vehicles per hour.
Minor	Link subject to a change in two-way flow of 1,400-3,500 vehicles per hour.
Negligible	Link subject to a change in two-way flow of fewer than 1,400 vehicles per hour.

8.4.23 Pedestrian amenity is broadly defined as the relative pleasantness of a journey, which is affected by traffic flow, traffic composition and footway width/separation from traffic. The guidance suggests at paragraph 3.30 that a “...tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled”.

Road User and Pedestrian Safety

8.4.24 Road user and pedestrian safety and collision rates can be assessed using the statistical assessment of the likely increase or decrease in the number of collisions resulting from changes in traffic flows and composition, which is calculated using anticipated increase in vehicle-km on different classes of road. However, the IEMA guidelines suggest that, in paragraph 3.42 and 3.43 “...it is more common for stakeholders to request a ‘collision cluster’ assessment to identify potential impacts at a more detailed level... Collision clusters are identified by a detailed review of the baseline characteristics to determine the road safety sensitivity of discrete areas of the road network...”.

8.4.25 The IEMA Guidelines also take into account the ‘Safe System’ approach within paragraph 3.45. The approach can be taken as follows:

- *“Identify the study area using historic crash data;*
- *Undertake evidence-led, objective modelling techniques to establish a baseline road safety level for the roads within the study area on which the impact thresholds are exceeded in relation to either non-motorised users or motorised user traffic. This analysis can be carried out using tools such as the iRAP Star Rating protocols or similar tools produced by individual highways/road authorities; and*
- *Assess the effects of additional development traffic for all users (including vulnerable groups) across the whole width of the highway corridor. This model should also assess the effect of any changes to the baseline road network, such as the provision of access junctions.”*

8.4.26 The final assessment should be based upon the changes in fatal and serious injuries, and roadside hazards using the iRAP Star Rating scoring system. This system determines that 1-star roads have the highest risk, and 5-star roads have the lowest risk. An example of a 3-tier star rating assessment has been provided in **Table 8.6**, and a magnitude of effects has been presented in **Table 8.7**.

Table 8.6: iRAP Star Rating Scoring System

Star Rating	Pedestrian Safety	Cycle Safety	Vehicle Safety
1 Star	No footpath, no safe crossing points, >40mph traffic, <2.0m wide footways, a fatal accident has occurred involving a pedestrian.	No cycle path, no safe crossings, poor road surface, >40 mph traffic, a fatal accident has occurred involving a cyclist.	Undivided road, narrow centre line, trees close to the road, winding alignment, >60mph traffic, a fatal accident has occurred involving a vehicle.
3 Stars	Footway present, pedestrian refuge and uncontrolled crossings, street lighting, 30mph traffic, >/2.0m, a serious or slight accident has occurred involving a pedestrian.	On-road cycle lane, good road surfacing, street lighting, 30mph traffic, a serious accident has occurred involving a cyclist.	Wide centreline and road widths, >5m from roadside hazards, 60mph traffic, a serious accident has occurred involving a vehicle.
5 Stars	Footway present, signalised and controlled crossings, street lighting, >2.5m wide footways, <30mph traffic, a slight accident or no accident has occurred involving a pedestrian.	Off-road dedicated cycle facility, raised platform crossings, signalised or controlled crossings, advanced stop lines, street lighting, <30mph traffic, a slight accident or no accident has occurred involving a cyclist.	Safety barrier separating oncoming vehicles and protecting roadside hazards, straight alignments, <60mph traffic, a slight accident or no accident has occurred involving a vehicle.

8.4.27 In order to achieve a total iRAP score, pedestrian safety, cycle safety, and vehicle safety must be scored based on the star rating (shown in Table 8.6). Once each element has been scored and totalled, the total iRAP score can be applied to Table 8.7 below which determines the applicable magnitude of effect.

Table 8.7: Road User and Pedestrian Safety – Magnitude of Effect

Magnitude	Total iRAP Score (Pedestrian + Cycle + Vehicle)
Major	0-3 -High safety risks
Moderate	4-6 - moderate safety risks
Minor	7-10 - low safety risks
Negligible	11 - 15 - low to no safety risks

8.4.28 Liaison with the relevant authorities should be undertaken to determine the best approach for the significance of road safety effects. Additionally, a Road Safety Audit should be undertaken for any proposals engineering changes to the adopted road network.

Fear and Intimidation

- 8.4.29 A further effect of traffic flows on pedestrian and cycle movements is the element of fear and intimidation individual travellers will experience with respect to vehicular movements. The impact of this factor is dependent on the volume of traffic, the HGV content and speed, the width of footway and its proximity to the carriageway edge. As is the case with pedestrian delay, there are no commonly agreed thresholds for the measurement of this impact, with appraisal based on the judgement of the assessor.
- 8.4.30 Nevertheless, the IEMA Guidelines do suggest some thresholds, based on previous research, which could be used, and these are shown in **Table 8.8**.

Table 8.8: Fear and Intimidation Threshold

Degree of Hazard Score	Average Traffic Flow over 18-Hour Day (all vehicles/hour 2-way)	Average Vehicle Speed	Total 18 Hour Heavy Goods Flow (HGV)
30	1,800+	>40	3,000+
20	1,200-1,800	30-40	2,000-3,000
10	600-1,200	20-30	1,000-2,000
0	< 600	<20	<1000

- 8.4.31 Notwithstanding the thresholds set in **Table 8.8**, the IEMA guidelines suggest that they should be approached with a certain level of caution as the individual factors could be weighted by local circumstances to decide the overall value of intimidation. For example, a road may show higher speeds but lower flows, making crossing easier, or high flows but congested and constant traffic, therefore reducing total fear of passing vehicles but increasing crossing difficulties.
- 8.4.32 The total score from the three elements is combined to provide a 'level' of fear and intimidation for all three elements. **Table 8.9** has been presented below to demonstrate the levels of fear and intimidation.

Table 8.9: Levels of Fear and Intimidation

Level of Fear and Intimidation	Total Hazard Score
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

- 8.4.33 The magnitude of impact is approximated with reference to the changes in the level of fear and intimidation from baseline conditions. **Table 8.10** summarises the magnitude-levels applied to the category fear and intimidation' for the purpose of this assessment.

Table 8.10: Fear and Intimidation – Magnitude of Impact

Magnitude of Impact	Definition	Change in step/traffic flows (AADT) from baseline conditions
High	Increase in average traffic flow over 18 hours of 1,800+ vehicles/hour. An average 18-hour HGV flow of 3,000+.	Two step changes in level.
Medium	Increase in average traffic flow over 18 hours of 1,200-1,800 vehicles per hour. An average 18-hour HGV flow of 2,000-3,000.	One step change in level. >400 vehicle increase in average 18 hour AV two-way all vehicle flow. >500 HV increase in total 18-hour HV flow.
Low	Increase in average traffic flow over 18 hours of 600-1,200 vehicles/hour. An average 18-hour HGV flow of 1,000-2,000.	One step change in level. <400 vehicle increase in average 18 hour AV two-way all vehicle flow. <500 HV increase in total 18-hour HV flow.
Negligible	Increase in average traffic flow over 18 hours of less than 600 vehicles/hour. An average 18-hour HGV flow of less than 1,000.	No change in step changes.

Significance of Effect

- 8.4.34 Significance criteria are determined through referencing magnitude of impact with sensitivity of receptors. The significance of traffic change varies depending upon the environmental impact criteria being considered. The magnitude of impact, based on the change that the Proposed Development would have upon the receptors is considered within the range of major, moderate, minor and negligible. Table 8.11 demonstrates the Magnitude of Impact
- 8.4.35 It is noted that consideration is given to scale and duration of impact/effect (e.g. for construction, short-term for 1–2 years, medium-term for 3–5 years, long-term for 5 years and greater, and permanent, dependent upon project timeframes).

Table 8.11: Magnitude of Impact (Degree of Change)

Magnitude of Impact (degree of change)		Typical description
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.

Magnitude of Impact (degree of change)		Typical description
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No Change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

8.4.36 The predicted level of effect is based upon the consideration of magnitude of impact and sensitivity of the resource/receptor to come to a professional judgement of how important this effect is. **Table 8.12** demonstrates the Level of Significance of Effect.

Table 8.12: Level of Significance of Effect

Magnitude of Impact	Sensitivity		
	High	Moderate	Low
Major	Major	Major - Moderate	Moderate - Minor
Moderate	Major - Moderate	Moderate - Minor	Minor
Minor	Moderate - Minor	Minor	Minor - Negligible
Negligible	Negligible	Negligible	Negligible

8.4.37 A Moderate or Major level of effect is considered significant for the purposes of this EIA assessment.

8.4.38 Where the assessment demonstrates that no impacts are a result of the Proposed Development, 'negligible' has been identified and these effects are inherently not significant.

Assessment Limitations and Assumptions

8.4.39 The designated construction and decommissioning vehicle routes have not been agreed with FC at this stage. The final vehicle routes will be agreed and confirmed in a detailed Construction Traffic Management Plan (CTMP) post planning determination as part of the approval of conditions process.

8.4.40 Although the routes are yet to be agreed, two worst-case scenarios have been assessed at this stage to provide a robust assessment, and include the following:

- Scenario 1: 100% of HGV movements route west to/from Junction 5 of the M90; and
- Scenario 2: 50% of HGV movements route west to/from Junction 5 of the M90 and 50% of HGV movements route east along the B9097 and then south towards the A92.

- 8.4.41 It is envisaged that the HGVs will route from the Proposed Development towards the M90 via the following roads:
- B9097 – between the Proposed Development access and B920;
 - B920 – between the B9097 (Proposed Development Road) and B9097 (travelling west to the M90);
 - B9097 (second stretch) – between B920 and B996 (to the west);
 - B996 – adjacent to Junction 5 of the M90; and
 - Junction 5 of the M90.
- 8.4.42 Alternatively, it is envisaged that the HGVs will route from the Proposed Development towards the A92 via the following roads:
- B9097 – between the Proposed Development and B921;
 - B921 – between the B9097 and B981 (Jamphlars Road);
 - B981 (Jamphlars Road) - between B921 and Auchterderran Road;
 - B9149 – between B981 and A92 junction; and
 - A92 junction south of Lochgelly.
- 8.4.43 A detailed description of the routing has been provided within the Baseline Conditions section of this chapter.
- 8.4.44 The construction traffic flows have been based upon the peak period. It is noted that the peak period will not include Abnormal Indivisible Load (AIL) vehicles; however, it is acknowledged that these will have to access the site to transport the six proposed transformers. Given the AILs will generate negligible trips on the network and are to be outside of the construction peak period, no further assessment of AILs has been undertaken within this Traffic and Transport Chapter. Details regarding the access for AILs on the local road network are to be included within the CTMP, which the Local Planning Authority will require to approve prior to commencement.
- 8.4.45 It is anticipated that the deconstruction of the existing 275kV substation will begin in Q4 2030 and continue for approximately 12-14 months. The decommissioning phase traffic flows have been based upon the peak period noted to be between May and August 2031. Similar to the construction phase, the AILs associated with the decommissioning phase will generate negligible trips that are outside of the peak construction periods, as a result no further assessment of AILs has been undertaken within this Traffic and Transport Chapter.
- 8.4.46 Nevertheless, the decommissioning phase will also include AIL movements, and as aforementioned, details regarding the access for AILs on the local road network are to be included within the CTMP, which the Local Planning Authority will require to approve prior to commencement.

8.5 Baseline Conditions

Current Baseline (2025)

Baseline Traffic Data Collection

- 8.5.1 Baseline traffic flows are required to understand the existing flows on the local road network and along the routes towards the strategic road network.
- 8.5.2 The baseline traffic flows have been obtained through a 7-day Automatic Traffic Count (ATC). The ATC surveys were undertaken over a 7-day period (24-hours each day) between Monday 02 December and Sunday 08 December 2024 outside of school holiday periods.
- 8.5.3 Seven locations on the surrounding local road network were chosen for the survey, as part of potential routes towards the strategic road network including the M90, and routes towards the A92 in the south. The seven locations included:
- Location 1 - B9097 East of Brackley Lodge;
 - Location 2 - B920 North of Robert Braird and Sons Farm;
 - Location 3 - B9097 south of B920;
 - Location 4 - B920 Ballingry;
 - Location 5 - B921 adjacent Tillcoultry Quarry;
 - Location 6 - B981 Jamphlars Road adjacent Recycling Centre; and
 - Location 7 - B9149 between Muir Road and B981 Roundabouts.
- 8.5.4 The survey results have been included as **Technical Appendix 8.1**, where each of the locations above are referred to as “L1 - L7”. The survey results provide baseline 7-Day, 24-hour Annual Average Daily Traffic (AADT) flows for total vehicles (including HGVs). The survey results also provide baseline 7-Day 24-hour AADT flows for HGVs only. **Table 8.13** demonstrates the baseline traffic flows for all surveyed locations.

Table 8.13: 2024 Baseline Flows

Survey Location	Vehicle Type	24 hour 7-day AADT Flows
		2024 Baseline Flows (Two-Way)
Location 1 B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	All Vehicles	5372
	Heavy Goods Vehicles	838
	Heavy Goods Vehicles (%)	16%
Location 2 B920 north of Robert Baird and Sons Farm	All Vehicles	3800
	Heavy Goods Vehicles	631
	Heavy Goods Vehicles (%)	17%
Location 3 B9097 south of B920 ghost island junction	All Vehicles	2555
	Heavy Goods Vehicles	461
	Heavy Goods Vehicles (%)	18%
Location 4 B920 north of Ballingry Crescent, Ballingry	All Vehicles	4689
	Heavy Goods Vehicles	566
	Heavy Goods Vehicles (%)	12%
Location 5 B921 adjacent Tillcoultry Quarries	All Vehicles	4030
	Heavy Goods Vehicles	510
	Heavy Goods Vehicles (%)	13%
Location 6 B981 Jamphlars Road adjacent Bowhill Recycling Facility	All Vehicles	4446
	Heavy Goods Vehicles	545
	Heavy Goods Vehicles (%)	12%
Location 7 B9149 between Muir Road and B981 Roundabouts	All Vehicles	9406
	Heavy Goods Vehicles	1182
	Heavy Goods Vehicles (%)	13%

Future Baseline (2027)

Future Baseline Scenario

8.5.5 The peak construction period across the entire construction phase has been identified to occur during March – June 2027. Therefore, the baseline 2024 traffic flows have been factored to generate the baseline 2027 flows. Scotland's National Road Traffic Forecast (NRTF) calculator tool has been interrogated to derive a low growth factor. The low growth factor was applied to the 2024 baseline flows. The 2027 future baseline traffic flows have been demonstrated in **Table 8.14**.

Table 8.14: 2027 Future Baseline Flows

Survey Location	Vehicle Type	24 hour 7-day AADT Flows
		2027 Future Baseline Flows (Two-Way)
Location 1 B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	All Vehicles	5426
	Heavy Goods Vehicles	846
	Heavy Goods Vehicles (%)	16%
Location 2 B920 north of Robert Baird and Sons Farm	All Vehicles	3838
	Heavy Goods Vehicles	637
	Heavy Goods Vehicles (%)	17%
Location 3 B9097 south of B920 ghost island junction	All Vehicles	2581
	Heavy Goods Vehicles	466
	Heavy Goods Vehicles (%)	18%
Location 4 B920 north of Ballingry Crescent, Ballingry	All Vehicles	4736
	Heavy Goods Vehicles	572
	Heavy Goods Vehicles (%)	12%
Location 5 B921 adjacent Tillcoultry Quarries	All Vehicles	4070
	Heavy Goods Vehicles	515
	Heavy Goods Vehicles (%)	13%
Location 6 B981 Jamphlars Road adjacent Bowhill Recycling Facility	All Vehicles	4490
	Heavy Goods Vehicles	550
	Heavy Goods Vehicles (%)	12%
Location 7 B9149 between Muir Road and B981 Roundabouts	All Vehicles	9500
	Heavy Goods Vehicles	1194
	Heavy Goods Vehicles (%)	13%

Construction Traffic and Decommissioning Traffic

Construction Traffic

8.5.6

The proposed construction traffic has been calculated and provided by the Applicant. Although the traffic associated with the construction phase will generate trips across the entire period, the Applicant identified a peak construction period. The peak construction period was identified between March and June 2027 (during the 'Bulk Earthworks' period). As the peak period is anticipated to generate the most trips during the construction phase, these trips have been used within the assessment as they are robust.

- 8.5.7 The Applicant identified that the construction peak period anticipates a total of 78 two-way HGV trips per day. The 78 two-way trips will access and exit the site and will route towards the M90 or A92 as aforementioned.

Decommissioning Traffic

- 8.5.8 The proposed decommissioning traffic has been calculated and provided by the Applicant. The decommissioning phase is anticipated to commence in Q4-2030 and last for a period of approximately 12-14 months, with the peak decommissioning period occurring between May and August 2031.
- 8.5.9 The Applicant, using the anticipated number of vehicles for each decommissioning activity, calculated that a total of 187 vehicles is forecast over the 12-14-month period. To provide a robust forecast, the Applicant then applied a 25% margin. Including the 25% margin, the decommissioning phase is proposed to generate 234 trips, equating to a total of 468 two-way trips. This equates to an average of 39 daily two-way trips over a 12-month period, or an average of 33 daily two-way trips over a 14-month period.
- 8.5.10 The Applicant also provided that during the peak decommissioning months (May to August 2031), 60 two-way trips are anticipated per day.
- 8.5.11 Overall, it is clear that the construction phase is forecast to generate a higher quantity of vehicle trips compared to the decommissioning phase during the respective peak periods.
- 8.5.12 The following assessment will therefore only consider the construction phase trips on the local road network as this phase produced a higher, and therefore worst-case scenario, number of trips. No further assessment of the decommissioning phase has been undertaken.

Future Baseline (2027) and Construction Traffic

- 8.5.13 The 78 two-way HGV trips have been added to the 2027 baseline flows. The percentage increase was calculated for all seven survey locations and has been provided within **Table 8.15**.
- 8.5.14 Although the construction routes are yet to be agreed, two worst-case scenarios have been proposed at this stage to provide a robust assessment and include the following:
- Scenario 1: 100% of HGV movements route west to/from Junction 5 of the M90; and
 - Scenario 2: 50% of HGV movements route west to/from Junction 5 of the M90 and 50% of HGV movements route east along the B9097 and then south towards the A92.
- 8.5.15 In order to establish the impact of the proposed construction peak period traffic on the local road network, the two routing scenarios have been assessed.

Scenario 1

- 8.5.16 Scenario 1 anticipates that construction HGV routing is to travel towards the M90 during the construction peak period, and therefore does not include for Location 4, 5, 6 and 7. Table 8.15 demonstrates the percentage increase of vehicles (including all vehicles, and HGVs only) at Location 1, 2 and 3.

Table 8.15: Percentage Increase of 7-day AADT Traffic Flows (Two-Way) - Scenario 1

Survey Location	Vehicle Type	24 hour 7-day AADT Flows		
		2027 Future Baseline Flows (Two-Way)	Assessment Flows (Proposed Construction Flows and 2027 Future Base Flows) (Two-Way)	Percentage Increase
Location 1	All Vehicles	5426	5504	1.44%
B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	Heavy Goods Vehicles	846	924	9.22%
	Heavy Goods Vehicles (%)	16%	17%	-
Location 2	All Vehicles	3838	3916	2.03%
B920 north of Robert Baird and Sons Farm	Heavy Goods Vehicles	637	715	12.24%
	Heavy Goods Vehicles (%)	17%	18%	-
Location 3	All Vehicles	2581	2659	3.02%
B9097 south of B920 ghost island junction	Heavy Goods Vehicles	466	544	16.75%
	Heavy Goods Vehicles (%)	18%	20%	-

Scenario 2

8.5.17 Scenario 2 anticipates that 50% of HGVs (39) are to travel west towards Junction 5 of the M90 and 50% of HGVs (39) are to travel east to get to the A92 adjacent Lochgelly. **Table 8.16** demonstrates the percentage increase of vehicles (including all vehicles, and HGVs only) across Location 1 to Location 7.

Table 8.16: Percentage Increase of 7-day AADT Traffic Flows (Two-Way) - Scenario 2

Survey Location	Vehicle Type	24 hour 7-day AADT Flows		
		2027 Future Baseline Flows (Two-Way)	Assessment Flows (Proposed Construction Flows and 2027 Future Base Flows) (Two-Way)	Percentage Increase
Location 1	All Vehicles	5426	5465	0.72%
B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	Heavy Goods Vehicles	846	885	4.61%
	Heavy Goods Vehicles (%)	16%	16%	-

Survey Location	Vehicle Type	24 hour 7-day AADT Flows		
		2027 Future Baseline Flows (Two-Way)	Assessment Flows (Proposed Construction Flows and 2027 Future Base Flows) (Two-Way)	Percentage Increase
Location 2 B920 north of Robert Baird and Sons Farm	All Vehicles	3838	3877	1.02%
	Heavy Goods Vehicles	637	676	6.12%
	Heavy Goods Vehicles (%)	17%	17%	-
Location 3 B9097 south of B920 ghost island junction	All Vehicles	2581	2620	1.51%
	Heavy Goods Vehicles	466	505	8.38%
	Heavy Goods Vehicles (%)	18%	19%	-
Location 4 B920 north of Ballingry Crescent, Ballingry	All Vehicles	4736	4775	0.82%
	Heavy Goods Vehicles	572	611	6.82%
	Heavy Goods Vehicles (%)	12%	13%	-
Location 5 B921 adjacent Tillcoultry Quarries	All Vehicles	4070	4109	0.96%
	Heavy Goods Vehicles	515	554	7.57%
	Heavy Goods Vehicles (%)	13%	13%	-
Location 6 B981 Jamphlars Road adjacent Bowhill Recycling Facility	All Vehicles	4490	4529	0.87%
	Heavy Goods Vehicles	550	589	7.09%
	Heavy Goods Vehicles (%)	12%	13%	-
Location 7 B9149 between Muir Road and B981 Roundabouts	All Vehicles	9500	9539	0.41%
	Heavy Goods Vehicles	1194	1233	3.27%
	Heavy Goods Vehicles (%)	13%	13%	-

8.6 Assessment of Likely Significant Effects

Construction

- 8.6.1 As part of the assessment of likely significant effects, both Scenario 1 and Scenario 2 have been assessed separately. This assessment reviews the future baseline scenarios.

Scenario 1

- 8.6.2 The screening for Scenario 1 identified that across Locations 1, 2, and 3, the proposed construction traffic is significantly below the 30% increase threshold set out within Rule 1 of the IEMA guidelines for total traffic.
- 8.6.3 The screening also identified that across Locations 1, 2 and 3, the proposed construction traffic is also below the 30% increase threshold for HGVs.
- 8.6.4 Referencing Rule 2 of the IEMA guidelines, which states that the assessment must include highway links of high sensitivity where traffic flows have increased by 10% or more. An assessment of the sensitivity of the roads has been undertaken.
- 8.6.5 Using **Table 8.1**, the following road links along the routing have been reviewed on their sensitivity and summarised within **Table 8.17**.

Table 8.17: Study Area Receptor Sensitivity

Road Link	Sensitivity	Reasoning
B9097 (between the Proposed Development access and B920). Falls within survey Location 3	Low	No built-up areas surrounding the road suggesting minimal contact with receptors; however, no footways are provided along the route.
B920 (between the B9097 (Proposed Development Road) and B9097 (travelling east to the M90). Falls within survey Location 2	Low	No built-up areas surrounding the road suggesting minimal contact with receptors; however, no footways are provided along the route.
B9097 (A second stretch of the B9097, between B920 and B996). Falls within survey Location 1	Low	No built-up areas surrounding the road (suggesting minimal contact with receptors). The road is within close proximity to a Core Path (segregated from road) and adjacent Loch Leven Tourist attraction; both of which, however, are not frequently visited by large volumes of receptors.
B996 (adjacent Junction 5 of the M90)	Negligible	No built-up areas along the small section of road – limited to no receptor use.

- 8.6.6 It has been identified that all the roads within the study area and along the construction routing towards the M90 feature low or negligible receptors use and therefore have a low or negligible level of receptor sensitivity.

- 8.6.7 As aforementioned, IEMA Rule 2 requires an assessment for links with Medium or High sensitivity receptors, with All Vehicle or Heavy Vehicle flow changes greater than 10%. Based on **Table 8.16**, the study area does not apply to Rule 2.
- 8.6.8 It is concluded that, with regards to Scenario 1 (routing all HGV traffic west towards the M90), no further assessment is required and the Proposed Development during the construction peak period and decommissioning peak period is to generate a negligible impact.

Scenario 2

- 8.6.9 The screening for Scenario 2 identified that across Location 1 to Location 7, the proposed construction traffic is significantly below the 30% increase threshold set out within Rule 1 of the IEMA guidelines for total traffic.
- 8.6.10 The screening also identified that across all locations the proposed construction traffic is also below the 30% increase threshold for HGVs.
- 8.6.11 Rule 2 of the IEMA guidelines states that the assessment must include highway links of high sensitivity where traffic flows have increased by 10% or more. **Table 8.16** demonstrates that for Scenario 2, traffic flows have not increased by 10%. Therefore, it can be concluded that no further assessment is required and the Proposed Development during the construction peak period and decommissioning peak period is to generate a negligible impact.

Mitigation

- 8.6.12 No mitigation or monitoring is required based on this assessment at this stage.
- 8.6.13 As part of post planning permission, a detailed CTMP is recommended to be prepared with one of the aims to reduce the transport impacts of the construction traffic servicing the Proposed Development.

Assessment of Residual Effects

- 8.6.14 Residual effects are considered to be negligible.

8.7 Future Monitoring of Significant Environmental Effects

- 8.7.1 No mitigation or monitoring is required for the construction and decommissioning phases based on this assessment

8.8 Summary

- 8.8.1 In summary, this chapter has described the methods used to assess the impacts, the baseline conditions at the site and surroundings, the potential direct and indirect impacts of the Proposed Development during the construction phase and decommissioning phase.

- 8.8.2 Baseline traffic data on the local road network was surveyed and collected in December 2024, which has been used to inform the baseline assessment. The environmental assessment of traffic and movement uses the IEMA Guidelines (2023).
- 8.8.3 The anticipated percentage change in traffic for all survey locations did not exceed the thresholds set out by IEMA and therefore no further assessment of the impacts has been undertaken and can be considered negligible. It has been concluded that no specific mitigation is required. Nevertheless, a CTMP is recommended to be prepared to set out the aim to reduce the transport impacts of the construction traffic servicing the Proposed Development.
- 8.8.4 **Table 8.18** provides a summary of residual effects during construction and decommissioning.

Table 8.18: Summary of Residual Effects During Construction and Decommissioning

Receptor	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
B9097 (between the Proposed Development access and B920).	N/A	Negligible	N/A	N/A	N/A
B920 (between the B9097 (Proposed Development Road) and B9097 (travelling east to the M90).	N/A	Negligible	N/A	N/A	N/A
B9097 (A second stretch of the B9097, between B920 and B996).	N/A	Negligible	N/A	N/A	N/A
B996 (adjacent Junction 5 of the M90)	N/A	Negligible	N/A	N/A	N/A
B9097 (from the Development access, westward towards B920 and falls within survey Location 3)	N/A	Negligible	N/A	N/A	N/A
B921	N/A	Negligible	N/A	N/A	N/A
B981	N/A	Negligible	N/A	N/A	N/A
B9149	N/A	Negligible	N/A	N/A	N/A

Chapter 09:

Air Quality

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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9. Air Quality

9.1 Introduction

- 9.1.1 This chapter has been prepared by Stantec UK and assesses the likely environmental effects of the Proposed Development with respect to air quality. This chapter also describes the methods used to assess the effects; the baseline conditions currently existing at the site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been adopted.
- 9.1.2 Cumulative effects associated with air quality have additionally been considered and can be found in **Chapter 11**.

9.2 Scope of Assessment and Consultation

- 9.2.1 A request for an EIA Scoping Opinion was submitted to Fife Council in July 2024 (planning reference 24/01927/SCO). An EIA Scoping Opinion was received from Fife Council in September 2024. In its response to the Scoping Report dated 20 August 2024 Fife Council's Land and Air Quality team stated that they were generally satisfied with the information provided in the scoping report and had no further comments. It was agreed in the Scoping Opinion that construction dust impacts and construction road traffic impacts were being 'Scoped In' and all operational impacts were 'Scoped Out' of the assessment. However, since consultation with Fife Council, a standby diesel generator is now proposed, and the 275kV elements of the existing Westfield Substation will be decommissioned once the extension is complete and electrified. Therefore, effects of combustion emissions and decommissioning road traffic emissions have also been considered in this chapter.

9.3 Assessment Methodology and Significance Criteria

Assessment Guidance

- 9.3.1 The primary guidance documents used in undertaking this assessment are detailed in the sections below.

DEFRA 'Local Air Quality Management Technical Guidance (LAQM.TG(22))'

- 9.3.2 DEFRA LAQM.TG(22) was published for use by local authorities in their LAQM review and assessment work (DEFRA, 2025). The document provides key guidance on aspects of air quality assessment, including screening, use of monitoring data, and use of background data that are applicable to all air quality assessments.

EPUK/IAQM 'Land-Use Planning and Development Control: Planning for Air Quality'

- 9.33 EPUK and the IAQM have together published guidance to help ensure that air quality is properly accounted for in the development control process (EPUK and IAQM, 2017). It clarifies when an air quality assessment should be undertaken, what it should contain, and how impacts should be described and assessed including guidelines for assessing the significance of impacts.

IAQM 'Guidance on the Assessment of Dust from Demolition and Construction'

- 9.34 Guidance on the assessment of dust from demolition and construction has been published by the IAQM (IAQM, 2024). The guidance provides a series of matrices to determine the risk magnitude of potential dust sources associated with construction activities in order to identify appropriate mitigation measures that are defined within further IAQM guidance.

Air Quality in Fife Advice for Developers

- 9.35 Fife Council has developed an Air Quality Supplementary Planning Document (SPD) (Fife Council, 2020) to assist developers in preparing planning proposals and to guide their discussions with FC officers prior to the submission on planning applications. The SPD sets out the criteria for deciding whether a simple or detailed air quality assessment is required.

Study Area

- 9.36 The study area adopted for this assessment is as follows:
- For the construction phase dust risk assessments, the study area (based on the IAQM, 2024 guidance) is defined as up to 250m from the site or 50m from the route to be used by construction vehicles (up to 250m from the site entrance); and
 - For the construction phase road traffic emissions assessment, the study area (based on EPUK and IAQM, 2017 guidance) is defined as all roads, which could potentially exceed the screening criteria outlined in **Technical Appendix 9.2**.

Baseline Data Collection

- 9.37 A desk-based review of baseline conditions has been completed. Information regarding baseline air quality has been obtained by collating the information from the following sources:
- Recent monitoring data from the latest Fife Council (FC) Air Quality Annual Progress Report 2024 (Fife Council, 2025); and
 - Scottish Government's 2021 – based Maps of annual concentrations (Scottish Government, 2021a).

Construction Dust Impacts

- 9.38 During demolition and construction, dust from on-site activities and off-site trackout by construction vehicles has the potential to impact on sensitive human receptors within the study area. The main

potential impacts are loss of amenity (as a result of dust soiling) and deterioration of human health (as a result of increased concentrations of PM₁₀). It is also possible for deposited dust to harm nearby ecological receptors.

- 9.3.9 The suspension of particles in the air is dependent on surface characteristics, weather conditions and on-site activities. Impacts have the potential to occur when dust generating activities coincide with dry, windy conditions, and where sensitive receptors are located downwind of the dust source(s).
- 9.3.10 Separation distance is also an important factor. Large dust particles (greater than 30 µm), which can be potentially responsible for most dust annoyance, will largely deposit within 100m of sources. Intermediate particles (10-30 µm) can travel 200-500 m. Consequently, significant dust annoyance is usually limited to within a few hundred metres of its source. Smaller particles (less than 10 µm), which are the predominant fraction that can be potentially responsible for human health impacts largely remain airborne. However, the impact on the short-term concentrations of PM₁₀ occurs over a shorter distance due to the rapid decrease in concentrations with distance from the source due to dispersion.
- 9.3.11 The assessment of the risk of potential construction dust impacts has been undertaken with reference to relevant guidance (IAQM, 2024). The assessment methodology considers three separate potential dust impacts:
- Loss of amenity due to dust soiling;
 - Human health effects due to increases in concentrations of PM₁₀; and
 - Harm to ecological receptors due to increased dust deposition.
- 9.3.12 The first stage of the assessment involves screening to determine if there are sensitive receptors within threshold distances of the activities associated with the construction phase of the scheme; defined as the study area. No further assessment is required if there are no receptors within the study area.
- 9.3.13 The IAQM guidance outlines that an assessment is only required in cases where:
- 9.3.14 A 'human receptor' is located within:
- 250m of the boundary of the site; and/or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).
- 9.3.15 An 'ecological receptor' is located within:
- 50m of the boundary of the site; and/or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).
- 9.3.16 The assessment of potential risk is determined by considering the risk of dust impacts arising from four activities in the absence of mitigation: demolition, earthworks, construction and trackout.

- 9.3.17 The dust emission class (or magnitude) for each activity, receptor sensitivity and the overall sensitivity of the area are determined using the criteria outlined in **Tables 9.1.1 to 9.1.5** in **Technical Appendix 9.1** (based on the IAQM guidance), indicative thresholds and professional judgement. The risk of dust impacts arising is a product of the relationship between the dust emission magnitude and the area sensitivity and is based on the criteria outlined in **Table 9.1.6** (based on the IAQM guidance). The risk of impact is then used to determine the mitigation requirements.
- 9.3.18 The IAQM guidance recommends that no assessment of the significance of effects is made without mitigation in place, as mitigation is assumed to be secured by planning conditions, legal requirements or required by regulations.
- 9.3.19 With appropriate mitigation in place, the IAQM guidance indicates that this *“will ensure that a potential significant adverse effect will not occur, so the residual effect will normally be ‘not significant’”*.

Construction Road Traffic Emission Impacts

- 9.3.20 The potential for a significant overall effect on existing sensitive receptors within the study area as a result of emissions from traffic generated by the Proposed Development during the construction phase have been determined qualitatively. The assessment takes into consideration the screening criteria outlined in the EPUK and IAQM guidance (EPUK and IAQM, 2017) (see **Technical Appendix 9.2**), the anticipated routing of the generated traffic and the anticipated duration of impacts associated with the generated traffic.

Back-up Power Generator Emission Impacts

- 9.3.21 The potential for a likely significant effect on existing sensitive receptors within the study area as a result of emissions from the back-up power generator during the operation phase have been determined qualitatively considering the potential emission rates and operational frequency.
- 9.3.22 Research indicates that given the limited capacity, flue discharge conditions and operating duration of the generator, resultant impacts during operation will be limited and inherently cannot result in exceedance of the short-term NO₂ NAQO (which allows 18 hours of exceedance per annum) and will have a minimal influence on annual average concentrations. Therefore, as per IAQM guidance (Air Quality Consultants Ltd, 2025) it is considered that the life safety backup power generators do not require detailed assessment.
- 9.3.23 The NO_x emission rate (g/s) of the unit is compared to the EPUK and IAQM guidance indicative criteria for combustion processes which states that *“typically, any combustion plant where the single or combined NO_x emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion”* (EPUK and IAQM, 2017) (see **Technical Appendix 9.2**). If the emission rate falls below the screening criteria, then a detailed assessment of combustion emissions is not required.

Decommissioning Road Traffic Emission Impacts

- 9.324 The potential for a significant overall effect on existing sensitive receptors within the study area as a result of emissions from traffic generated by the Proposed Development during the decommissioning phase have been determined qualitatively. The assessment takes into consideration the screening criteria outlined in the EPUK and IAQM guidance (EPUK and IAQM, 2017) (see **Technical Appendix 9.2**), the anticipated routing of the generated traffic and the anticipated duration of impacts associated with the generated traffic.

Receptor Sensitivity

- 9.325 The following relevant sensitive receptor locations within the study area were considered within this assessment:
- Human health receptors – places where members of the public might be expected to be regularly present over the averaging period of the NAQOs. Receptors considered as part of the assessment include those within close proximity to the site and the surrounding road network such as the existing substation itself; and
 - Ecological receptors – both statutorily designated and non-statutorily designated ecological sites are considered. However, there are no ecological receptors in the study area that are relevant to the EPUK and IAQM screening criteria set out in **Appendices 9.2**.

Significance of Effect

- 9.326 Significance of effect is determined by comparing the trip generation and the combustion emissions associated with the Proposed Development to the EPUK and IAQM guidance screening criteria set out in **Technical Appendix 9.2**. Where the trip generation or combustion emissions fall below the screening criteria the effect is considered to be '**Not Significant**'.
- 9.327 The IAQM guidance recommends that no assessment of the significance of construction dust effects is made without mitigation in place, as mitigation is assumed to be secured by planning conditions, legal requirements or required by regulations.

Assessment Limitations and Assumptions

- 9.328 The assessment uses predicted AADT flows generated by the Proposed Development to determine the likely significant effects in relation to air quality. The traffic flows will have inherent uncertainties associated with them. However, this is not expected to change the conclusions of the report.

9.4 Legislation and Policy Context

Air Quality Regulations

- 9.4.1 The National Air Quality Objectives (NAQOs) set out in the Air Quality (Scotland) Regulations 2000 provide the statutory basis for the air quality objectives under Local Air Quality Management (LAQM) in Scotland. These are set out in Scotland's LAQM Policy Guidance 2024 ((LAQM.PG (24)) (Scottish Government, 2024) and are shown in **Table 9.1**.

9.4.2 The Air Quality Standards (Scotland) Regulations 2010 (AQSR) were put in place to transpose the European Union's (EU) Directive on ambient air quality and cleaner air for Europe (2008/50/EC) (European Parliament, Council of the European Union, 2008) however, these are less stringent than the NAQOs.

9.4.3 The relevant NAQOs for this assessment are shown in **Table 9.1**.

Table 9.1: Relevant Air Quality Objectives

Pollutant	Time Period	Objectives	Source
NO ₂	1-hour mean	200 µg/m ³ not to be exceeded more than 18 times a year	NAQO
	Annual mean	40 µg/m ³	NAQO
PM ₁₀	24-hour mean	50 µg/m ³ not to be exceeded more than 17 times a year	NAQO
	Annual mean	18 µg/m ³	NAQO
PM _{2.5}	Annual mean	10 µg/m ³	NAQO

Air Quality Plan for NO₂ in the UK

9.4.4 The UK Air Quality Plan for NO₂ (DEFRA, 2018) sets out how the Government (and devolved administrations) planned to deliver reductions in NO₂ throughout the UK, with a focus on reducing concentrations to below the EU limit values throughout the UK within the "*shortest possible time*".

9.4.5 The plan requires all Local Authorities (LAs) to develop local plans to improve air quality and identify measures to deliver reduced emissions, with the aim of meeting the Limit Values within their area within "*the shortest possible time*". Potential measures include changing road layouts, encouraging public and private ultra-low emission vehicle (ULEV) uptake, the use of retrofitting technologies and new fuels and encouraging public transport. In Scotland, the National Low Emission Framework (Scottish Government, 2019) was developed to help LAs consider transport related actions, such as Low Emission Zones (LEZ), to improve local air quality where transport is identified as the key contributor to air quality problems.

Air Quality Management

The Air Quality Strategy

9.4.6 Part IV of the Environment Act 1995 required the Secretary of State to prepare and publish a 'strategy' regarding air quality.

9.4.7 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007) establish the policy framework for ambient air quality management and assessment in the UK (DEFRA in partnership with the Scottish Executive, the Welsh Assembly Government and the Department of the Environment for Northern Ireland, 2007). The primary objective of the Air Quality Strategy is to ensure that everyone can enjoy a level of ambient air quality which poses no significant risk to health or quality of life. The Air Quality Strategy sets out the NAQOs and Government policy on achieving these. In 2015, Scotland moved away from The Air Quality Strategy to the Clean Air for Scotland

(CAFS) strategy (Scottish Government, 2015) and have since, in 2021, moved their focus to its successor Cleaner Air for Scotland 2.

Cleaner Air for Scotland 2 – Towards a Better Place for Everyone.

9.4.8 In July 2021, the Scottish Government published ‘Cleaner Air for Scotland 2 – Towards a Better Place for Everyone’ (the CAFS2) (Scottish Government, 2021b), which is Scotland’s second separate air quality strategy and sets out measures to further reduce air pollution over the period 2021–2026. The CAFS2 sets out how Scotland intends to deliver further air quality improvements around 10 general themes:

- Health;
- Integrated Policy;
- Placemaking;
- Public Engagement and Behaviour Change;
- Industrial Emissions Regulation;
- Tackling Non-Transport Emissions Sources;
- Governance, Accountability and Delivery; and
- Further Progress Local Planning Policy.

Local Air Quality Management

9.4.9 Part IV of the Environment Act 1995 introduced a system of Local Air Quality Management (LAQM), which requires local authorities to regularly and systematically review and assess air quality within their boundary. In addition, local authorities are required to appraise development and transport plans against these assessments.

9.4.10 Where an NAQO is unlikely to be met, the local authority must designate an Air Quality Management Area (AQMA) and draw up an Air Quality Action Plan (AQAP) setting out the measures it intends to introduce in pursuit of the NAQOs within its AQMA.

9.4.11 The Local Air Quality Management Technical Guidance 2022 ((LAQM.TG (22); (DEFRA, 2025)), issued by DEFRA for local authorities provides advice on where the NAQOs apply. These include outdoor locations where members of the public are likely to be regularly present for the averaging period of the objective (which vary from 15 minutes to a year) as summarised in **Table 9.2**.

Table 9.2: Relevant Public Exposure

Averaging Period	NAQOs should apply at:	NAQOs do not apply at:
Annual mean	All locations where members of the public might be regularly exposed. For example: • Building façades of residential properties, schools, hospitals, care homes etc.	Façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residences. Kerbside sites. Any other location where public exposure is expected to be short term.
24-hour mean, and 8-hour mean	All locations where the annual mean NAQO would apply, together with hotels and gardens of residences.	Kerbside sites. Any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual mean and 24 and 8-hour mean NAQOs apply as well as: • Kerbside sites. • Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more; and • Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside locations where the public would not be expected to have regular access.
15-minute mean	All locations where members of the public might reasonably be regularly exposed for a period of 15 minutes or longer.	

Planning Policy

National Planning Policy

National Planning Framework (NPF) 4

- 9.4.12 National Planning Framework 4 (NPF4) (Scottish Government, 2023) is the national spatial strategy for Scotland. It sets out the spatial principles, regional priorities, national developments and national planning policy.

9.4.13 Policy 23 states that:

“... d) Development proposals that are likely to have significant adverse effects on air quality will not be supported. Development proposals will consider opportunities to improve air quality and reduce exposure to poor air quality. An air quality assessment may be required where the nature of the proposal or the air quality in the location suggest significant effects are likely.”

Fife Local Development Plan (FIFEplan)

9.4.14 The Fife Local Development Plan was adopted in 2017 (Fife Council, 2017) and intends to shape the land use and planning for Fife and its communities until 2027. The policy relating to air quality has been set out below.

Policy 10 Amenity

“Development will only be supported if it does not have a significant detrimental impact on the amenity of existing or proposed land uses. Development proposals must demonstrate that they will not lead to a significant detrimental impact on amenity in relation to:

Air quality, with particular emphasis on the impact of development on designated Air Quality Management Areas;

[...]

Air Quality

Development proposals that lead to a breach of National Air Quality Standards or a significant increase in concentrations of air pollution within an existing Air Quality Management Area (AQMA) will not be supported.

Statutory supplementary guidance will provide additional information, detail and guidance on air quality assessments, including an explanation of how proposals could demonstrate that they would not lead to an adverse impact on air quality.”

Air Quality Strategy for Fife 2025 – 2030

9.4.15 The Air Quality Strategy for Fife was adopted in 2024 (Fife Council, 2024) and seeks to contribute to Fife becoming a healthier and more sustainable place. The strategy sets out the steps to be taken for the council to improve their air quality.

9.5 Baseline Conditions

Current Baseline (2025)

Ambient Air Quality

Limit Values

9.5.1 According to Pollution Climate Mapping data published by DEFRA (DEFRA, 2020), the area in the vicinity of the site does not contain any predicted exceedances of a NAQO in the ‘existing’ year (2025) or future years.

Local Air Quality Management

9.5.2 Fife Council has investigated air quality within its area as part of its responsibilities under the LAQM regime. When the EIA Scoping report was written Fife Council had two AQMAs declared within the county. However, since then these have both been revoked and at the time of writing, no AQMAs are declared within the county. The nearest AQMA to the site is in Edinburgh, more than 22 km to the south-east.

Local Monitoring Data

NO₂

9.5.3 Fife Council carries out monitoring at four automatic monitoring stations, the nearest of which, Kirkcaldy, is located approximately 10.8 km from the Proposed Development and is therefore not considered to be representative of baseline air quality conditions at the site. The Council also deploys NO₂ diffusion tubes at a number of locations, including one location located within Cowdenbeath. 2020--2024 monitoring results for the closest and most representative monitoring locations to the site are shown in **Table 9.3** and their locations are shown in **Figure 9.1**. Whilst 2020 and 2021 monitoring results have been included in **Table 9.3**, it should be noted that these are not considered to be representative of longer-term trends due to COVID-19 restrictions in place over this period.

Table 9.3: Measured Annual Mean NO₂ Concentrations 2020–2024

Site ID	Site Type	Within AQMA	Annual Mean NO ₂ (µg/m ³)				
			2020	2021	2022	2023	2024
High Street, Cowdenbeath	Kerbside	No	14.0	16.0	14.0	15.4	12.7
Chapel Level, Kirkcaldy	Roadside	No	-	-	11.0	12.3	12.2
NAQO		40					

9.5.4 There have been no measured exceedances of the annual mean NO₂ NAQO between 2020–2024 at the closest monitoring location to the site. Furthermore, measured concentrations at all diffusion tube monitoring sites in the borough are below 60 µg/m³, indicating that it is unlikely that any exceedances of the 1-hour mean objective have occurred.

PM₁₀ and PM_{2.5}

9.5.5 At the time of writing, Fife Council do not undertake particulate matter (PM₁₀ or PM_{2.5}) monitoring in close proximity to the study area.

Predicted Background Concentrations

- 9.56 Estimated background concentrations for the site have been obtained from the latest Scottish Government's 2018 – based Maps of annual concentrations (Scottish Government, 2021a). The background concentrations for the study area/identified receptors area are provided in **Table 9.4**.
- 9.57 The background concentrations are all well below the relevant NAQOs and limit value both in the 'existing' year and the 'future' year 2030.

Table 9.4: Estimated Annual Mean Background Concentrations

Year	Location	Annual Mean ($\mu\text{g}/\text{m}^3$)		
		NO ₂	PM ₁₀	PM _{2.5}
2026	319_697	3.5	8.3	3.8
	318_697	3.6	8.2	3.9
2030	319_697	3.1	8.2	3.6
	318_697	3.1	7.9	3.7
NAQO		40	18	10

Future Baseline (2030)

- 9.58 Baseline concentrations of NO₂, PM₁₀ and PM_{2.5} are predicted to decrease between 2025 and the opening year (2030) as vehicle emission factors and background concentrations are expected to improve, despite the traffic increase in the network.

9.6 Assessment of Likely Significant Effects

Construction

Construction Dust Impacts

Screening Assessment

- 9.61 There are existing sensitive human receptors including a number of residential properties, located within 250m of the site boundary and within 50m of the routes that may be used by construction vehicles. As such, further assessment of the risk of dust soiling and PM₁₀ emissions is required.
- 9.62 There are no sensitive ecological receptors located within 50m of the site boundary or within 50m of the routes used by construction vehicles on the public highway. The closest designated ecological site to the site, Loch Leven Site of Special Scientific Interest (SSSI), is located more than 2km from the site boundary. As such, the potential for ecological impacts as a result of dust soiling can be screened out as being '**Not Significant**'.

Further Assessment

Dust Emission Magnitude

- 9.6.3 The dust emissions magnitudes have been determined in **Table 9.5** based the criteria shown in **Table 9.1-1** in **Technical Appendix 9.1**. No demolition is required during the construction of the Proposed Development; however, demolition is required for the decommissioning phase of the Proposed Development. The 275kV elements of the existing substation are to be decommissioned once the substation extension is complete and electrified therefore, this demolition has been included in the Construction Dust Assessment and associated Mitigation table (**Table 9.7**).

Table 9.5: Dust Emission Magnitudes

Activity	Magnitude	Justification
Demolition	Medium	The Site currently includes the existing 275kV component of the substation which will be deconstructed following the completion of the construction and electrification of the proposed extension to the Westfield substation. Deconstruction activities could occur more than 12 m above ground however, it is unlikely to create in excess of 75,000 m ³ of material. As well as this, the deconstructed components will mainly be metal which have low dust potential. Therefore, the dust emission magnitude of demolition activities is judged to be 'medium' as a precautionary measure.
Earthworks	Large	Proposed earthworks activities comprise clearance of vegetation, soil preparation and landscaping across an area greater than 110,000 m ² . The soil at the site is derived from Carboniferous sandstone, shales and limestones (Scottish Government, 2025) which are considered to be moderately dusty, particularly during periods of dry weather. Based on this, the dust emission magnitude of earthworks activities is judged to be 'large'.
Construction	Medium	The total building volume to be constructed is expected to be between 12,000m ³ and 75,000m ³ . Aside from foundations, construction materials will primarily comprise of metal with a lower dust potential. Based on this, the dust emission magnitude of construction activities is judged to be 'medium'.
Trackout	Large	The number of HDV that will exit the site will vary depending upon the processes occurring at any one time. There are unlikely to be more than 50 outward HDV movements in any one day. However, due to the nature of the site, there could be an unpaved road length greater than 100m in length comprising moderately dusty surface material. Based on this, the dust emission magnitude of trackout is judged to be 'large' as a precautionary measure.

Area Sensitivity

- 9.6.4 The area sensitivity to dust soiling and human health impacts has been determined based on the criteria shown in **Tables 9.1-2, 9.1-3, 9.1-4 and 9.1-5 in Technical Appendix 9.1**. The IAQM demolition and construction band criteria used to determine the sensitivity of the local area is shown in **Figure 9.2**.
- 9.6.5 The existing Westfield Substation is classed as being 'low sensitivity' receptor to dust soiling, based on the IAQM guidance (IAQM, 2024) (see **Table 9.1-3 in Technical Appendix 9.1**). It is located within 20m of the site boundary. There are no high or medium sensitivity receptors located within 20m of the site boundary, and only three high sensitivity receptors within 250m. As such, the sensitivity of the area surrounding the site to dust soiling is judged to be 'low'.
- 9.6.6 The IAQM guidance indicates that potential impacts of trackout should be considered for sensitive receptors within 50m of the route used by construction vehicles within a distance of up to 250m from the site entrance. As the construction traffic routing is currently unknown, the worst-case assumption has been made that all main roads may potentially be used by HDVs leaving the site entrance(s). The existing Westfield Substation and between 1 and 10 residential receptors is located within 20m of roads extending up to 250m of the site; as such, the sensitivity to dust soiling of the area surrounding roads along which material may be tracked is judged to be 'medium'.
- 9.6.7 The IAQM also defines receptors such as Westfield Substation as being a 'low sensitivity' and residential properties as being 'high sensitivity' receptors to human health impacts (see **Table 9.1-4 in Technical Appendix 9.1**). PM₁₀ concentrations within the study area are anticipated to be similar to the maximum of the predicted 2026 PM₁₀ background concentrations at the site (8.3 µg/m³). Based on the predicted existing PM₁₀ concentrations and the number of sensitive receptors within 20 m of the site boundary and roads along which material may be tracked, the sensitivity to human health impacts of the areas surrounding the site and the area surrounding roads along which material may be tracked are judged to be 'low'.

Risk of Impacts

- 9.6.8 The risk of construction dust impacts, without mitigation, have been defined based on the criterion shown in **Table 9.1-6 in Technical Appendix 9.1** and are presented in **Table 9.6**.

Table 9.6: Risk of Construction Dust Impacts without Mitigation

Potential Impacts	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low Risk	Low Risk	Low Risk	Medium Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk

Construction Road Traffic Emission Impacts

- 9.6.9 During the construction period, the peak increase in HDV movements on the road network will be 78 AADT, which is below the threshold of 100 HDV movements per day outside an AQMA for an assessment to be necessary according to EPUK and IAQM guidance. Therefore, this level of additional HDV movements will not have a significant effect on local air quality and the impacts of

emissions associated with construction road traffic on air quality in the local area are considered to be '**Not Significant**'.

Operational Phase

Operational Combustion Emission Impacts

- 9.6.10 As part of the Proposed Development, there is a standby diesel generator, which is required in case of a power outage. Due to the size of the generator (circa 200 kWe) the NO_x emission rate screening criteria of 5mg/sec (EPUK and IAQM, 2017) would be exceeded however, the generator will be operated very infrequently (one hour tests per month, totalling less than 18 hours per annum) and will therefore not have the potential to impact the short-term or long-term nitrogen dioxide (NO₂) and particulate matter (PM₁₀) national air quality objectives (NAQOs).
- 9.6.11 Given the limited capacity and operating frequency and duration of the standby generator alongside the low background concentrations and separation distance from the closest sensitive receptor (located >100m to the north-east), the emissions to air (of NO_x and PM₁₀/PM_{2.5}) from the standby diesel generator are not considered to have the potential to give rise to significant offsite impacts on the short-term and long-term NAQOs and therefore considered '**Not Significant**' and have not been assessed further.

Decommissioning

Decommissioning Road Traffic Emission Impacts

- 9.6.12 During the decommissioning period, the peak increase in HDV movements on the road network will be 36 AADT, which is below the threshold of 100 HDV movements per day outside an AQMA for an assessment to be necessary according to EPUK and IAQM guidance. Therefore, this level of additional HDV movements will not have a significant effect on local air quality and the impacts of emissions associated with decommissioning road traffic on air quality in the local area are considered to be '**Not Significant**'.

Mitigation

Construction

- 9.6.13 A Construction Environmental Management Plan (CEMP) will be implemented throughout the construction phase of the Proposed Development. The mitigation measures set out in **Table 9.7** will be incorporated into the CEMP where appropriate and are based on the IAQM guidance (IAQM, 2024) and the outcomes of the construction dust risk assessment provided in **Table 9.6**. It should be noted that demolition measures are to apply to decommissioning phase only and construction measures to apply to the construction phase only.

Table 9.7 Construction Phase Mitigation Measures

Category	Mitigation Measure
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
	Display the head or regional office contact information.
Management	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real time PM ₁₀ continuous monitoring and/or visual inspections.
	Record all dust and air quality complaints, identify cause(s) and take measures to reduce emissions in a timely manner, and record the measures taken.
	Make the complaints log available to the local authority when asked.
	Record any exceptional incidents that cause dust and/or air emissions, either on- of off-site, and the action taken to resolve the situation in the log book.
Monitoring	Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of the site boundary, with cleaning to be provided if necessary.
	Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
	Agree dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring locations with the local authority. Where possible, commence baseline monitoring at least three months before work on a phase commences.
Preparing and maintaining the site	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
	Fully enclose site or specific operations where there is a high potential for dust productions and the site is active for an extensive period.
	Avoid site runoff of water or mud.

Category	Mitigation Measure
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site, cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicle/machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
	Impose and signpost a maximum speed limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car sharing).
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
	Use enclosed chutes and conveyors and covered skips.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
	Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management	Avoid bonfires and burning of waste materials.
Demolition	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
	Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.

Category	Mitigation Measure
	Avoid explosive blasting, using appropriate manual or mechanical alternatives.
	Bag and remove any biological debris or damp down such material before demolition.
Construction	Avoid scabbling (roughening of concrete surfaces) if possible.
	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
Trackout	Use water assisted dust sweeper(s) on the site access and local roads, to remove, as necessary, any material trackout out of the site. This may require the sweeper being continuously in use.
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving the site are covered to prevent escape of materials during transport.
	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
	Record all inspections of haul routes and any subsequent action in a site log book.
	Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
	Access gates to be located at least 10 m from receptors where possible.

9.6.14 Furthermore, in accordance with Part 4 of the IAQM construction dust guidance, all NRMM will adhere to the NRMM emissions standards for NO₂ and PM₁₀ outlined in the Road Vehicles and Non-Road Mobile Machinery (Type-Approval) (Amendment and Transitional Provisions) (EU Exit) Regulations 2022.

9.6.15 The mitigation measures outlined above are considered to be embedded into the design of the Proposed Development. As the effects of the construction phase of the Proposed Development are **'Not Significant'** no additional mitigation is required.

Assessment of Residual Effects

Construction

- 9.6.16 As no additional mitigation is required for the construction phase of the Proposed Development, the residual effects remain the same as those reported in the Construction Dust Impacts and Construction Road Traffic Emission Impacts sections and are '**Not Significant**'.

Operation

- 9.6.17 As no additional mitigation is required for the operational phase of the Proposed Development, the residual effects remain the same as those reported in the Operational Combustion Impacts Emissions section and are '**Not Significant**'.

Decommissioning

- 9.6.18 As no additional mitigation is required for the decommissioning phase of the Proposed Development, the residual effects remain the same as those reported in the Decommissioning Road Traffic Impacts Emissions sections and are '**Not Significant**'.

9.7 Future Monitoring of Significant Environmental Effects

Construction

- 9.7.1 The assessment has demonstrated that residual effects associated with the construction phase of the Proposed Development on air quality are considered '**Not Significant**', therefore no monitoring is required.

Operation

- 9.7.2 The assessment has demonstrated that residual effects associated with the operation phase of the Proposed Development on air quality are considered '**Not Significant**', therefore no monitoring is required.

Decommissioning

- 9.7.3 The assessment has demonstrated that residual effects associated with the decommissioning phase of the Proposed Development on air quality are considered '**Not Significant**', therefore no monitoring is required.

9.8 Summary

- 9.8.1 The potential air quality impacts associated with the Proposed Development have been assessed. The site is located within the administrative boundary of Fife Council. Fife Council has investigated air quality within its area as part of its responsibilities under the (Local Air Quality Management (LAQM) regime. When the Environmental Impact Assessment (EIA) Scoping report was written Fife Council had two Air Quality Management Areas (AQMAs) declared within the county. However,

since then these have both been revoked and at the time of writing, no AQMAs are declared within the county. The nearest AQMA to the site is in Edinburgh, more than 22 km to the south-east.

- 9.8.2 The construction activities associated with the Proposed Development have the potential to create dust. During construction it is recommended that, in accordance with the Institute of Air Quality Management guidance, a package of mitigation measures are put in place to minimise the risk of elevated Particulate Matter (PM₁₀) concentrations and dust soiling in the surrounding area. With the mitigation from **Table 9.7** in place, the construction dust impacts are judged as being '**Not Significant**'.
- 9.8.3 During the construction period, the peak increase in heavy duty vehicles (HDVs) movements on the road network will be 78 Average Annual Daily Traffic (AADT) which is below the threshold of 100 HDV movements per day outside an AQMA for an assessment to be necessary according to Environmental Protection United Kingdom (EPUK) and IAQM guidance. Therefore, the air quality impacts of the Proposed Development with regards to construction traffic are considered to be '**Not Significant**' and additional mitigation is not required.
- 9.8.4 As part of the Proposed Development, there is a standby diesel generator required in case of a power outage. Due to the size of the generator (circa 200 kWe) the IAQMs NO_x emission rate screening criteria of 5mg/sec (EPUK and IAQM, 2017) would be exceeded. However, the generator will be operated very infrequently and will therefore not have the potential to impact the short-term or long-term nitrogen dioxide (NO₂) and particulate matter (PM₁₀) national air quality objectives (NAQOs). Alongside this, the background concentrations at the site are low and the separation distance from the closest sensitive receptor is over 100m, therefore the potential impact of emissions to air from the back-up power generator are considered '**Not Significant**'.
- 9.8.5 During the decommissioning period, the peak increase in HDVs movements on the road network will be 36 AADT which is below the threshold of 100 HDV movements per day outside an AQMA for an assessment to be necessary according to EPUK and IAQM guidance. Therefore, the air quality impacts of the Proposed Development with regards to decommissioning traffic are considered to be '**Not Significant**' and additional mitigation is not required.
- 9.8.6 No secondary mitigation measures or further monitoring is required as the effects of construction dust, traffic and combustion emissions on existing sensitive human receptors is considered to be '**Not Significant**'.
- 9.8.7 There are not predicted to be any significant air quality effects as a result of the Proposed Development, and the Proposed Development is considered to be in accordance with the requirements of the National Planning Framework 4 (NPF4) and the Fife Air Quality Supplementary Planning Document (SPD). The summary of effects is presented in **Table 9.8**.

Table 9.8: Summary of Residual Effects

Receptor	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
Ecological and Human Receptors	Impacts of Construction Dust	N/A	None	Not Significant	Not Significant

Receptor	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
Ecological and Human Receptors	Impacts of Construction Traffic	Not Significant	None	Not Significant	Not Significant
Ecological and Human Receptors	Impacts for emissions from back-up power generator	Not Significant	None	Not Significant	Not Significant
Ecological and Human Receptors	Impacts of Decommissioning Traffic	Not Significant	None	Not Significant	Not Significant

Chapter 10: Noise

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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10. Noise

10.1 Introduction

- 10.1.1 This chapter has been prepared by Stantec UK. This chapter of the EIAR assesses the likely environmental effects of the Proposed Development with respect to noise. This chapter also describes the methods used to assess the effects; the baseline conditions currently existing at the site, future baselines and surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been adopted.
- 10.1.2 Cumulative effects associated with noise have additionally been considered within the EIAR and can be found in **Chapter 12** – Cumulative and Interactive Effects.

10.2 Scope of Assessment and Consultation

- 10.2.1 In July 2024 an EIA Scoping Report was submitted to Fife Council (FC), which outlined the proposed scope and approach for this chapter.
- 10.2.2 A Scoping Opinion (**Technical Appendix 2.1**) was received from FC on 09 September 2024. The scope of the proposed EIA Report was considered to be broadly acceptable to the Council.
- 10.2.3 Further consultation with the Environmental Health Officer ('EHO') at FC was undertaken during October 2024. The consultation is provided in **Technical Appendix 10.1**. The proposed survey methodology was issued to the EHO, who confirmed that the approach was suitable. This included details of both noise sensitive receptor locations and measurement locations.
- 10.2.4 **Table 10.1** highlights the consultee comments related to noise that were raised during consultation and provides a response.

Table 10.1: Consultation

Reference	Consultee Comment	Applicant Response
Scoping Response 09/09/2024 - FC	The LPA confirmed that noise (construction traffic noise and operational noise only) was to be scoped into the EIAR.	Construction traffic and operational activity noise has been scoped into the Environmental Impact Assessment Report (EIAR).
Pre-application response 10/10/2024 - FC	The pre-application response from FC confirmed that 'A noise report should be submitted with any future planning application, and this should set out the anticipated noise emissions from the proposal and provide details of the predicted noise levels at the boundary of nearby residential properties together with any required noise attenuation measures. The noise report should set out whether the noise impact from the proposal would be acceptable or not.'	A noise impact assessment has been provided as part of the submission and is included within Technical Appendix 10.2 .
EHO Consultation 31/10/2024 - FC	The survey methodology was submitted including details of the measurement and receptor locations. The EHO confirmed 'Based on your explanation below your original monitoring points are acceptable.'. The full consultation is provided in Technical Appendix 10.1 .	Baseline measurement positions and receptor locations have been confirmed as acceptable for the purpose of the assessment.

- 10.25 Since the Scoping Report was issued, decommissioning of the 275kV substation has been considered to form part of the Proposed Development. Noise levels generated during decommissioning works are expected to be comparable to those generated during construction works. The Scoping Report noted that noise from construction works could potentially result in significant effects if appropriate mitigation is not implemented. However, as is the case for construction noise, likely effects would be mitigated through the implementation of a construction environmental management plan, which would outline relevant noise mitigation for the decommissioning phase. Noise from decommissioning works has been scoped out of the assessment. These works will not overlap with construction and would be comparable in nature and duration. On this basis, and given receptor distances, no significant effects are anticipated.
- 10.26 Since the Scoping Report was issued, the installation of 33kV underground cabling has been considered to form part of the assessment. The works involve excavating, installing cabling, backfilling and reinstating ground. There will be periods during the works when they are taking place near to noise sensitive receptors, however the works would not take place at night and the duration of works closer to receptors is expected to be limited. As is the case for other construction noise activity, likely effects would be mitigated through the implementation of a construction environmental management plan, which would outline relevant noise mitigation for the works. This includes when underground cabling works are taking place concurrently with other construction activity. Construction activity noise has been scoped out of the assessment. On this basis, no significant effects are anticipated.

10.3 Legislation and Policy Context

National Legislation

Control of Pollution Act 1974

- 10.3.1 The Control of Pollution Act 1974 (CoPA) (HMSO, 1974) covers a wide range of environmental pollution including noise. Parts of the Act have been superseded by the Environmental Protection Act 1990 (EPA) (HMSO, 1990).
- 10.3.2 Section 60 of the Act relates to the 'Control of Noise on Construction Sites' and Section 61 relates to obtaining 'Prior Consent for Work on Construction Sites'. These sections of the Act are often used in conjunction with other standards to determine acceptable noise levels in relation to construction, hours of operation and specific working methods or mitigation.
- 10.3.3 A section 61 application outlines the proposed construction works, hours of operation and a mitigation plan to reduce noise and vibration impact through the use of best practicable means. It allows prior consent to be agreed between the contractor and the council and assists with providing the contractor with a defence against legal action taken under Section 60 of CoPA (HMSO, 1974) or section 80 of the EPA (HMSO, 1990).

Environmental Protection Act 1990

- 10.3.4 The EPA (HMSO, 1990) requires local authorities to investigate noise complaints from premises (land and buildings) and vehicles, machinery or equipment in the road. This includes noise arising from construction sites.
- 10.3.5 If the local authority is satisfied that noise from a development amounts to a statutory nuisance, then the authority must serve an abatement notice on the person responsible or in certain cases the owner or occupier of the property. The notice may require that the noise or nuisance is completely stopped or limited to certain times of the day.

National Planning Policy

National Planning Framework 4

- 10.3.6 The National Planning Framework 4 (LGHD, 2023) (NPF4) was adopted in 2023 and is a long-term plan looking to 2045 that guides spatial development, sets out national planning policies, designates national developments and highlights regional spatial priorities.
- 10.3.7 The statutory development plan consists of NPF4 and the relevant local development plan(s), which in this case is the Fife Local Development Plan 2017 (LDP).
- 10.3.8 With respect to noise, NPF4 Policy 11 states:

"[...]"

e) In addition, project design and mitigation will demonstrate how the following impacts are addressed:

i. impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;

[...]

10.3.9 NPF4 Policy 14 states:

“a) Development proposals will be designed to improve the quality of an area whether in urban or rural locations and regardless of scale.

[...]

c) Development proposals that are poorly designed, detrimental to the amenity of the surrounding area or inconsistent with the six qualities of successful places, will not be supported.”

10.3.10 NPF 4 Policy 23 states:

“e) Development proposals that are likely to raise unacceptable noise issues will not be supported. The agent of change principle applies to noise sensitive development. A Noise Impact Assessment may be required where the nature of the proposal or its location suggests that significant effects are likely.”

10.3.11 Planning Advice Note (PAN) 1/2011: ‘Planning and Noise’

10.3.12 Published in March 2011, PAN 1/2011 provides advice on the role of the planning system in helping to prevent and limit adverse effects of noise (Scottish Government, 2011). Information and advice on noise assessment methods are provided in the accompanying Technical Advice Note (TAN 2011). Included within the PAN document and the accompanying TAN are details of the legislation, technical standards, and codes of practice for specific noise issues.

10.3.13 Neither PAN 1/2011 nor the associated TAN provides specific guidance on the assessment of noise from fixed plant, but the TAN includes an example assessment scenario for ‘New noisy development (incl. commercial and recreation) affecting a noise sensitive building’, which is based on British Standard (BS) 4142:1997: Method for rating industrial noise affecting mixed residential and industrial areas (BSI, 1997). In 2014, BS 4142:1997 was replaced with BS 4142:2014: Methods for rating and assessing industrial and commercial sound with the most up to date iteration provided in 2019 (BSI, 2019).

Local Planning Policy

Fife Local Development Plan - FIFEplan (2017)

10.3.14 FIFEplan (FC, 2017) Policy 10 provides that “*Development proposals must demonstrate that they will not lead to a significant detrimental impact on amenity in relation to... noise...*” The section on applying Policy 10 sets out that “*new development is required to be implemented in a manner that ensures that existing uses and the quality of life of those in the local area are not adversely affected.*” The planning authority will assess amenity impact on a case-by-case basis, with certain forms of development (including noise-generating or noise-sensitive uses) always requiring an assessment of amenity impacts.

Other Relevant Standards and Guidance

British Standard 4142:2014 + A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

- 10.3.15 BS 4142:2014 + A1:2019 (BSI, 2019) describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in the standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.
- 10.3.16 The standard is used to determine the rating levels for sources of sound of an industrial and/or commercial nature and the ambient, background and residual sound levels at outdoor locations. These levels could be used for the purposes of investigating complaints; assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and assessing sound at proposed new dwellings or premises used for residential purposes. However, the determination of noise amounting to a nuisance is beyond the scope of the standard.
- 10.3.17 The standard should not be used to assess sound from the passage of vehicles on public roads and railway systems; recreational activities; music and other entertainment; shooting grounds; construction and demolition; domestic animals; people; public address systems for speech and other sources falling within the scopes of other standards or guidance. The standard cannot be applied to the derivation of indoor sound levels arising from sound levels outside, or the assessment of indoor sound levels.
- 10.3.18 The procedure contained in BS 4142 assesses the significance of sound which depends upon the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs/will occur. It is noted that a BS 4142 assessment is reliant on measuring relevant background sound levels.
- 10.3.19 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level and considering the following:
- Typically, the greater this difference, the greater the magnitude of the impact;
 - A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
 - A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
 - The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
- 10.3.20 In order to consider the context, BS 4142 advises that the following factors should be considered:
- The absolute level of sound;
 - The character and level of the residual sound compared to the character and level of the specific sound; and

- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions such as:
 - Façade insulation treatment;
 - Ventilation and/or cooling that will reduce the need to have windows open to provide rapid or purge ventilation; and
 - Acoustic screening.

British Standard 7445:2003 'Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures'

- 10.3.21 BS 7445-1:2003 (BSI, 2003) describes methods and procedures for measuring noise from all sources which contribute to the total noise climate of a community environment, individually and in combination. The results are expressed as equivalent continuous A-weighted sound pressure levels, $L_{Aeq,T}$.
- 10.3.22 BS 7445-1:2003 states that sound level meters that are used should conform to Class 1 (or Class 2 as a minimum) as described in BS EN 61672-1:2013 (BSI, 2013) and should be calibrated according to the instructions of the manufacturer and field calibration should be undertaken at least before and after each series of measurements.

Design Manual for Road and Bridges LA III Traffic Noise and Vibration

- 10.3.23 The Design Manual for Roads and Bridges (DMRB) (Standards for Highways, 2020) is considered to be the regulatory standard for the design of a new road or improvements to an existing road. LA III provides guidance on the environmental assessment of noise and vibration emissions from construction traffic.
- 10.3.24 The document states in 3.15:
- “Construction traffic BNL increases shall be calculated for roads within the construction traffic study area.”*
- 10.3.25 The calculation of the Basic Noise Level (BNL) is described in the CRTN (Department for Transport Welsh Office, 1988), and takes into account traffic speeds, AAWT 18-hour flows and HGV composition.
- 10.3.26 Paragraph 3.17 of DMRB LA III states:
- “Magnitude of impact at noise sensitive receptors of construction traffic shall be determined in accordance with Table 3.17.”*
- 10.3.27 Table 3.17 of DMRB LA III is reproduced below in **Table 10.2**.

Table 10.2: Magnitude of Impact at Receptors

Magnitude of Impact in Noise Terms	Change in Noise Level LA10,18hr (dB) at Noise Sensitive Receptor
Major	≥ 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	< 1.0

10.3.28 Paragraph 3.19 of DMRB LA 111 states:

“Construction noise and construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding: 1) 10 or more days or nights in any 15 consecutive days or nights; 2) a total number of days exceeding 40 in any 6 consecutive months.”

Calculation of Road Traffic Noise 1988 (CRTN)

10.3.29 The Calculation of Road Traffic Noise (CRTN) (Department for Transport Welsh Office, 1988) describes the standard procedures for the measurement and calculation of traffic noise. It includes consideration of a number of factors including vehicle class, speed, road surface, distance attenuation and barrier attenuation.

10.3.30 Noise levels are measured or predicted in terms of the $L_{A10,1\text{hour}}$ or $L_{A10,18\text{hour}}$. The $L_{A10,18\text{hour}}$ is the arithmetic average of the measured or calculated $L_{A10,1\text{hour}}$ levels for each one-hour period between 06:00 hours and 00:00 hours.

Procedure for the Assessment of Low Frequency Noise Complaints Revision 1 December 2011 (NANR45)

10.3.31 The objective of NANR45 (University of Salford, 2011) is to assist Environmental Health practitioners in handling complaints relating to low frequency noise (LFN), excluding LFN relating to traffic and entertainment sources.

10.3.32 The document details a methodology for assessing complaints which refers to third octave band criteria between 10Hz and 160Hz. At frequencies below 31.5Hz the criteria are based on the average threshold of audibility for steady sounds.

10.3.33 The methodology compares the measured LFN at the location of the complainant with the third octave band criteria between 10Hz and 160Hz. Where the measured LFN exceeds the criteria, then this suggests that there may be an actionable complaint.

10.3.34 The reference values are detailed in **Table 10.3**.

Table 10.3: LFN Criteria – Outside Property

Low Frequency Noise Reference Criterion ($L_{eq,7}$) at Third Octave Band Centre Frequency (Hz)												
10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
92	87	83	74	64	56	49	43	42	40	38	36	34

- 10.3.35 The procedure detailed in NANR45 is intended to assist in the evaluation of existing problems and is not intended as a means of predicting when disturbance might occur. However, in the absence of industry standard guidance with respect to LFN, it is considered that if the assessed sound falls below criteria curve, this is a positive indication that the assessed sound is unlikely to cause LFN complaints.

Local Guidance

Fife Council Policy for Development and Noise (2021)

- 10.3.36 FC's Planning Policy for Development and Noise provides non-statutory guidance to support Local Development Plan policies relating to amenity and environmental protection. The document outlines the Council's expectations regarding the assessment and control of noise impacts arising from or affecting new development. It establishes that both noise-generating and noise-sensitive developments must be designed and located to ensure that unacceptable noise effects are avoided.
- 10.3.37 The guidance sets out a structured approach to noise assessment, including the requirement for baseline surveys, identification of sensitive receptors, and the use of appropriate noise criteria and assessment methodologies. Where relevant, applicants are expected to assess the significance of predicted noise effects by determining the magnitude of change against appropriate benchmarks. A checklist is provided to support consistent reporting and to ensure that proposed mitigation measures are clearly identified and justified. The guidance promotes early engagement with the planning authority and the inclusion of suitably detailed acoustic assessments as part of the planning submission process.

10.4 Assessment Methodology and Significance Criteria

Study Area

- 10.4.1 Based on professional judgement, experience from working on other energy schemes and related guidance and standards, the following study areas have been used within the assessment.

Construction Traffic Noise

- 10.4.2 To evaluate the potential impact of construction-related traffic noise, a study area has been established in accordance with the guidance provided in DMRB, Specifically, Section 3.8 of the guidance states:

"A construction traffic study area shall be defined to include a 50m width from the kerb line of public roads with the potential for a increase in baseline noise level (BNL) of 1 dB(A) or more as a result of the addition of construction traffic to existing traffic levels".

- 10.4.3 On this basis, a study area of 50m from construction traffic routes has been applied. The study area includes local roads but excludes major roads as it is assumed that significant effects due to construction traffic noise are not likely to occur on major roads, which experience high traffic flows.

Operational Noise

- 10.4.4 In this instance the assessment reports the impact at high sensitivity receptors, located within 500m of the site. No significant impacts are identified at distances beyond this.

Receptor Sensitivity

- 10.4.5 The sensitivity of the Noise Sensitive Receptor ('NSR') is estimated in its current state at the time of writing the report. The level of sensitivity is determined with reference to the methodology detailed in The Assessment of Noise: Technical Advice Note (TAN 2011) (EFD, 2011) which considers existing regulations and guidance, societal value, and vulnerability to change. A combination of the assessed value of these three components allows the NSRs' sensitivity to be classified as Low, Medium or High.

Table 10.4: Receptor Sensitivity

Level of Sensitivity	Definition
Low	Receptors where distraction or disturbance from noise is minimal.
	Buildings not occupied during working hours.
	Factories and working environments with existing high noise levels.
	Sports grounds when spectator noise is a normal part of the event.
	Night clubs.
Medium	Receptors moderately sensitive to noise, where it may cause some distraction or disturbance.
	Offices.
	Bars/Cafes/Restaurants where external noise may be intrusive.
	Sports grounds when spectator noise is not a normal part of the event and where quiet conditions are necessary (e.g. tennis, golf, bowls).

Level of Sensitivity	Definition
High	Receptors where people or operations are particularly susceptible to noise. Residential, including private gardens where appropriate. Quiet outdoor areas used for recreation. Conference facilities. Theatres/Auditoria/Studios. Schools during the daytime. Hospitals/residential care homes. Places of worship.

10.4.6 Based on a review of publicly available information, **Table 10.5** presents the nearest noise sensitive receptors relative to the Proposed Development, within the study area. Individual receptors have been identified which are representative of those in the immediate vicinity of the respective receptor. The receptor locations which would experience the worst-case impacts have been selected, where they represent a group of receptors.

Table 10.5: Receptor Sensitivity

Ref	Receptor Description	Use	Eastings	Northings	Distance and Direction to Receptor	Sensitivity
NSR1	Jasmine Cottage, Ballingry	Residential	318659	697574	400 m to the north east	High
NSR2	Capledrae Cottage, Ballingry	Residential	319601	697781	140 m to the west	High
NSR3	Capledrae Farm Cottages, Woodend	Residential	318790	697773	280 m to the west	High
NSR4	Westfield Biomass Plant, Cardenden	Industrial	319010	698121	300 m to the north	Low

10.4.7 An aerial photograph of the location of the identified nearest noise sensitive receptors can be seen in **Figure 10.1**.

Magnitude of Change/Impact

10.4.8 This section summarises the assessment approach and how impacts have been identified. The assessment is based on the following policy and guidance, which is discussed in Section 10.3:

- The National Planning Framework 4 (LGHD, 2023);
- Planning Advice Note (PAN) 1/2011: 'Planning and Noise' (Scottish Government, 2011);
- Fife Local Development Plan – FIFEplan (FC, 2017);

- British Standard 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound (BSI, 2019);
- Design Manual for Roads and Bridges LA 111 Traffic Noise and Vibration (Standards for Highways, 2020); and
- Procedure for the Assessment of Low Frequency Noise Complaints Revision 1 (NANR45) (University of Salford 2011).

Construction Traffic Noise

- 10.4.9 The assessment of noise due to construction traffic is based on the change in noise level at noise sensitive receptors due to a change in the volumes of road traffic generated by the construction of the Proposed Development.
- 10.4.10 The change in noise level has been calculated by comparing the anticipated construction traffic flows with the 2027 future baseline traffic flows.
- 10.4.11 Assessment for this EIAR Chapter uses short-term assessment criteria taken and adapted from DMRB LA 111 to assess the temporary construction impact. DMRB LA 111 provides negligible to major magnitudes of impacts, and does not refer to a magnitude of impact relating to no change. For the purposes of this assessment and to assign an impact of no change, a change of 0 dB in noise levels has been associated with a magnitude of impact of no change. **Table 10.6** details the proposed assessment criteria.

Table 10.6: Change in Noise Levels Due to Construction Traffic

Magnitude of Impact in Noise Terms	Change in Noise Level $L_{A10,18hr}$ (dB) at Noise Sensitive Receptor
Major	≥ 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	0.1 to 1.0
No Change	0

- 10.4.12 Where the impact in noise terms is above negligible, the assessment of effects, and therefore determining whether an effect is significant or not, will take into account the following factors:
- Proximity of calculated change to the minor/moderate boundary;
 - Consideration of the calculated change in the long-term;
 - The context of the specific noise sensitive receptor; and
 - Acoustic context of the area and likely perception of change by the receptor.
- 10.4.13 Based on guidance provided within DMRB LA 111, construction traffic noise has been considered to be a significant effect in EIA terms where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights; and
- A total number of days exceeding 40 in any 6 consecutive months.

Operational Noise Impacts from Static Plant

10.4.14 Based on guidance provided within BS 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound (BSI, 2019) and guidance outlined in PAN 1/2011, the preliminary magnitude of impact definitions for residential receptors are provided in **Table 10.7**. BS 4142:2014+A1:2019 provides assessment of sound levels outside dwellings or premises used for residential purposes, and is not applicable to other types of receptors.

Table 10.7: Preliminary Magnitude of Impact for Operational Plant Noise – Residential Receptors

Preliminary Magnitude of Impact in Noise Terms	Rating Level ($L_{A,T,r}$ dB) at Noise Sensitive Residential Receptor
Major	Greater than 5.0 dB above the typical background sound level, depending on context.
Moderate	3.1 to 5.0 dB above the typical background sound level, depending on context.
Minor	1.1 to 3.0 dB above the typical background sound level, depending on context.
Negligible	Less than 1.0 dB above the typical background sound level, depending on context.
No Change	Less than the typical background sound level, depending on context.

- 10.4.15 The context of the assessment should be used to modify the overall outcome and final magnitude of impact, as necessary.
- 10.4.16 Regarding low frequency noise from the substation, an assessment has also been undertaken in accordance with Procedure for the Assessment of Low Frequency Noise Complaints ('NANR45') (University of Salford, 2011) at high sensitivity receptors. Where the predicted levels exceed NANR45 criteria, this may be considered as significant. Anything below the threshold would be considered as **Not Significant**.
- 10.4.17 Assessment of operational noise has not been undertaken at NSR4 (Westfield Biomass Plant, Cardenden), due to its low sensitivity, noise generation within NSR4 itself, and distance away from the site. Sound levels in and around NSR4 are likely to be affected by operations on the biomass plant site, and therefore sound levels which would be required to result in an impact are expected to need to be very high to result in a significant effect. It is therefore concluded that significant effects would not occur at NSR4.

Significance of Effect

- 10.4.18 After the magnitude of the impact and the sensitivity of the receptor/resource have been determined, the significance of effect for noise and vibration has been classified using the matrix in

Table 10.8. The evaluation of effect significance has been through the recommendations in TAN 2011 and based on professional judgement, considering both sensitivity and magnitude. Effects that are identified as Minor or Negligible are not considered to be significant in EIA terms. Effects that are identified as Major and Moderate (adverse or beneficial) are considered significant in EIA terms. Significant adverse effects will require the consideration of additional mitigation measures.

Table 10.8: Effect Significance Matrix

Receptor Sensitivity	Magnitude of Impact				
	No Change	Negligible	Minor	Moderate	Major
High	Neutral	Minor	Minor/ Moderate	Moderate/ Major	Major
Medium	Neutral	Neutral/Minor	Minor	Moderate	Moderate/Major
Low	Neutral	Neutral/Minor	Negligible/ Minor	Minor	Minor/Moderate

10.4.19 As outlined in DMRB, construction traffic noise is considered to be a significant effect in EIA terms where it is determined that a l, major or moderate magnitude of impact will occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights; or
- A total number of days exceeding 40 in any six consecutive months.

Assessment Limitations and Assumptions

Baseline Sound Survey

10.4.20 The engineer noticed nothing unusual in terms of the sound climate at the time of the survey. This chapter refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections.

Operational Noise Assessment

10.4.21 The assessment in this chapter does not represent an assessment of a detailed developed design. The detailed design of the development should be supported by detailed acoustic assessments and provision of acoustic performance specifications where relevant. However, the assessment has been undertaken based on the project description and considered a worst-case scenario consistent with the approach for applications for planning permission in principle.

10.4.22 Provided the developed design complies with the acoustic assessment criteria detailed in this chapter, noise impacts at the identified receptors are unlikely to exceed those presented.

Construction Traffic Noise

10.4.23 The assessment of construction road traffic noise is based on preliminary information available at the time of writing. Construction traffic volumes, vehicle types, and routing have been estimated

using indicative construction programmes and logistics plans. These estimates are considered representative of a likely worst-case scenario. Noise levels at receptors may vary depending on final routing, timing of vehicle movements, and noise conditions at the time of construction.

10.5 Baseline Conditions

10.5.1 Details of the baseline sound survey can be seen in **Technical Appendix 10.2**.

Current Baseline (2025)

Baseline Road Traffic Flows

10.5.2 Baseline 2025 road traffic flow data, used to inform the construction traffic noise assessment, were provided by the project's transport consultant. The data provided is presented in **Tables 10.10** and **10.11**.

Background Sound Levels – Operational Noise

10.5.3 Based on the results of the environmental sound surveys, a statistical analysis of the background sound levels measured during the sound survey has been undertaken and forms the basis of the operational noise assessment.

10.5.4 The statistical analysis of the $L_{A90,15\text{minutes}}$ has been carried out in accordance with BS 4142:2014+A1:2019. The chosen background sound levels for the daytime and night-time are represented in **Technical Appendix 10.2**.

10.5.5 The measured typical background sound levels are replicated below including the relative receptor locations for each position. The measurement locations were selected to be representative of the identified receptors.

Table 10.9: Background Sound Levels for Assessment

Receptor	Measurement Position ID	Selected Typical Background Sound Level $L_{A90,15\text{minutes}}$ dB	
		Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
NSR1	LT2	39	33
NSR2	LT2	39	33
NSR3	LT1	41	38

Future Baseline (2027)

Construction

10.5.6 Baseline traffic flows were derived from traffic surveys undertaken on the local road network in 2025. The surveys captured existing traffic volumes, which were then projected to 2027 using standard

growth factors and modelling techniques. This information provided a robust baseline against which the potential impact of construction traffic could be assessed.

Operation

- 10.5.7 The evolution of baseline sound levels in future years is likely to be influenced by various factors, including changes in local infrastructure, economic activity, and population growth.
- 10.5.8 A key contributor to increasing ambient sound is the anticipated rise in road traffic, driven by population growth and associated development. Other environmental sound sources, such as industrial activity and land-use changes, may also shape the overall acoustic environment.
- 10.5.9 Locally, once the Proposed Development is operation, the existing 275kV substation will be decommissioned, and the existing footprint will be reduced. This is expected to occur in 2030. As there will be a reduction in equipment at the existing 275kV substation, noise levels generated by the existing installation are expected to reduce.
- 10.5.10 Based on the experience of the engineer during the sound survey and as reported within **Technical Appendix 10.2**, sound from the existing substation was not audible at the survey measurement locations. On this basis, it is considered unlikely that there would be a significant change in baseline sound conditions due to the existing substation being rationalised.
- 10.5.11 In a wider context, the extent and rate of background sound level changes will depend on local planning decisions, technological advancements, and broader societal trends. Considering these local and regional factors, it is likely that baseline sound levels will rise in the future, which would reduce the impact of the Proposed Development further as the difference between the predictions and ambient sound levels would decrease. These considerations have not been factored into the assessment, as the 2025 background sound levels represent a worst-case baseline level when compared to the potential future sound levels.

10.6 Embedded Mitigation

Construction

- 10.6.1 Construction noise is scoped out of the assessment. The Construction Environmental Management Plan (CEMP) will be developed to include mitigation specific to the site.

Operation

- 10.6.2 The switchgear would be contained within the GIS building, which will minimise noise. The equipment would be installed in accordance with accepted industry standards for noise and ensure impacts are minimised.

10.7 Assessment of Likely Significant Effects

Construction Traffic Noise

10.7.1 The road traffic noise assessment considers the change in ambient noise levels at existing receptors as a result of changes in the 18-hour AAWT traffic flows due to construction traffic during 2027 construction year compared to the baseline. Two scenarios have been proposed for the construction traffic routes and assessment of both scenarios has been presented.

- Scenario 1: 100% traffic arriving from the east; and
- Scenario 2: 50% traffic arriving from the east and 50% traffic arriving from the west.

10.7.2 **Table 10.10** details the proposed change in noise levels from Scenario 1.

Table 10.10: Construction Traffic Noise Assessment – Scenario 1

Road	Baseline Traffic Flow (2027)		Baseline (2027) + Construction Traffic Flow		Calculated Change in Basic Noise Level (BNL dB)	Magnitude of Impact
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
Location 1 - B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	5966	1021 (17%)	6044	1099 (18%)	0.2 dB(A)	Negligible
Location 2 - B920 north of Robert Baird and Sons Farm	4116	733 (18%)	4194	811 (19%)	0.3 dB(A)	Negligible
Location 3 - B9097 south of B920 ghost island junction	2804	559 (20%)	2882	637 (22%)	0.4 dB(A)	Negligible
Location 4 - B920 north of Ballingry Crescent, Ballingry	5086	626 (12%)	5086	626 (12%)	0.0 dB(A)	No Change
Location 5 - B921 adjacent Tillcoultry Quarries	4431	609 (14%)	4431	609 (14%)	0.0 dB(A)	No Change
Location 6 - B981 Jamphlars Road adjacent Bowhill Recycling Facility	4853	653 (13%)	4853	653 (13%)	0.0 dB(A)	No Change

Road	Baseline Traffic Flow (2027)		Baseline (2027) + Construction Traffic Flow		Calculated Change in Basic Noise Level (BNL dB)	Magnitude of Impact
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
Location 7 - B9149 between Muir Road and B981 Roundabouts	10158	1436 (14%)	10158	1436 (14%)	0.0 dB(A)	No Change

10.7.3 **Table 10.11** details the proposed change in noise levels from Scenario 2.

Table 10.11: Construction Traffic Noise Assessment – Scenario 2

Road	Baseline Traffic Flow (2027)		Baseline (2027) + Construction Traffic Flow		Calculated Change in Basic Noise Level (BNL dB)	Magnitude of Impact
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
Location 1 - B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	5966	1021 (17%)	6005	1060 (17.7%)	0.1 dB(A)	Negligible
Location 2 - B920 north of Robert Baird and Sons Farm	4116	733 (18%)	4155	773 (18.6%)	0.2 dB(A)	Negligible
Location 3 - B9097 south of B920 ghost island junction	2804	559 (20%)	2843	599 (21.1%)	0.2 dB(A)	Negligible
Location 4 - B920 north of Ballingry Crescent, Ballingry	5086	626 (12%)	5125	665 (13.0%)	0.2 dB(A)	Negligible
Location 5 - B921 adjacent Tillcoultry Quarries	4431	609 (14%)	4470	648 (14.5%)	0.2 dB(A)	Negligible

Road	Baseline Traffic Flow (2027)		Baseline (2027) + Construction Traffic Flow		Calculated Change in Basic Noise Level (BNL dB)	Magnitude of Impact
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
Location 6 - B981 Jamphlars Road adjacent Bowhill Recycling Facility	4853	653 (13%)	4892	692 (14.2%)	0.2 dB(A)	Negligible
Location 7 - B9149 between Muir Road and B981 Roundabouts	10158	1436 (14%)	10197	1475 (14.5%)	0.1 dB(A)	Negligible

10.74 The impacts identified in **Table 10.10** and **10.11** are either no change or negligible along all links assessed. Based on receptors with either high (NSR1-3) or low (NSR4) sensitivity, the effects of construction traffic in EIA terms are considered to be Short Term, Neutral/Minor and therefore **Not Significant**.

Operational Noise

10.75 An assessment of operational noise has been provided in **Technical Appendix 10.2**. A summary of the assessment of static plant noise can be seen in **Table 10.12** and **Table 10.13**.

10.76 **Technical Appendix 10.2** outlines noise limits for transformers of 87 dBA L_w per unit.

10.77 As per paragraph 10.4.17, assessment of operational noise has not been undertaken at NSR4, which is an industrial site, due to its low sensitivity and distance away from the site. Significant effects will be avoided at NSR4 by achieving acceptable noise levels at other receptors, which are closer to the Proposed Development and have more stringent criteria applied within the assessment.

Table 10.12: BS 4142:2014+A1:2019 Noise Assessment Results – Daytime (07:00 to 23:00) at 4m height

Receptor	Calculated Rating Level $L_{Ae,1hour}$ (dB)	Background Sound Level ($L_{A90,15mins}$) (dB)	Excess of Rating Level over Background Sound Level (dB)	Magnitude of Impact
NSR1	30	39	-9	No Change
NSR2	36	39	-3	No Change
NSR3	28	41	-13	No Change

Table 10.13: BS 4142:2014+A1:2019 Noise Assessment Results – Night-Time (23:00 to 07:00) at 4m height

Receptor	Calculated Rating Level $L_{Ar,15mins}$ (dB)	Background Sound Level ($L_{A90,15minutes}$) (dB)	Excess of Rating Level over Background Sound Level (dB)	Magnitude of Impact
NSR1	30	33	-3	No Change
NSR2	36	33	+3	Minor
NSR3	28	38	-10	No Change

Context

- 10.7.8 When determining the overall outcome of the assessment it is important to consider the context of the assessment. Section 11 of BS 4142:2014+A1:2019 advises that:

“1) The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.

Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.”

- 10.7.9 The background sound levels and rating levels are relatively low, are a contextual factor, and therefore have relevance in the assessment.

Discussion

- 10.7.10 The outcome of the assessment indicates that the rating level at NSR1 is below the background sound level during the day and night, resulting in an impact of no change. Based on NSR1 having a high sensitivity and the contextual factors, this results on a Long Term Neutral Effect, which is **Not Significant**.
- 10.7.11 The outcome of the assessment indicates that the rating level at NSR2 is below the background sound level during the day and 3 dB above the background sound level at night, resulting in a minor impact. Based on NSR2 having a high sensitivity this results on a Long Term Minor/Moderate Effect.
- 10.7.12 Based on the background sound level and rating level being relatively low, the overall effect is considered to be Long Term and Minor, which is **Not Significant**.
- 10.7.13 The outcome of the assessment indicates that the rating level at NSR3 is below the background sound level during the day and night, resulting in an impact of no change. Based on NSR3 having a high sensitivity and the contextual factors, this results on a Long Term Neutral Effect, which is **Not Significant**.

Significant.

- 10.7.14 The assessment of low frequency sound at the nearest receptors is also below NANR45 criteria. For further information see Section 4.1 of **Technical Appendix 10.2**.
- 10.7.15 Therefore, the effects of operational noise are considered to be Long Term, Neutral/Minor and **Not Significant**.

Mitigation and Enhancement

Construction

- 10.7.16 As noted in Section 10.6, the CEMP will identify mitigation to control construction activity noise and vibration impacts. No additional mitigation measures are considered to mitigate the effects of construction traffic noise.

Operational Noise

- 10.7.17 The transformers shall be selected and designed as appropriate to achieve 87 dB L_w . Acoustic enclosures may be required to reduce the total sound emissions.

Assessment of Residual Effects

Construction

- 10.7.18 As no additional mitigation measures have been proposed, the residual construction traffic noise effects remain unchanged.
- 10.7.19 The residual construction traffic noise effects in EIA terms are considered to be Short Term, Neutral/Minor and **Not Significant**.

Operational Noise

- 10.7.20 As no additional mitigation measures have been proposed, the residual operational noise effects remain unchanged.
- 10.7.21 The residual operational noise effects in EIA terms are considered to be Long Term, Neutral/Minor and **Not Significant**.

10.8 Future Monitoring of Significant Environmental Effects

- 10.8.1 No significant residual effects have been identified and do not need to be considered any further.

10.9 Summary

- 10.9.1 A noise assessment has been undertaken to determine the likely significant effects from the Proposed Development.

- 10.9.2 The Scoping Response from FC confirmed that construction traffic noise and operational noise should be scoped into the EIAR, and that other impacts can be scoped out.
- 10.9.3 The Pre-application response from FC confirmed that a noise report should be submitted with any future planning application. This report is provided within **Technical Appendix 10.2**.
- 10.9.4 Following the Scoping Response, consultation was undertaken with FC to agree the survey methodologies, as included in **Technical Appendix 10.1**.
- 10.9.5 A series of unattended environmental sound surveys and baseline traffic surveys have undertaken between to determine the existing sound climate at locations considered representative of the nearest noise sensitive receptors.
- 10.9.6 An assessment of noise associated with the Proposed Development has been provided to determine if any significant effects will arise.

Construction

- 10.9.7 The potential noise impact from construction traffic has been assessed. The results of the assessment shows that noise impacts from construction traffic are likely to be Short Term, Negligible on all roads, which is **Not Significant**.

Table 10.14: Summary of Residual Effects During Construction

Road	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
Location 1 - B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 2 - B920 north of Robert Baird and Sons Farm	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 3 - B9097 south of B920 ghost island junction	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 4 - B920 north of Ballingry Crescent, Ballingry	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 5 - B921 adjacent Tillcoultry Quarries	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant

Road	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
Location 6 - B981 Jamphlars Road adjacent Bowhill Recycling Facility	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 7 - B9149 between Muir Road and B981 Roundabouts	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant

Operation

- 10.9.8 The potential noise impact from operational element of the scheme on the nearest noise sensitive receptors from the Proposed Development has been assessed. The result of the assessment shows that the residual noise effects from on-site operations are likely to be Long Term, Negligible to Minor at all noise sensitive receptors, which is **Not Significant**.

Table 10.15: Summary of Residual Effects During Operation

Receptor	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
NSR1	Long Term, Neutral	Not Significant	None	Long Term, Neutral	Not Significant
NSR2	Long Term, Minor	Not Significant	None	Long Term, Minor	Not Significant
NSR3	Long Term, Neutral	Not Significant	None	Long Term, Neutral	Not Significant

Chapter 11: Major Accidents and Disasters

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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11. Major Accidents and Disasters

11.1 Introduction

- 11.1.1 This Chapter has been prepared by Stantec UK. It provides an assessment of the likely significant effects on the environment arising from the vulnerability of the Proposed Development to risks of Major Accidents and / or Disasters (MA&D). It reviews the relevant policy framework, proposes mitigation measures where necessary and presents the significance of the residual effects for MA&D hazards relevant to the Proposed Development.

11.2 The Scope of Assessment and Consultation

Scope of Assessment

- 11.2.1 This assessment has been carried out in line with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations) which require:

"A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned" (Schedule 4, Paragraph 8)".

- 11.2.2 This Chapter, therefore, considers whether:

- The Proposed Development would be vulnerable to MA&D;
- The Proposed Development would be a source of hazard that could result in a major accident or would interact with an external source of hazard; and
- The presence of the Proposed Development could be expected to increase the risk of serious harm to people or the environment, in the event of an external disaster or accident.

Consultation

- 11.2.3 Under the EIA Regulations a request for a Scoping Opinion was submitted to Fife Council (FC) in July 2024, and a Scoping Opinion provided by FC in September 2024.

- 11.2.4 Comments from consultees, specifically the Health and Safety Executive (HSE), received by FC in relation to MA&D indicated that consideration of the following should be scoped into the assessment:

- Requirement to include an assessment of the risk of two major accident pipelines:
 - 6776 - Shell Expro St Fergus to Mossmorran NGL Pipeline operated by Shell UK Exploration and Production; and
 - 8109_2368 - Westfield / Mossmorran (F12) operation by Scotland Gas Network Ltd.

Definitions

- 11.25 Reference is made throughout this Chapter to Institute of Sustainability and Environmental Professionals (ISEP)s 'Major Accidents and Disasters in EIA: A Primer' (hereafter referred to as 'the Primer') which provides guidance for impact assessment practitioners undertaking a MA&D assessment. The Primer is structured around a typical assessment approach that offers a proportionate method for considering MA&D through screening, scoping and assessment.
- 11.26 Key terms defined in the IEMA Primer and used in this Chapter are listed in **Table 11.1** below.

Table 11.1: Key Terms for MA&D defined by the IEMA Primer

Key Term	IEMA Primer Definition
As low as reasonably practicable (ALARP)	Involves weighing a risk against the trouble, time and money needed to control it. Thus, ALARP describes the level to which we expect to see risks controlled.
Disaster	May be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident.
Reasonable worst-case scenario	A challenging manifestation of the scenario after highly implausible scenarios are excluded.
Major Accident	Events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events.
Receptor	The specific component of the environment that could be adversely affected if the source reaches it. Environmental receptor is specifically defined as: features of the environment that are subject to assessment under Article 3 of the EIA Directive, namely population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and landscape.
Significant environmental effect (in relation to a major accidents and/or disasters assessment)	Could include the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration.
Source-pathway-receptor linkage	For a risk to arise there must be hazard that consists of a 'source' (e.g. high rainfall); a 'receptor' (e.g. people, property, environment); and a pathway between the source and the receptor (e.g. flood routes).

11.3 Assessment Methodology and Significance Criteria

- 11.3.1 The assessment has been undertaken in accordance with the following.

Study Area

- 11.32 The Study Area for this assessment is defined as the Red Line Boundary (RLB) of the Proposed Development as detailed in **Chapter 3** of this EIAR, and a wider surrounding area within which external hazards could influence the vulnerability of the Proposed Development.
- 11.33 This includes, where relevant, existing infrastructure (e.g. pipelines, utilities), transport routes, and natural hazard sources that could give rise to major accidents or disasters affecting the Proposed Development.

Assessment

- 11.34 This MA&D assessment identifies the reasonably foreseeable worst-case environmental consequence of a hazard (i.e. the likely significant effect) on human health and the environment and the basis of its potential severity of harm and duration. However, by definition, all MA&D hazards could result in some form of serious damage and therefore, the assessment then considers the likelihood of a significant hazard or threat occurring. MA&D focuses on low-likelihood/high consequence events, as shown in **Figure 11.1**.

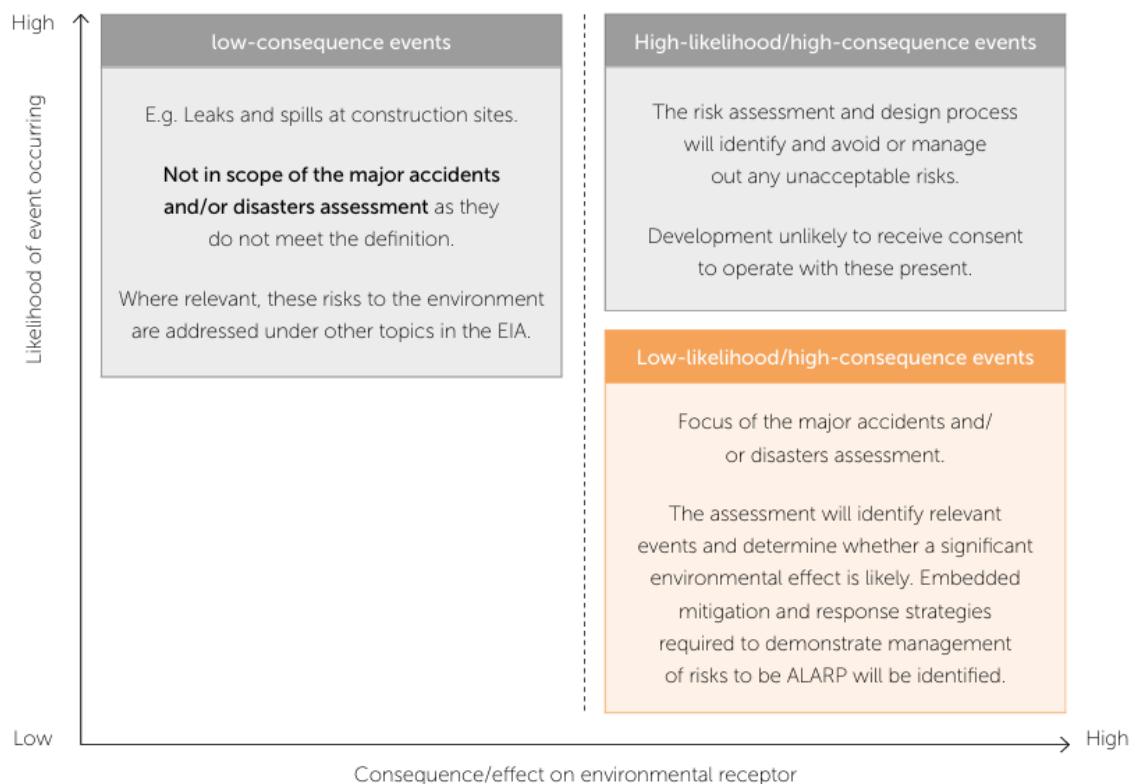


Figure 11.1 Summary of scope in MA&D (from the ISEP Primer)

- 11.35 The assessment follows the standard industry guidance set out in the ISEP Primer:
- The baseline has been established by:
 - Identifying hazards and threats (noting that hazards can be grouped into high-level 'risk events' which have the same potential consequences); and
 - Identifying receptors relevant to the identified hazards/risk events.

- Identifying the reasonable worst-case impacts on receptors resulting from the hazards/risk events by:
 - Reviewing the hazards/risks events to establish how they could impact the receptors; and
 - Noting where risk events are screened out on the basis that there is no source-to-receptor pathway, and/or the consequence of the hazard/risk events do not meet the criteria of a significant effect.
- Describing the primary and tertiary (embedded and best practice) mitigation for the risk events, plus any secondary (additional) mitigation measures proposed, noting whether the mitigation measures eliminate, reduce, isolate and/or control the risk events:
 - For MA&D risk management options comprise:
 - Elimination (or avoidance) - eliminate the source or receptor;
 - Reduction - adapt processes to reduce the likelihood;
 - Isolation - physical measures to isolate a risk such that there is no pathway;
 - Control - appropriate control measures to manage a risk should it occur; and
 - Exploitation - exploit the risk if it presents potential benefits or new opportunities e.g. moving an existing asset to which a development relates further from a potential source of hazard.

11.3.6 The assessment follows the above structure for each of the risk topics assessed to ensure that a robust assessment is presented. For completeness, a review of wider hazards has also been undertaken.

Significance

11.3.7 In this assessment, effects are considered to be 'significant' or 'not significant', there are no varying degrees of significance identified.

11.3.8 The ISEP Primer defines significant effects in relation to MA&D as *'The loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration'*.

11.3.9 As above, hazards identified in the baseline conditions which have no credible source-pathway-receptor linkage are removed from further consideration and source-pathway-receptor linkages are considered in the assessment of likely significant effects i.e. significant effects will be ruled out where there are no credible source-pathway-receptor linkages.

11.3.10 In accordance with the ISEP Primer, factors such as the geographic extent, duration, severity, and sensitivity are considered in determining the significance of effects.

11.3.11 Key to the assessment of residual effects is to demonstrate how mitigation reduces the likelihood and significance of the reasonable worst-case impact to an acceptable level. As Low as Reasonably Practicable (ALARP) describes the level to which MA&D are expected to be mitigated.

Assessment Scenarios

- 11.3.12 The MA&D assessment for the Proposed Development will consider the following three assessment scenarios:
- Construction;
 - Decommissioning of existing 275kV substation; and
 - Operation.
- 11.3.13 Construction and Decommissioning phases are assessed separately due to differences in their spatial extent and the receptors potentially affected. While the nature of activities may be similar, the decommissioning works relate to a different part of the Proposed Development and may therefore give rise to distinct risk pathways and potential major accident scenarios. The construction phase is anticipated to represent a worst-case scenario for Major Accident Hazard Pipelines due to navigating ground sensitivities.
- 11.3.14 Whilst exact details of the construction methods to be used cannot be determined with absolute certainty at this time, a number of assumptions and parameters have been fixed for the purpose of this assessment and are described within **Chapter 3: Description of Development**. Construction is expected to last approximately 4 years.
- 11.3.15 Operation will be considered under a separate assessment scenario as it involves different activities and impacts, particularly those associated with the substation itself. By separating these phases into separate scenarios, the evaluation can be more targeted and effective, ensuring that all potential risks and impacts are comprehensively addressed.

Assessment Limitations and Assumptions

- 11.3.16 The following assumptions have been applied to the risk identification exercise when considering risk events:
- No modelling or detailed calculations have been undertaken; a qualitative assessment approach has been adopted (this is an accepted approach in the ISEP Primer);
 - The assessment is limited by the availability of historical evidence and data on the likelihood and environmental consequences of MA&D events;
 - Where information is not available (such as historical evidence on the likelihood and the environmental consequence of an event), professional judgement has been used to reach a conclusion;
 - Each hazard or threat has been considered on an individual basis;
 - No surveys beyond those undertaken to inform other EIA topics and planning documents have been completed to establish the baseline for the MA&D assessment; and
 - The assessment assumes that all embedded and best practice mitigation measures described in the EIAR will be implemented as proposed.

11.4 Legislation and Policy Context

11.4.1 This section summaries the legislation and policy context that has informed the assessment of likely significant effects on the risks of MA&D.

National Policy and Legislation

11.4.2 MA&D was introduced as a topic into the EIA Regulations as a result of EU Directive 2014/52/EU (the EIA Directive). The EIA Regulations require '*a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned*' (Schedule 4, para 8). The underlying objective to the assessment is to ensure that appropriate precautionary actions are taken for those developments which '*...because of their vulnerability to major accidents and/or natural disasters...are likely to have significant adverse effects on the environment*' (para 15 of Directive 2014/52/EU).

11.4.3 **Table 11.2** below lists other legislation relevant to the assessment of MA&D. The design, construction, and operation of the Proposed Development and decommissioning of the existing substation is required to take health and safety measures into account, and improve safety through design and operation, in accordance with these regulations.

Table 11.2: Legislation Relevant to MA&D

Legislation	Description
Electricity at Work regulations 1989	The purpose of these regulations is to prevent injury and death caused by electrical hazards in the workplace.
Health and Safety at Work Act 1974 (HSWA)	Sets out requirements for employers' staff in control of premises, manufactures and employees, and sets out the framework for the regulation of industrial health and safety in the UK.
The Management of Health and Safety at Work Regulations 1999	These regulations contain more specific details about employers' health and safety duties under the HSWA.
The Civil Contingencies Act 2004	Sets out the roles and responsibilities for responding to a major accident and disaster at a local level. Local planning authorities and primary responders such as the emergency services are required to have emergency plans and business continuity management arrangements. They must assess the risk of emergencies occurring and make information available to the public. They also form 'local resilience partnerships' who publish Community Risk Registers, and co-ordinate and cooperate between responders.
Construction (Design and Management) Regulations 2015	These Regulations aim to improve health, safety and welfare in construction projects. They place legal duties on all parties involved in construction to plan, manage and monitor work from the design stage through to completion.

Legislation	Description
Control of Major Accidents and Hazards (COMAH) Regulations 2015	The COMAH Regulations aim to prevent and mitigate the effects of major accidents involving dangerous substances which can cause serious damage/harm to people and/or the environment. COMAH treats risks to the environment as seriously as those to people.

National Planning Framework (adopted 2023)

- 11.4.4 From 13 February 2023, Scotland's fourth National Planning Framework (NPF4) forms part of the statutory Development Plan. NPF4 must be read as a whole, and its 33 policies are to be used as a guide to decision making. Where there is a conflict between NPF4 and the Local Development Plan policy, whichever of them is the later in date is to prevail.

FIFEplan (adopted 2017)

- 11.4.5 FIFEplan supports development that contributes to a low-carbon economy and sustainable growth, subject to compliance with development principles relating to siting, design, landscape and visual impact, amenity, and environmental protection. The proposed substation is considered to align with these policy objectives by providing essential grid infrastructure, with potential impacts capable of being appropriately mitigated through design, landscaping, and environmental controls consistent with MA&D requirements.

11.5 Baseline Conditions

- 11.5.1 A description of the Site and its context is provided in Chapter 3. Key points of relevance to MA&D, specifically when considering possible receptors, include:
- The Site is within close proximity to a number of commercial and industrial land uses, including a historic quarry being developed as the Fife Energy Park over 1 km to the north-east, and the residential settlement of Ballingry located 800 m to the west;
 - The Fife Pilgrim Way Long Distance Walking Route (LDWR), which connects West Fife and East Fife via routes used by medieval pilgrims is located to the south of the Site;
 - There are a number of Core Paths (CP) in proximity to the Site, including the abandoned railway route to the north-west;
 - To the north-west of the Site is the Loch Leven National Nature Reserve, Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Wetland Designation;
 - Man made drainage ditches in the south of the Site drain to a larger field drain on the southern boundary;
 - The HSE website and COMAH Search tool found no COMAH establishments within 3 miles of the Site; and
 - A small portion of the western part of the Site is located within HSE's land-use-planning consultation zones for two major accident hazard pipelines.

Future Baseline

- 11.52 In addition to the current baseline, consideration has been given to how baseline conditions may evolve over the lifetime of the Proposed Development.
- 11.53 The future baseline is not anticipated to differ significantly from the current baseline with regard to the vulnerability of the Proposed Development to the risk of MA&D. This is because no substantial changes to the surrounding land uses or the nature of the natural and man-made hazards identified within the current baseline are anticipated over the lifetime of the Proposed Development. Any changes in climate and associated extreme weather events will be considered through the design and resilience measures incorporated into the Proposed Development.

Likely Significant Effects

- 11.54 The likely significant effects considered for the Proposed Development, which are of "*low-likelihood but potentially high-consequence*" as noted in the Primer, are set out in **Table 11.3** below.
- 11.55 This takes account of the data sources noted above, the type of development in question (a substation and decommissioning of existing substation) and its location.

Table 11.3: Potential Effects

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
Natural risks	Meteorological Hazards	Extreme storms, temperatures, drought, heatwaves, lightning etc, can have significant adverse effects on structural, human, and environmental receptors.	It is anticipated that weather warnings issued by the Met Office National Severe Weather Warning Service and the Scottish Environmental Protection Agency (SEPA) Flood Warning Service for forecasts on extreme adverse weather conditions, will be considered during all phases of the development. The Proposed Development will be designed in accordance with relevant engineering and environmental standards, taking account of climatic conditions, including appropriate drainage design and structural resilience. In addition, established warning systems, such as those provided by the Met Office and SEPA, will enable proactive management of extreme weather events, thereby reducing the likelihood of significant effects occurring.	No – not significant
	Seismic Hazards	Based on available information published by the British Geological Survey (BSG) the Site is not located in an area of seismic hazard risk at Grid Reference X 319040 Y 697600 (British Geological Survey, no date).	Not required.	No – not significant
	Flooding	According to the Flood Risk Assessment (FRA) completed by Fairhurst for the Proposed Development (Fairhurst, 2025), the primary source of	Substation raised above ground level on concrete substructures that fulfils the flood	No - not significant

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
		flood risk to the Site is fluvial flows from two unnamed watercourses located in the vicinity of the Site, the proposed substation platform is located entirely outwith the area at risk of flooding in a 1 in 200 year + Climate Change (CC) event. Therefore, this effect is not anticipated to be significant and the risk during all phases of the development is considered low. Further impact of surface water flooding is considered in the Flood Risk Assessment (FRA) provided as part of this planning application.	mitigation requirements in SPENs Substation Flood Resilience Policy. Drainage systems to fulfil the requirements of SUB-03-034 including, minimum self-cleansing velocity and max velocity and SuDS requirements. Details in FRA which has been submitted as a standalone document in support of the Planning Application.	
	Wildfire	Wildfires can cause significant environmental damage and damage to infrastructure and property.	The area surrounding the Proposed Development does not contain woodland or vulnerable grassland and therefore the risk of wildfires has been scoped out.	No – not significant
Man-made Hazards	UXO	Possibility of encountering UXO, inadvertent detonations pose a serious risk to life.	A review of unexploded ordinance (UXO) risk has been undertaken as part of the Phase 1 Desk Study (RSK, 2024). A UXO bomb risk map obtained from Zetica UXO (included within Appendix E of RSK Phase 1 Desk Study) identifies the Site as being located within a Low-Risk area for potential unexploded bombs associated with WWII aerial bombardment. A low-risk classification corresponds to areas with a bombing density of 15 bombs per 1000 acres or fewer. The report confirms that, in such areas, works can proceed without the requirement for special precautions.	No – not significant

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
			On this basis, the likelihood of encountering UXO at the Site is considered low and the risk of a major accident associated with UXO is negligible.	
	Failure of the National Electricity Transmission System (NETS)	Potential to cause a nationwide loss of power, disrupting utilities, public services, domestic households and businesses.	This is considered a low probability event with limited impact on the Proposed Development. If the national grid failed, the substation would automatically isolate and de energise, in accordance with fail safe design principles. These protective measures ensure that faults are detected and safely managed, minimising any risk to substation infrastructure or the wider electricity network. As a result, significant adverse effects associated with outages are unlikely.	No - not significant
	Regional failure of the electricity network	This could cause a regional loss of power, disrupting some utilities, public services, domestic households and businesses.	Regional failure of electricity network is considered a low-probability event with limited potential impact on the proposed substation. The substation would be designed with appropriate protection, control and isolation systems to ensure safer operation during abnormal network conditions. These measures allow the substation to respond effectively to network disturbances, thereby reducing the likelihood of significant adverse effects arising.	No – not significant
	Major Fire	There is a potential risk of fire associated with substation infrastructure, primarily related to electrical faults. Toxic gases and/or firewater could have major adverse impacts on population and	Substations are designed to include fault detection, automatic isolation, and fire suppression measures, which limit the likelihood and extent of fire related impacts.	No- not significant

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
		human health, air quality, ecology, and water resources.		
	Air Quality	Surges in poor air quality are primarily due to weather conditions preventing pollution from dispersing. A prolonged period of elevated ground level ozone or fine particulate matter could cause significant health risks associated with respiratory and cardiovascular conditions.	The Proposed Development does not create any emissions during operation. Air Quality has been scoped into the EIAR to assess construction phase dust impacts and construction phase road traffic impacts and appropriate dust and air quality management measures will be implemented as seen in Technical Appendix 3.1: Outline Construction Environmental Management Plan (CEMP) .	No – not significant
	Land and Water Contamination	Potential release of harmful chemicals to the environment.	Embedded mitigation measures form part of the Proposed Development design, including the installation of impermeable concrete bunding around equipment containing potentially hazardous substances, designed to contain any leaks or spills. In addition, the substation compound has been located away from nearby watercourses, reducing potential for any contaminants to reach sensitive receptors. During construction of the Proposed Development and decommissioning of the existing substation, measures through SPEN's Policies, Procedures and Specification Documentation¹ will be	No – not significant

¹ [Policies, Procedures and Specifications: Documentation - SP Energy Networks](#)

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
			implemented, including appropriate storage, handling and spill response procedures.	
	Major Road Traffic Accidents	Increased traffic is expected during the construction and decommissioning phases of the Proposed Development; this is discussed in full in Chapter 8: Transport. Once operational, it is anticipated that the Site will only be visited for maintenance.	The measures to mitigate the risk of any major accident during all phases of the Proposed Development will be included within management plans such as the Construction Traffic Management Plan (CTMP).	No - not significant
	Vandalism	Risk of vandalism/arson leading to damage of infrastructure and potential fires.	Mitigated through security measures embedded into the design of the Proposed Development such as perimeter & security fencing and CCTV. Outlined in Chapter 3, which will reduce the likelihood of unauthorised access and intentional damage. The design and operation of the infrastructure will comply with relevant safety standards, limiting the potential for any such incidents to escalate into major accidents. The types and quantities of potentially hazardous or flammable materials present are limited and managed in accordance with SPEN's Policies, Procedures and Specifications Documentation.	No – not significant
	Electrocution	A significant hazard associated with substations is the risk of electrocution caused by electrical faults and factors such as failure to properly isolate equipment before maintenance and unauthorised access to the substation.	Mitigated through security measures embedded into the design of the Proposed Development such as perimeter & security fencing and CCTV. Outlined in Chapter 3.	No – no significant

Group	Effect	Characteristic of Impact / Reasonable Worse Case Scenario	Mitigation / Discussion	Further consideration required?
			Implementing robust security measures and strict interlock/isolation procedures is essential to prevent personnel from being exposed to live high-voltage equipment.	
	Major Accident Hazard Pipelines	Potential to include fires and explosion, with associated risk to human health, property, and local environment. Effects would be localised and primarily associated with the immediate pipeline consultation zones.	Although the likelihood of the Proposed Development contributing to a high consequence event, including fires or explosions is considered low, particularly with the implementation of embedded mitigation measures (including consultation with pipeline operators, adherence to defined consultation zones, and the use of Permit to Dig procedures), the potential consequences of a pipeline failure are severe and may extend beyond the immediate site boundary. The risk associated with pipeline infrastructure is not fully within the control of the Proposed Development, as it depends on the integrity and operation of third-party assets. During the construction phase, ground disturbance activities represent a potential interaction with buried infrastructure.	Yes – Scoped in

11.6 Mitigation

Primary and Tertiary Mitigation

11.6.1 As detailed in **Chapter 3**, a range of mitigation measures have been identified through the iterative design process and have been incorporated into the design of the Proposed Development or have been taken into consideration through SPEN's Policies, Procedures and Specifications Documentation.

Primary Mitigation

11.6.2 A number of measures have been embedded into the Proposed Development to avoid or reduce environmental effects. These form part of the design to be assessed and include:

- The results of utility searches, which show where different utilities are located within the red line boundary have been used to inform the site layout;
- Transformers will be located within an impermeable concrete bunded area to contain any potential oil spill from equipment;
- Bunds will be fitted with a suitable Class 1 oil water separator system, with clean water to drain to soakaway, designed to meet the requirements of BS EN 858-1;
- Improvement works will be undertaken to increase the visibility at the existing access onto the B9097 to facilitate safe access and egress by all vehicles and to allow for delivery of Super Grid Transformers on larger vehicles as an Abnormal Indivisible Load (AIL);
- Construction compounds have been sited to avoid sensitive areas and minimise environmental impact;
- A permanent SuDS feature, comprising two interlinked basins will be provided, located to the south-east of the substation platform, with access for maintenance;
- Landscape bunds, with a maximum of 2 m, in addition to low height tree and shrub planting to assist filtering views of the Proposed Development;
- Security fencing and approximately 20 CCTV columns along the perimeter security fence line and within the substation compound at a height of 6.5 m; and
- Vegetation around substation compound to be well managed to avoid spread of fire and habitat loss.

Tertiary Mitigation

11.6.3 Tertiary mitigation includes measures required through legislative requirements and/or SPEN's Policies, Procedures and Specification Documentation.

11.6.4 Best practice procedures and guidance will be followed during the construction, operation and decommissioning phases. Examples include:

- A CEMP to set out general environmental control measures during construction (e.g. pollution/silt control, hours of operation, storage areas), to be secured by an appropriately worded planning condition;
- Security for substation that will include 24-hour remote site monitoring with the capability to remotely shut down substation equipment if unsafe conditions are detected;
- Competence and training for all installation and maintenance personnel;
- CTMP to control impacts on local traffic during construction and decommissioning, to be secured by an appropriately worded planning condition;
- Emergency Response Plan that outlines the procedures for dealing with various types of accidents or disasters, to be secured by an appropriately worded planning condition;
- Code of Construction Practice (CoCP) which sets out the best practice procedures for construction, to be secured by an appropriately worded planning condition; and
- Landscape Ecological Management Plan (LEMP), to be secured by an appropriately worded planning condition.

11.7 Assessment of Likely Significant Effects

11.7.1 This section presents the findings of the MA&D assessment for the construction and operation of the Proposed Development and decommissioning of the existing 275kV substation. It identifies and evaluates potential risks and impacts associated with each phase of the project, establishing appropriate mitigation measures that are in place to minimise any adverse effects on the environment and public safety.

Assessment of Significant Likely Effects for Major Accident Hazard Pipelines

11.7.2 This section sets out an assessment of MA&D in relation to Major Hazard Pipelines and identifies the reasonable worst-case environmental impact.

11.7.3 A small area of the western part of the Site lies within the HSE land-use-planning consultation zone associated with two major accident hazard pipelines, which can be seen in **Figure 11.2** below. These comprise the Shell Expro St Fergus to Mossmorran Natural Gas Liquids (NGL) Pipeline operated by Shell UK Exploration & Production and the Westfield / Mossmorran (F12) Pipeline operated by Scotland Gas Networks Ltd.

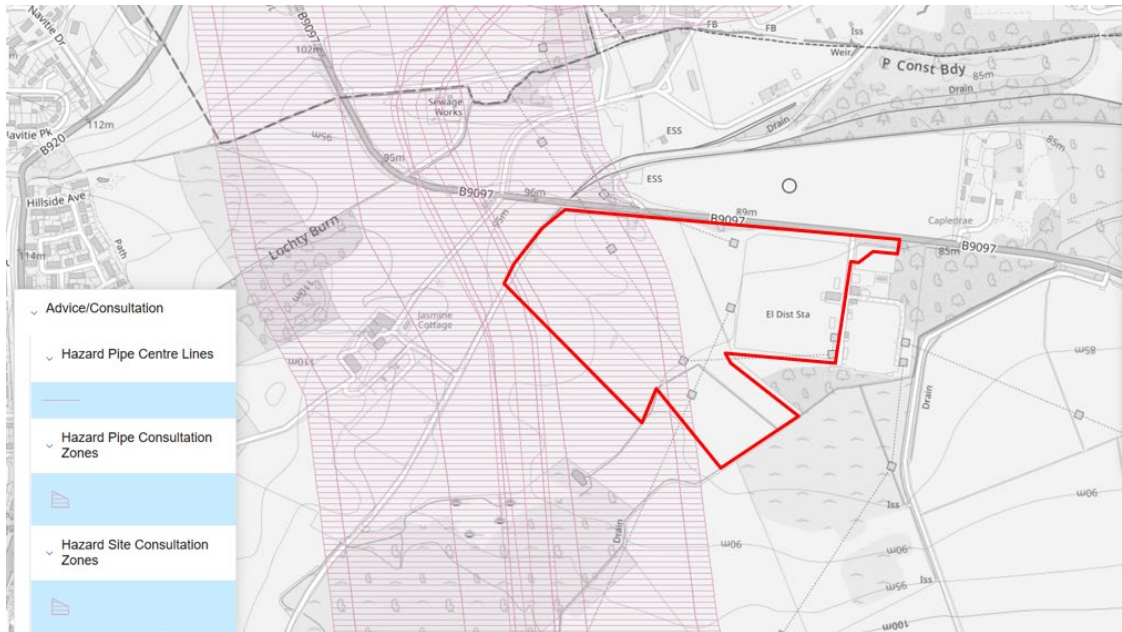


Figure 11.2: Hazard Pipe Centre Lines and Consultation Zones

- 11.7.4 In the unlikely event of a failure or external damage to a major accident hazard pipeline, potential effects could include fire, explosions and thermal radiation, which may pose risks to human health and nearby infrastructure. Depending on the nature of the release, there is also potential for short-term effects on air quality from combustion products, and localised contamination of land in the immediate vicinity of the pipeline. These effects are expected to be largely confined within the established consultation zones and would be managed through emergency response procedures implemented by the operator of the pipeline.
- 11.7.5 Elements of the Proposed Development are located within the pipeline consultation zone, as shown on Figure 3.1. Development within this zone includes the decommissioning of the existing substation and the construction of a new Substation and associated infrastructure and has been subject to consideration in consultation with relevant pipeline operators.
- 11.7.6 In addition to the substation infrastructure, the Proposed Development includes the installation of a 33 kV underground cable connection through a separate planning application. Construction of the underground cable will require excavation and trenching works along the proposed route. Where the cable route is located within, crosses, or is in proximity to utility infrastructure or Major Accident Hazard Pipeline consultation zones, works will be undertaken in accordance with agreed protection measures, including utility searches, consultation with relevant asset owners, permit-to-dig procedures and any crossing agreements required by the infrastructure operators. These measures will minimise the potential for accidental damage to buried assets and ensure risks remain As Low As Reasonably Practicable (ALARP).
- 11.7.7 The Applicant has consulted with the relevant pipeline operators in relation to the Proposed Development, and the operators are aware of the proposals, as confirmed by the Pipeline Operator Correspondence received (available on request). The design and proposed construction approaches have been confirmed as acceptable, subject to adherence to standard protection measures to maintain pipeline integrity.

- 11.7.8 The potential for a major accident originating from the pipelines, independent of the Proposed Development, has also been considered. In the unlikely event of a pipeline failure resulting in a fire or explosion, the Proposed Development and associated receptors within the vicinity of the pipeline could be exposed to thermal radiation, overpressure and combustion products. The potential consequences would depend on the nature and scale of the incident and the location of the release relative to the Proposed Development. The relevant pipeline consultation zones identify areas where development has the potential to be affected by a major accident and therefore provide an appropriate basis for considering these risks.
- 11.7.9 Although elements of the Proposed Development are located within the pipeline consultation zone, appropriate mitigation measures, including, consultation with the pipeline operators, stand-off distances and the implementation of standard safeguards, the severity of any residual impact is substantially reduced, with minimal risk to receptors. The residual risk is therefore considered ALARP and acceptable within national guidance and planning policy. The risk associated with Major Accident Hazard Pipelines is therefore **Not Significant**.

Secondary Mitigation Measures

- 11.7.10 No secondary mitigation measures are required. The primary and tertiary mitigation discussed above is considered sufficient.

Summary of Residual Significant Effects

- 11.7.11 There are no significant effects anticipated with embedded mitigation in place and therefore no secondary mitigation measures identified. The risk of MA&D for Major Accident Hazard Pipelines remains **Not Significant**.

11.8 Summary of Residual Effects

- 11.8.1 Overall, adverse effects associated with the construction, operation and decommissioning of the Proposed Development would be avoided, contained, or reduced ALARP through the application of inherent design mitigation and adherence to industry standard methodologies.

11.9 Monitoring

- 11.9.1 As no significant residual effects have been identified in relation to MA&D, no formal monitoring measures are considered necessary.
- 11.9.2 However, standard construction phase monitoring and compliance checks, such as those set out in the CEMP, will be implemented to establish that mitigation measures are properly implemented and remain effective throughout the lifecycle of the Proposed Development.

11.10 Conclusions

- 11.10.1 This assessment considered the potential for MA&D associated with the Proposed Development, focusing on Major Accident Hazard Pipelines. The assessment followed relevant planning policy

and guidance, using a precautionary approach to identify hazards, assess potential impacts, and recommend mitigation.

- 11.10.2 Baseline conditions were informed by known site characteristics, historical land use, and industry experience. The assessment has focused on the risks associated with the Proposed Development and Major Accident Hazard Pipelines. Other relevant MA&D have also been discussed such as meteorological hazards.
- 11.10.3 It is concluded that there are no significant MA&D effects for interactions with Major Accident Hazard Pipelines during construction and operation with embedded mitigation in place.

Chapter 12: Cumulative and Interactive Effects

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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12. Cumulative and Interactive Effects

12.1 Introduction

1211 This chapter considers both effects arising from different elements of the Proposed Development on environmental receptors (interactive effects) and from projects combined with other activities (in-combination effects).

1212 The approach to cumulative assessment therefore considers the following:

- Interactive cumulative effects arising from the interaction of different environmental effects associated with the Proposed Development.
- In-combination cumulative effects arising from the Proposed Development in combination with the other associated developments comprising the relevant parts of TKUP and EGL4.
- In-combination cumulative effects arising from the Proposed Development and relevant parts of TKUP and EGL4 in combination with other developments.

12.2 Methodology and Approach

1221 The approach to cumulative assessment has been informed by the following guidelines:

- Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (PINS, 2024);
- Planning Advice Note 1/2013: Environmental Impact Assessment (Scottish Government, 2013);
- Planning Circular 1/2017: Environmental Impact Assessment Regulations (Scottish Government, 2017); and
- EIA Handbook v5 (Scottish Natural Heritage and Historic Environment Scotland, 2018).

1222 A 'long list' of other proposed developments was identified, to include all elements of the Tealing to Kincardine Upgrade Project (within the SPEN Transmission Licence Area, with those within the SSE Licence Area considered far enough away to not be likely to result in significant cumulative effects based upon an initial appraisal and professional judgement) and other proposed energy and other developments within an identified geographical zone of influence of the proposed development (to include development under construction, permitted applications not yet implemented, submitted applications not yet determined, any appeal not yet determined, projects where a Screening or Scoping request has been made to either the Scottish Government Energy Consents Unit (ECU) or LPA).

1223 Undertaking the cumulative assessment in this way ensures that the relevant parts of the TKUP project is considered in an appropriate and transparent manner. Although the consenting strategy requires the substation 'hubs' and overhead line upgrades to be progressed as separate applications, reflecting a phased approach to securing the necessary consents, the cumulative assessment first considers the Proposed Development alongside the relevant elements of the TKUP project before assessing cumulative effects with the other cumulative developments

identified. This ensures that the environmental effects of the Proposed Development as part of TKUP project as a whole are properly taken into account.

1224 Information has been obtained on other developments from Fife Council planning department and the Energy Consents Unit.

1225 The geographical zone of influence of cumulative effects varies across each environmental topic, whereby the potential for cumulative effects will differ depending upon the geographical extent of potential impacts. For example, when considering visual amenity there may be no visual relationship between the Proposed Development and other cumulative schemes identified, and therefore any cumulative effects are likely to only to be experienced in a sequential way. Therefore, the developments considered in the assessment of cumulative effects will vary between each environmental topic. The geographical zone of influence was informed by the Zone of Theoretical Visibility (**Figure 6.6**) and best practice guidance relevant to each topic.

12.3 Cumulative Sites

1231 The list of cumulative schemes was presented to Fife Council in a pre-application meeting in February 2025. This has been reviewed and updated ahead of submission to take account of potential additional cumulative schemes, and further agreement was provided in April 2026 by Fife Council. Since that agreement, one additional scheme has been added, and one removed. The updated list of projects has been agreed with Fife Council. The cumulative schemes and their reason for inclusion are listed in **Table 12.1** and their location identified on **Figure 12.1**.

Table 12.1: Developments for Consideration in Cumulative Assessment

Development Name	Description	Fife Council/ECU Reference and Status	Reason for Inclusion within Cumulative Assessment
Elements of the Tealing to Kincardine Upgrade Project (TKUP)			
TKUP Reconductoring of YJ Route	Reconductoring YJ overhead line from 275kV to 400kV.	Consulted on publicly in 2024 and 2025 but is yet to be subject to an EIA Scoping Request or S37 Application to ECU.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project.
TKUP Reconductoring of YV Route	Reconductoring YV Route from 275kV to 400kV	Consulted on publicly in 2024 and 2025 but is yet to be subject to an EIA Scoping Request or S37 Application to ECU.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project
TKUP Reconductoring of YS Route	Reconductoring YS overhead line from 275kV to 400kV.	Consulted on publicly in 2024 and 2025 but is yet to be subject to an EIA Scoping Request or S37 Application to ECU.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project.

Development Name	Description	Fife Council/ECU Reference and Status	Reason for Inclusion within Cumulative Assessment
TKUP ZC(N) and ZC(S)	Routes have consent to operate at 400kv as part of their original consents. One span between ZC(N)001 and YG001A will be subject to Section 37 application for uprating to 400kv and one new span is proposed between these towers as part of TKUP.	Part Consented. Consulted on publicly in 2024 and 2025 but is yet to be subject to an EIA Scoping Request or S37 Application to ECU.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project.
Reconfiguration of OHL and 132kV OHL works at Westfield Substation	New terminal towers and reconfiguration works including removal of existing towers and use of temporary masts around the existing Westfield Substation.	Consulted on publicly in 2024 and 2025 but is yet to be subject to an EIA Scoping Request or S37 Application to ECU. Some works to 132kV Permitted Development.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project. Particularly so given the proximity to the Proposed Development.
Reconfiguration of OHL and 132kV OHL works at Mossmorran Substation	New terminal towers and reconfiguration works including removal of existing towers and use of temporary masts around the existing Mossmorran Substation.	Consulted on publicly in 2024 and 2025 but is yet to be subject to an EIA Scoping Request or S37 Application to ECU. Some works to 132kV Permitted Development.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project.
Mossmorran 400kV Substation (and decommissioning of 275/132kV elements such as 2 x 240MVA Transformers, 275kV Circuit Breakers, Disconnectors, Instrument Transformers, Surge Arresters, Post Insulators, associated busbars and support structures)	400kV extension to the existing Mossmorran substation.	EIA Scoping Opinion Reference 24/01928/SCO, decision issued 10 September 2024.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project.
Removal of YJ001 tower and span between YJ001 & YJ001A	Removal of YJ001 tower and span between YJ001 & YJ001A cannot be done during the YJ reconductoring works. The removal should take place during shifting of	Anticipated 2030.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project.

Development Name	Description	Fife Council/ECU Reference and Status	Reason for Inclusion within Cumulative Assessment
	circuits from YJ001/A to ZCN.		
Reconfiguration of OHL at Conland	New terminal towers and reconfiguration works including removal of existing towers and use of temporary masts around the proposed Conland Substation.	Consulted on publicly in 2025 but is yet to be subject to an EIA Scoping Request or S37 Application to ECU.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project.
Conland 400kV Substation	New 400kV Substation near Pitkevy Farm.	Consulted on publicly in 2025 but is yet to be subject to an EIA Scoping Request or Planning Application to Fife Council.	As part of the wider TKUP project, requires to be included as part of the appraisal of the TKUP project.
Elements of the Eastern Green Link 4 Project (EGL4)			
Eastern Green Link 4 (EGL4) – Converter Station	New High Voltage Direct Current (HVDC) electrical link that will connect Fife in Scotland with Norfolk in England. Construction of the Scottish onshore elements will start in 2027 and last for approximately 4-5 years. The Converter Station site is located immediately east of Westfield Substation. Converter stations are key components of a DC system and they enable electricity to be converted from AC to DC or vice versa. The largest buildings which house the converters are up to 28.5m tall, with other infrastructure housed outside or in small buildings. The total operational footprint is approximately 8-9 hectares. Construction is expected to take up to four years.	Consulted on publicly in 2024 and 2025. A Scoping Request was submitted on 09 December 2024 and a Proposal of Application Notice submitted on 08 April 2025.	The Proposed Development will serve EGL 4. This is a large energy transmission development in close proximity to the Proposed Development this development needs to be considered as part of the Proposed Development cumulative assessment.

Development Name	Description	Fife Council/ECU Reference and Status	Reason for Inclusion within Cumulative Assessment
Eastern Green Link 4 (EGL4) – On Shore Underground AC Cable Route	New High Voltage Direct Current (HVDC) electrical link that will connect Fife in Scotland with Norfolk in England. Construction of the Scottish onshore elements will start in 2027 and last for approximately 4-5 years. AC underground cables are required between the converter station and Westfield Substation. The route will be 800m long, within a 60m wide working corridor, constructed using open cut trenching methods. These works will be undertaken simultaneously with the construction of the converter station.	Consulted on publicly in 2024 and 2025. A Scoping Request was submitted on 09 December 2024 and a Proposal of Application Notice submitted on 08 April 2025.	The Proposed Development will serve EGL 4. This is a large energy transmission development in close proximity to the Proposed Development, and within the wider zone of influence, this development needs to be considered as part of the Proposed Development cumulative assessment.
Eastern Green Link 4 (EGL4) – On Shore Underground DC Cable Route	New High Voltage Direct Current (HVDC) electrical link that will connect Fife in Scotland with Norfolk in England. Construction of the Scottish onshore elements will start in 2027 and last for approximately 4-5 years. DC underground cables are required between the landfall site and the converter station. This corridor is approximately 14km in length and a working corridor of 40m is required. Construction will be undertaken over 2-3 years. No permanent above ground infrastructure is required along the route.	Consulted on publicly in 2024 and 2025. A Scoping Request was submitted on 09 December 2024 and a Proposal of Application Notice submitted on 08 April 2025.	The Proposed Development will serve EGL 4. This is a large energy transmission development in close proximity to the Proposed Development, and within the wider zone of influence, this development needs to be considered as part of the Proposed Development cumulative assessment.
Eastern Green Link 4 (EGL4) – Landfall Site	New High Voltage Direct Current (HVDC) electrical link that will connect Fife in Scotland with Norfolk in England. Construction	Consulted on publicly in 2024 and 2025. Scoping Request was submitted on 09 December 2024 and a	The Proposed Development will serve EGL 4. Included as part of the wider EGL4 development, even though

Development Name	Description	Fife Council/ECU Reference and Status	Reason for Inclusion within Cumulative Assessment
	of the Scottish onshore elements will start in 2027 and last for approximately 4-5 years. The landfall site is where the subsea cables come ashore and connected to the underground cables using a buried Transition Joint Pit. No permanent above ground infrastructure is required.	Proposal of Application Notice submitted on 08 April 2025	not located in close proximity to the Proposed Development.
Other Cumulative Developments			
Westfield Solar Farm, near OHL tower YS07.	Solar Farm.	22/02880/FULL: Construction of a Terrestrial Solar Farm and Associated Development (Section 42 application to vary condition 10 (landscaping) of 22/02880/FULL) - approved 27 November 2025. Ref. 25/02363/FULL.	Located approximately 1.2km to the north of the Proposed Development, there is potential for combined intervisibility and other potentially combined impacts to occur.
Former Fife Power Station, Ballingry, Cardenden, KY5 OHQ	Battery Energy Storage System.	ECU00005188: Battery Energy Storage System (BESS) facility with an installed capacity of up to 100MW (at point of connection) – Application submitted to the ECU July 2024.	Located just north of the adjacent B9097 to the north of the Proposed Development, there is potential for combined intervisibility and other potentially combined impacts to occur.
Kirklands Farm, Ballingry, KY5 OHH	Battery Energy Storage System.	ECU00004942: Energy storage system, which will store up to 200MW of energy – EIA Screening Opinion issued 22 February 2024 (non-EIA).	Located a short distance to the west of the Proposed Development, there is potential for combined intervisibility and other potentially combined impacts to occur.
Land At Strathruddie, Kinglassie	Battery Energy Storage System and Solar Farm.	21/03531/FULL: Proposed solar farm up to 25MW, battery storage and associated access and infrastructure.	Located approximately 1.8km to the east of the Proposed Development, there is potential for combined intervisibility and

Development Name	Description	Fife Council/ECU Reference and Status	Reason for Inclusion within Cumulative Assessment
		Approved 16 March 2022, undergoing Condition discharge.	other potentially combined impacts to occur.
Glenniston Solar Array	Installation of 39MW solar PV array with 10MW embedded battery storage facility and associated infrastructure including vehicular access, internal access tracks, security fencing, CCTV cameras, underground cabling, inverters, substations, auxiliary transformer and other ancillary development	23/02598/FULL Approved 5 April 2024	Located approximately 4.5km to the south of the Proposed Development, there is potential for combined intervisibility and other potentially combined impacts to occur.
Westfield BESS	Proposed development of a battery energy storage system including associated infrastructure and access on land at the former Westfield Opencast Coal Site.	ECU00006213 At Screening stage.	Located just north of the adjacent B9097 to the north of the Proposed Development, there is potential for combined intervisibility and other potentially combined impacts to occur.

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Furthermore, there is also a temporal consideration, whereby the cumulative schemes will be delivered at different times. Therefore, the cumulative sites considered in the assessment of cumulative effects will vary between each environmental topic. **Table 12.2** provides information on the delivery programme of the wider TKUP project. It should be noted that for some of the overhead line routes these will be reconductored and put back in operation at 275kV, and only when the 400kV Substations are operational will the overhead lines be operated at 400kV.

Table 12.2: TKUP and EGL 4 Delivery Programme

Elements of the Tealing to Kincardine Upgrade Project (TKUP)	Construction Period, Year and Length	Operation, Year
TKUP Reconductoring of YJ Route from 275kV to 400kV	Oct 2028 – Sep 2029	275kV Sep 2029 400kV Oct 2030
TKUP Reconductoring of YV Route from 275kV to 400kV	April 2029 – Nov 2029	275kV Nov 2029 400kV Oct 2030
TKUP Reconductoring of YS Route from 275kV to 400kV	June 2028 – Feb 2029	275kV Feb 2029 400kV Oct 2030
132kV OHL works at Westfield Substation (AG)	September 2026 – Mar 2027	March 2027

Elements of the Tealing to Kincardine Upgrade Project (TKUP)	Construction Period, Year and Length	Operation, Year
Reconfiguration of OHL at Westfield Substation	Apr 2030 – Oct 2030	Oct 2030
Westfield 400kV Substation Extension	Sep – Oct 2030	Oct 2030
Decommissioning and Deconstruction of existing Westfield 275kV Substation Elements	Oct 2030 – Oct 2031	n/a
132kV OHL works at Mossmorran Substation (CP)	April 2027 – Oct 2027	Oct 2027
Reconfiguration of OHL at Mossmorran Substation	April 2030 – Oct 2030	Oct 2030
Mossmorran 400kV Substation	Feb 2028 – Aug 2030	Aug 2030
Decommissioning and deconstruction of 275kV Substation at Mossmorran	Oct 2030 – Oct 2031	n/a
Reconfiguration of OHL at Conland	Sep 2029 – Oct 2030	Oct 2030
Conland 400kV Substation	Sept 2027 – Oct 2030	Oct 2030
EGL4/HVDC at Westfield	Jan 2031- Oct 2031	Oct 2031

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To assist further in the cumulative assessment, the anticipated construction periods for TKUP and the other identified cumulative schemes (where known) are set out in the table below.

Table 12.3: Anticipated Construction Timetables

Scheme	2026	2027	2028	2029	2030
The Proposed Development					
TKUP Relevant Elements					
EGL4					
Westfield Solar Farm					
Former Fife Power Station BESS					
Kirklands Farm BESS	No details available				

Scheme	2026	2027	2028	2029	2030
Land At Strathruddie	No details available, but could extend across this period.				
Glenniston Solar Array	Unknown but likely 2026-2028				
Westfield BESS	Currently at Screening, so likely 2028-2030				

Cumulative Sites for Assessment

1234 A 'short list' of sites for assessment has been identified. This list has been identified considering the geographical zone of influence, the geographical extent of the cumulative sites and the likely construction periods and operational dates, along with industry specific guidance for each environmental topic in relation to cumulative assessment. These are listed as follows and shown on **Figure 12.1**.

- TKUP related projects:
 - TKUP Reconductoring of YJ Route;
 - TKUP Reconductoring of YS Route;
 - Reconfiguration of OHL and 132kV OHL works at Westfield Substation;
- EGL4 related projects:
 - EGL4 Converter Station;
 - EGL4 On Shore Underground AC Cable Route;
 - EGL4 On Shore Underground DC Cable Route;
- Westfield Solar Farm;
- BESS Kirklands Farm;
- BESS Fife Power Station;
- Westfield BESS; and
- Solar Farm and BESS Land at Strathruddie.

1235 Of the initial list of cumulative sites set out in **Table 12.1**, it is only the Glenniston Solar Array that has been 'scoped out' of further consideration of cumulative effects. This is for the following reasons:

- The Glenniston Solar Array has been scoped out of the cumulative assessment with the Westfield Substation Project due to its separation distance of approximately 4.5km and the lack of any credible pathway for cumulative effects.
- At this distance, and with intervening topography, vegetation and settlement, there is very limited potential for intervisibility or shared landscape or visual receptor context. The developments would not be experienced together and would not result in significant cumulative landscape or visual effects.
- There is no ecological or hydrological connectivity between the sites, and they do not share designated sites, habitats or ornithological receptors. Construction and operational activities would be spatially and functionally separate, precluding cumulative ecological effects.

- Traffic associated with each development would use separate road networks, and there are no shared sensitive receptors in relation to noise, vibration or air quality. Any effects arising from either scheme would be localised and temporary in nature.
- Owing to the distance between the sites, the absence of shared receptors, and the lack of overlapping environmental effects, the Glenniston Solar Array is appropriately excluded from further cumulative assessment in relation to the Westfield Substation Project

12.4 Interactive Cumulative Assessment

- 1241 The approach to the assessment of effect interactions considers the changes in baseline conditions at common sensitive receptors (i.e. those receptors that have been assessed by more than one technical topic) due to the Proposed Development. The assessment is based upon significant residual effects only (moderate or major significant effects).
- 1242 An overall assessment of the cumulative effects on identified common sensitive receptors has been made using professional judgement and the technical information provided in **Chapters 6–11**.
- 1243 Only residual significant effects on landscape character and visual amenity have been identified for the Proposed Development in isolation. It is therefore concluded that no significant effect interactions are anticipated.

12.5 In-combination Cumulative Assessment

- 1251 The in-combination cumulative assessment considers the cumulative effects arising from the relevant parts of the TKUP project and EGL 4, as established through the interactive assessment, together with other developments identified within the cumulative study area and identified above.
- 1252 The purpose of this assessment is to determine whether the combined influence of the wider TKUP, EGL 4 and other developments gives rise to additional significant environmental effects beyond those identified through the project-specific and interactive assessments. The assessment approaches this in line with topic area specific guidance and considers all stages through construction and operation.
- 1253 The ‘short list’ of proposed developments considered in this cumulative assessment is summarised above and illustrated on **Figure 12.1**. Each technical environmental topic has considered these, and the cumulative effects are summarised in the following sections.

In-combination Cumulative Effects of TKUP and EGL4

- 1254 The Proposed Development forms one component of the wider TKUP project, which comprises a number of related infrastructure elements that are being progressed through separate consent applications. In accordance with the cumulative assessment methodology set out in this chapter, the interaction between the Proposed Development and the relevant elements of the TKUP and EGL4 projects has been considered before assessing cumulative effects with other committed developments. This approach ensures that the environmental effects of the relevant TKUP and EGL4 projects are appropriately considered, notwithstanding the staged consenting strategy.

- 1255 The topic-specific chapters assess where interactions between the Proposed Development and other TKUP and EGL4 elements could result in combined environmental effects during construction or operation. The summary below provides an overview of the principal interactions and the conclusions reached.
- 1256 The in-combination assessment demonstrates that the interaction of the Proposed Development with the relevant elements of the TKUP project has been fully considered. Whilst some environmental receptors may experience the combined influence of more than one TKUP component, these effects generally reflect the same environmental changes identified for the Proposed Development in isolation, rather than giving rise to materially greater or different effects. Where interactions occur, they have been taken into account within the relevant topic-specific assessments and are reflected in the reported significance of effects.

Landscape and Visual Amenity

- 1257 Significant cumulative effects would not arise where there is no significant effect for the Proposed Development in isolation. There are also receptors where cumulative effects would reduce in significance due to the increased infrastructure and electrical context provided by the theoretical cumulative baseline which reduces the extent to which the Proposed Development would contribute to the cumulative magnitude of change. A summary of the cumulative effects on all landscape and visual receptors is provided below, with the full assessment provided in **Technical Appendix 6.1**.

Cumulative Landscape Effects Summary

- 1258 The cumulative assessment considers the interaction of the Proposed Development with other relevant elements of the TKUP and EGL4 projects, together with other committed and reasonably foreseeable developments identified within the cumulative baseline. Four cumulative scenarios are assessed, with the assessment considering the additional contribution of the Proposed Development and whether this would result in effects greater than those identified for the Proposed Development in isolation.

Scenario 1 Cumulative Effects

- 1259 Under Scenario 1, the addition of Westfield Solar Farm would result in only a limited change to the cumulative landscape baseline. Within the host LCT 186 Lowland Hills and Valleys, the separation between the developments and the existing influence of electrical and industrial infrastructure would limit the extent to which they would be perceived as a combined change. Construction and operational effects would therefore be no greater than those identified for the Proposed Development in isolation and would remain **Not Significant**.
- 12510 For the non-host LCTs, the influence of Westfield Solar Farm would generally be limited by distance, landform and vegetation. The Proposed Development would remain a small component of the wider landscape and cumulative effects would either be unchanged from the standalone assessment or not discernible. **No significant** cumulative landscape effects would arise.

Scenario 2 Cumulative Effects

- 12511 Under Scenario 2, the TKUP works would make only a limited additional contribution to landscape change, reflecting the existing presence of overhead lines, towers and substation infrastructure. EGL4 would represent the more substantial change to the cumulative baseline due to its scale and proximity to the Proposed Development.
- 12512 Within the host LCT, the Proposed Development and EGL4 would at times be experienced within the same localised area of energy infrastructure. However, this change would affect only a relatively small geographical part of the LCT and the Proposed Development would not materially increase effects beyond those identified in isolation. Cumulative effects on the host and non-host LCTs would therefore remain **Not Significant**.

Scenario 3 Cumulative Effects

- 12513 Scenario 3 would result in a modest further increase in the developed baseline through the addition of Westfield Solar Farm. However, its separation from the Proposed Development means that it would make only a limited additional contribution compared with Scenario 2.
- 12514 For the host LCT, cumulative construction and operational effects would therefore remain broadly equivalent to Scenario 2 and no greater than those arising from the Proposed Development in isolation. For the surrounding non-host LCTs, the additional change associated with Westfield Solar Farm would similarly be limited and would not materially alter the assessment conclusions. All cumulative landscape effects would remain **Not Significant**.

Scenario 4 Cumulative Effects

- 12515 Scenario 4 represents the greatest degree of cumulative landscape change, incorporating the additional BESS developments at Kirklands Farm, Westfield and the former Fife Power Station alongside TKUP, EGL4 and Westfield Solar Farm. This would result in a greater concentration of energy-related development within the local landscape, particularly within and around the host LCT.
- 12516 During construction, overlapping activity could result in a more noticeable cumulative landscape effect locally. However, the Proposed Development would represent a relatively modest component of this wider change, with EGL4 and the nearby BESS developments also making substantial contributions. At operation, the increased developed context would further reduce the relative contribution of the Proposed Development. Consequently, effects arising from the addition of the Proposed Development would be no greater than, and for the host LCT slightly lower than, those identified in isolation and would remain **Not Significant**.

Cumulative Landscape Effects Conclusion

- 12517 Across all four scenarios, the Proposed Development would form part of an evolving concentration of electrical and energy infrastructure but would not become a defining influence on the character of any assessed LCT. Scenario 4 would represent the greatest overall cumulative change, but the contribution of the Proposed Development to that wider change would remain limited. No significant cumulative landscape effects would therefore arise as a result of the addition of the Proposed Development under any of the four scenarios.

Cumulative Visual Effects Summary

- 12518 The cumulative visual assessment considers the additional visual change associated with the Proposed Development when experienced alongside the developments included within Scenarios 1 to 4. The assessment distinguishes between the overall cumulative visual effect and the contribution made by the Proposed Development to that effect.

Scenario 1 Cumulative Effects

- 12519 Under Scenario 1, cumulative visual effects would generally be very limited. For the Fife Pilgrim Way and the closer Core Paths to the west, Westfield Solar Farm would generally not be sufficiently prominent in the same views to result in discernible additional cumulative effects. Similarly, for most residential receptors and the B9097, there would be little or no additional cumulative change.
- 12520 Some limited sequential change may occur for users of the B920 and the unnamed road, although separation between the developments would limit their combined influence. Overall, Scenario 1 would result predominantly in no discernible cumulative effects or effects no greater than those arising from the Proposed Development in isolation.

Scenario 2 Cumulative Effects

- 12521 Under Scenario 2, EGL4 would result in a more substantial change to the local visual context, whereas the wider TKUP elements would generally make only a minor or imperceptible additional contribution. EGL4 and the Proposed Development would therefore be the principal components of cumulative change where both are visible.
- 12522 The greatest cumulative effects would occur at specific close-range or open locations, including the northern sections of Core Paths R580 and R581, parts of the elevated Core Path network, residential receptor groups and locations on the B9097. Significant cumulative effects would occur at some of these receptors; however, these would generally be the same as, or lower than, those identified for the Proposed Development in isolation. Across the routes and receptor groups as a whole, effects would generally remain **Not Significant**.

Scenario 3 Cumulative Effects

- 12523 Under Scenario 3, the addition of Westfield Solar Farm would largely result in little further change compared with Scenario 2. For the Fife Pilgrim Way, Core Paths to the west, residential groups and roads, the solar development would either be outside the principal direction of view, screened or sufficiently separated that it would not materially alter the cumulative visual effect.
- 12524 Accordingly, cumulative effects under Scenario 3 would generally be the same as those identified under Scenario 2. Significant effects would remain at certain localised receptors where significant effects already arise from the Proposed Development and EGL4, but the addition of the Proposed Development would not result in a new or greater significant cumulative effect.

Scenario 4 Cumulative Effects

- 12525 Scenario 4 would result in the greatest concentration of visible energy infrastructure, with the addition of the Kirklands Farm, Westfield and former Fife Power Station BESS developments. The extent of cumulative change would be most apparent from receptors with open or elevated views

towards the site and surrounding development, including parts of the Core Path network, some residential groups and sections of the B9097.

12526 At the northern ends of Core Paths R580 and R581, significant cumulative effects would continue to occur, although the Proposed Development would form only one component of a wider concentration of infrastructure. Similarly, significant cumulative effects may occur at particular residential groups and close-range locations, but these would generally be the same as or lower than the effects identified for the Proposed Development in isolation. EGL4 and, depending on the receptor, the nearby BESS schemes would make substantial contributions to the overall cumulative situation.

12527 Across the Fife Pilgrim Way, routes as a whole, more distant Core Paths and the wider road network, the contribution of the Proposed Development would remain limited and cumulative effects would generally be **Not Significant**. In several cases, the more developed cumulative baseline would reduce the relative visual influence of the Proposed Development.

Cumulative Visual Effects Conclusion

12528 Overall, the cumulative visual assessment demonstrates that the degree of cumulative change increases progressively from Scenario 1 through to Scenario 4, with Scenario 4 representing the greatest concentration of energy-related development. However, this does not translate into a corresponding increase in the contribution made by the Proposed Development. In the more developed scenarios, EGL4 and the nearby BESS developments would frequently form equal or greater components of cumulative visual change.

12529 While significant cumulative visual effects are identified at a number of localised receptors under Scenarios 2 to 4, these are generally no greater than, and in a number of cases lower than, the significant effects already identified for the Proposed Development in isolation. Accordingly, the addition of the Proposed Development would not give rise to any new or greater significant cumulative visual effects under any of the four scenarios.

Ecology and Biodiversity

12530 A review of the cumulative schemes 'short list' has been undertaken to assess the potential for cumulative effects on ecological receptors. This assessment considered both spatial and temporal overlaps in construction and operation phases, as well as any shared impact pathways, such as hydrological connectivity, habitat fragmentation, or disturbance to protected species.

12531 Of these cumulative schemes, the TKUP Reconductoring of YJ Route, YV Route and the YS Route are not considered relevant to the assessment of Ecology and Biodiversity, based on the limited and temporary nature of the scope of work. The uprating of the OHL routes will use the existing lattice tower structures, with no physical changes to the location or height of the route, and the construction activities will comprise temporary access and accommodation works. Therefore, these schemes are not considered relevant to the cumulative effects on Ecology and Biodiversity.

12532 The EGL4 project involves the construction of a converter station to the east of the existing Westfield substation with 14km of underground cable connecting to Kinghorn landfall site. The installation of the associated cable route will predominantly have temporary impacts on habitats and species, especially where horizontal directional drilling (HDD) will be used to avoid

watercourses and large areas of woodland and other sensitive habitats, and the existing habitats above the cable route will be allowed to naturally regenerate. Therefore, construction activities associated with the cabling are not anticipated to have cumulative effects on Ecology and Biodiversity

12533 The Zone of Influence for each ecological receptor is as defined in **Chapter 7**, and as follows:

- International statutory designations (20km radius around the site);
- National and Local statutory designations (2km) and non-statutory local sites (1km radius around the site);
- All other protected species, Priority Species and other notable species records (1km radius around the site); and
- All other Priority Habitat records (1km radius around the site).

12534 The Proposed Development alone will have no significant effect on any statutory designated site, predominantly due to the spatial separation and the scope of works, and there will therefore be no additive or incremental cumulative effects when considered in combination with other projects. Similarly, there will be no significant effects on any non-statutory designated sites as a result of the Proposed Development. Ballingry Meadow is the only non-statutory designation within the Zone of Influence, and the Proposed Development will not have any effects on the designated features and will therefore not contribute to cumulative effects from other schemes.

12535 The Proposed Development will have a minor adverse effect on the priority habitats within the site, namely the hedgerow, lines of trees and broadleaved semi-natural woodland habitat. However, this has been assigned on a precautionary basis, as these habitats are discrete, isolated and species-poor, and only small areas will be lost that have limited connectivity off-site. These habitat types are common and widespread within the surrounding landscape and only small losses are proposed as a result of the other schemes, including that of the adjacent EGL4 project, which are predominantly open areas of relatively low-value grassland, bare ground with very minimal woodland, hedgerow and tree loss. For the majority of the schemes there is no hydrological connectivity between them and the Proposed Development. However, the watercourse network within the site flows into the boundary of the now operational Westfield Energy Recovery Facility. The delivery of pollution control measures as part of the embedded mitigation for the Proposed Development will ensure there is no effect downstream through dust deposition, polluted water run-off or other impacts on species using the watercourse, and there are therefore no cumulative effects anticipated.

12536 The Proposed Development will have no significant effects on the bird assemblage, as this is valued at Less than Local level, or otter, as they are only considered to utilise the site for a foraging and/or commuting resource, for which connectivity will be maintained. Therefore, no cumulative effects are anticipated with the other schemes identified.

12537 The Proposed Development could have up to a minor adverse effect at the Local level for the bat assemblage within the site through the loss of suitable roost resources. The adjacent EGL4 will require the removal of trees with the potential to support roosting bats to facilitate the development, however, loss within the Proposed Development will be mitigated through the provision of bat boxes to replace any lost roost features and therefore any loss of suitable roosting habitat as a result of the other scheme will not have a cumulative effect in combination with the Proposed Development.

- 12538 Additionally, the schemes listed above have appropriate inherent or additional mitigation measures designed to minimise/avoid impacts to Ecology and Biodiversity. Where schemes are still subject to the planning process, it is assumed that they will only be consented where appropriate mitigation is secured to ensure that no unacceptable ecological effects arise. Therefore, it is concluded that no significant cumulative effects on ecological receptors are anticipated as a result of the Proposed Development in combination with other known or approved plans or projects.

Transport and Access

- 12539 A review of the shortlisted development sites within close proximity to the Proposed Development, as well as the TKUP and EGL4 elements, has been undertaken with specific regard to traffic and transport impacts associated with any operational and construction phases. The information used to formulate if the Proposed Development is to make a significant cumulative effect has been extracted from applications within Fife Planning Portal, alongside qualitative technical judgement.
- 12540 It is noted in the first instance that the Proposed Development (Construction Phase and associated substation decommissioning works) is anticipated to have a negligible impact on the local road network, and an assessment has been undertaken within **Chapter 8** of this EIA Report. The Proposed Development requires no mitigation works associated with traffic and transport.

Shortlisted Developments

- 12541 Five developments within close proximity to the Proposed Development have been identified and include the Westfield Solar Farm, BESS Kirklands Farm, and Solar Farm, BESS Fife Power Station, BESS Land at Strathruddie, and EGL4. Each development application has been reviewed (where provided) to determine the traffic impact and summarised below for clarity.

Westfield Solar Farm

- 12542 The Westfield Solar Farm (application reference: 22/02880/CND005) is situated approximately 1.6km north of the Proposed Development with access to be taken from the B920.
- 12543 A Construction Traffic Management Plan (CTMP) was submitted in September 2023 by Axis. The CTMP identified that the development will provide negligible operational traffic, and only 48 two-way trips per day during the construction peak period. The construction vehicle routing was identified to travel to the M90 Junction 5 to avoid traffic sensitive locations. The development was proposed to generate a negligible transport impact. Nevertheless, mitigation proposed for the site included a site staff Travel Plan and a Traffic Management Plan to be produced by the Contractor to ensure HGVs follow the proposed routing.

BESS Kirklands Farm

- 12544 The BESS Kirklands Farm (ECU application reference: ECU00004942; Fife Council reference 23/02776/CON) is situated approximately 800m west of the Proposed Development.
- 12545 An EIA Screening Opinion was adopted by the Scottish Ministers on 22 February 2024. The Screening Opinion identified that no EIA was required for this site. The Screening Opinion response also stated (with specific regard to transport) that traffic movements are likely to be low, with the most significant movements expected during construction and decommissioning. The document

concluded that construction, operational and decommissioning phases of the development are not expected to result in any impacts that would be considered significant.

BESS Fife Power Station

- 12546 The BESS Fife Power Station (ECU application reference: ECU00005188; Fife Council reference 25/00983/CON) is located at Woodend, Cardenden approximately 1km south-east of the Proposed Development.
- 12547 A Screening Opinion was adopted by the Scottish Ministers on 23 January 2025. The Screening Opinion stated that the development does not lie close to sensitive areas (including Land to which Nature Conservation Orders apply, International Conservation Sites, A World Heritage Site, Scheduled Monuments, National Scenic Areas, National Parks, Marine Protected Areas). The Screening Opinion also noted that 'given the site's proximity to the B9097, the existing access arrangements already in place, the negligible operational traffic and the temporary nature of construction traffic the Proposed Development is not expected to have any significant effects on the highway network.' The site therefore resulted in negligible transport impacts.
- 12548 An Outline Construction Management Plan (OCTMP) was submitted in April 2025. The OCTMP set out that around six to 10 HGV movements per day were anticipated during the busiest period. As aforementioned, the site would result in negligible transport impacts.
- 12549 In December 2025 Fife Council gave no objections to the proposal subject to the documents submitted during the consultation stage.

Solar Farm and BESS Land at Strathruddie

- 12550 The Solar Farm and BESS Land at Strathruddie (application reference: 21/03531/FULL) is situated approximately 2.6km east of the Proposed Development and was approved on 16 March 2022.
- 12551 A Transport Statement was submitted on 09 November 2021. The Transport Statement identified that the operational phase would see negligible trips (one trip a week). The construction period was set to six months with one month noted as the peak period. The construction peak period would see 64 two-way trips, operating outside of peak hours and routing towards the M90 Junction 5 to avoid sensitive areas. The Transport Statement concluded that the site would generate negligible effects.
- 12552 Transport comments were received from Fife Council in December 2021, which stated that 64 trips during a peak construction period was not a concern.
- 12553 A notice of commencement of development was issued in February 2025 with the start date for commencement on 24 February 2025. As construction began in February 2025 and is anticipated to last six months, no construction traffic will be on the local road network at the time of the Proposed Development construction or decommissioning. Additionally, as negligible traffic is anticipated during the operational phase, the Proposed Development should not be impacted.

Eastern Green Link 4

- 12554 The EGL4 project comprises a new High Voltage Direct Current (HVDC) electrical link that will connect to Fife in Scotland and Norfolk in England (application reference: 25/01071/PAN). ELG4 is proposed to be situated directly east of the Proposed Development with construction to begin in 2027.

- 12555 A separate 'Environmental Impact Assessment Scoping Opinion' application (reference: 24/03149/SCO) has been submitted to Fife Council. Within Fife Council's Environmental Services response (to the referenced scoping report), it was specified that an assessment of anticipated traffic volumes relating to any future works was provided, and the report concluded that the site does not meet the criteria for a more detailed assessment and has therefore been scoped out. Based on this response, it is understood that the forecasted traffic is not expected to have any significant effects on the network.
- 12556 The construction phase for EGL4 is forecasted to commence in 2027 at the earliest. As identified, the peak construction period for the Proposed Development is during March to June 2027. Whilst the early phases of the construction period associated with ELG4 could overlap with the peak construction period for the Proposed Development, it is noted that the traffic volumes associated with ELG4 were low enough to not require a detailed assessment. As a result, it could be anticipated that the negligible construction traffic associated with the early stages of EGL4 would not be enough to impact the Proposed Development peak construction period for the Proposed Development during March to June 2027 or with the decommissioning in 2031.

In-combination Cumulative Effects

- 12557 The additional construction and operational traffic impacts associated with the Proposed Development have been assessed when combined with the proposed construction and operational traffic impacts of the cumulative schemes (identified above) to determine if this would result in effects greater than those identified for the Proposed Development in isolation.
- 12558 Two scenarios have been assessed. Scenario 1 reviews the Proposed Development traffic impacts when combined with the TKUP and EGL4 cumulative schemes and their respective traffic impacts, and Scenario 2 reviews the Proposed Development traffic impacts when combined with all the cumulative schemes and their respective traffic impacts.

Scenario 1 – Proposed Development + TKUP and EGL4 Cumulative Schemes

- 12559 Under Scenario 1, taking account of the submitted information for other applications (summarised above) for both construction and operational phases, the traffic impact associated with the Proposed Development, the TKUP, and the EGL4 schemes would be negligible on the surrounding local road network. Consequently, the combination of the Proposed Development, plus the TKUP and EGL4 cumulative schemes would remain negligible for both construction and operational phases.

Scenario 2 – Proposed Development + All Cumulative Schemes

- 12560 Scenario 2 reviews the in-combination cumulative effects when combining all cumulative schemes. Taking account of the submitted information for all the cumulative schemes (summarised above) for both the construction and operational phases, it has been identified that the traffic impact would be negligible on the surrounding local network. Consequently, the combination of the Proposed Development, plus all the cumulative schemes would remain negligible for both construction and operational phases.

Summary

- 12561 In summary, developments within close proximity to the Proposed Westfield Substation Development generate negligible impacts with regard to Traffic and Transport.
- 12562 As concluded within **Chapter 8**, the Proposed Development shall generate a negligible transport impact. In addition, the Proposed Development will also generate a negligible impact when considering the addition of the alternative sites (aforementioned in this chapter resulting from changes caused by other past, present or foreseeable developments situated within close proximity), TKUP and ELG4 elements, and the respective traffic impacts added to the baseline network.
- 12563 Nevertheless, a Construction Traffic Management Plan is recommended to be prepared to set out the aim to reduce the transport impacts of the construction traffic servicing the Proposed Development.

Air Quality

Construction

- 12564 There is the potential for the Proposed Development to be in construction at the same time as other consented developments in the local area, such as other TKUP developments and EGL4. However, dust generating activities would have to be taking place concurrently in proximity to a receptor for cumulative effects to occur, which is considered unlikely. In addition, all consented development will require robust dust management procedures and construction vehicle routing strategies to prevent significant effects, and it is considered that these will be adequate to prevent the risk of significant in-combination effects associated with construction dust and construction traffic. As such, no in-combination construction phase impacts are predicted, and the overall cumulative effect is considered **Not Significant**.

Operation

- 12565 As part of the Proposed Development, there is a back-up power generator (diesel fired), which is required in case of a power outage. However, **Chapter 9** has determined the impacts of operational combustion emissions from the back-up power generator to be **Not Significant**.
- 12566 There is not considered to be a risk of cumulative impacts of operational combustion emissions as the assessment has identified no existing combustion plant within 500m of the site, and any existing combustion plant would need to be operating at the same time as the back-up generator to give rise to cumulative impacts. This is considered unlikely given the infrequent operation of the proposed back-up generator. Furthermore, existing combustion plant located further afield, such as the Westfield Energy Recovery Facility, is likely to have different dispersion characteristics to the proposed generator and will therefore impact different sensitive receptors. As well as this, it is unlikely that emissions from other sources such as road sources will impact the same receptors at the same time.
- 12567 In terms of road traffic emissions, the effect of operational road traffic emissions associated with the Proposed Development is considered **Not Significant**. A review of the EIA Scoping Opinion for EGL4 (planning application reference: 24/03149/SCO) indicates that the traffic generated by EGL4

is expected to fall below the thresholds for detailed assessment and can therefore be considered **Not Significant** and unlikely to give rise to in-combination effects with the Proposed Development. Similarly, operational traffic associated with other TKUP developments is unlikely to be considered significant or give rise to in-combination effects given the trips are expected to be limited to occasional maintenance trips.

- 12568 As such, it is considered that the overall cumulative effect during the operational phase is considered **Not Significant**.

Decommissioning

- 12569 There is the potential for the decommissioning phase of the Proposed Development to happen at the same time as the decommissioning or construction of other consented developments in the local area. However, dust generating activities would have to be taking place concurrently in proximity to a receptor for cumulative effects to occur, which is considered unlikely. In addition, all consented development will require robust dust management procedures and construction vehicle routing strategies to prevent significant effects, and it is considered that these will be adequate to prevent the risk of significant in-combination effects associated with decommissioning traffic. As such, no in-combination decommissioning phase impacts are predicted, and the overall cumulative effect is considered **Not Significant**.

Noise

Construction

- 12570 Cumulative construction traffic noise effects could occur in the event that vehicle movements from multiple schemes take place over the same period, or overlapping period, of time. The cumulative scheme list above has been reviewed for this preliminary assessment in relation to the construction phase.
- 12571 In relation to other TKUP substations, their scale and separation distance is such that cumulative noise effects are not anticipated to occur due to construction traffic.
- 12572 The assessment of construction traffic noise from the TKUP OHL works in close proximity to the Proposed Development and elsewhere has not yet been undertaken, and it is therefore not possible to quantitatively assess cumulative impact from this development. The TKUP OHL works will require connection to the Westfield substation, and therefore vehicles will be required to access the site. A significant increase (at least 25%) in vehicle movements on access roads would be required to result in an impact. Significant impacts as a result of the TKUP OHL works are therefore not anticipated.
- 12573 No specific information on construction traffic noise is currently available from other schemes. As the impact of construction traffic has been assessed as negligible within **Chapter 10**, it is considered that the proposed scheme will not significantly influence construction traffic noise in the area. Therefore, the cumulative impact is negligible and **Not Significant**.

Operational

- 12574 Operational cumulative effects have been considered using the cumulative schemes identified above to determine potential cumulative impacts at NSRs. The assessment considers the noise

impact from static plant only and does not consider any cumulative effects from maintenance or replacement, as this information is not publicly available. It is expected that impacts associated with maintenance works would be no greater than those identified for construction.

12575 The study area used within the **Chapter 10** Noise for operational impacts is 500m, as only negligible impacts from the site are expected at distances beyond this.

12576 To ensure a worst-case consideration of cumulative effects, schemes within 1km of the site have been identified and reviewed for potential cumulative effects during operation. The cumulative schemes within 1km have been considered in the assessment of cumulative operational effects in **Table 12.4**, based on publicly available information. A discussion of the likely cumulative effects from each site has been included.

Table 12.4: Cumulative Effects Discussion

Fife Council/ ECU Reference	Scheme	Cumulative Effects Discussion
N/A	TKUP Reconductoring of YJ Route	Due to the separation distance between the YJ Route and the nearest noise sensitive receptor considered within Chapter 10 Noise being approximately 500 m, cumulative operational noise effects are not anticipated.
N/A	TLUP Reconductoring of YS Route	Cumulative effects would only be expected to occur if both schemes were expected to result in significant effects. As the assessment in Chapter 10 Noise concludes that significant effects are not expected to occur, cumulative effects are not expected to occur.
N/A	Reconfiguration of OHL and 132kV OHL works at Westfield Substation	Cumulative effects would only be expected to occur if both schemes were expected to result in significant effects. As the assessment in Chapter 10 Noise concludes that significant effects are not expected to occur, cumulative effects are not expected to occur.
N/A	Eastern Green Link 4 (EGL4) – Converter Station	The separation distance between the Eastern Green Link 4 (EGL4) Converter Station and the nearest noise sensitive receptor considered within Chapter 10 Noise is approximately 200 m. At this distance, impacts from the EGL4 converter station could be significant. However, as the assessment in Chapter 10 Noise concludes that significant effects are not expected to occur, cumulative effects are not expected to occur.
ECU00005188	Former Fife Power Station, Ballingry, Cardenden, KY5 OHQ	NSR2 and NSR3 are assessed within the Noise Impact Assessment Report for the Battery Energy Storage System (ref. 24.121.2.R2). The results indicated that with mitigation, the rating level would be 41 dB $L_{Ar,15minutes}$ at night at NSR2, and 42 dB $L_{Ar,15minutes}$ at night at NSR3.

	Battery Energy Storage System	The calculated rating levels from the Westfield Substation proposals are 36 dB $L_{Ar,15minutes}$ at night at NSR2 and 28 dB $L_{Ar,15minutes}$ at night at NSR3. Based on the calculated rating levels being at least 5 dB below the contribution from the Battery Energy Storage System, cumulative effects are unlikely to occur.
ECU00004942	Kirklands Farm, Ballingry, KY5 OHH	No noise assessment has been provided at the time of writing this report. Therefore, it is not possible to comment on the impact of noise from the scheme. However, noise impacts associated with the Westfield Substation primarily affect the east facade of NSR2, whereas noise impacts associated with the Kirklands Farm development would primarily affect the west facade of NSR2. Based on noise emissions from the Kirklands Farm development being suitably controlled, significant cumulative effects are not anticipated to occur.
ECU00006213	Westfield BESS	No noise assessment has been provided at the time of writing this report. Therefore, it is not possible to comment on the impact of noise from the scheme. However, for planning purposes, noise from the scheme would need to be suitably controlled such that it does not result in significant adverse impact at receptors, or result in noise nuisance. BESS elements of the scheme are indicated to be approximately 600 m from NSR2, and the energy recovery facility is indicated as being approximately 400 m from NSR2. These distances are expected to be sufficient for impacts to be controlled on the Westfield BESS scheme, such that cumulative significant effects would be controlled. The Proposed Development results in minor effects due to operation at NSR2. On this basis and the above, cumulative effects are not anticipated to occur.

Summary

- 12577 Based on the discussion of potential cumulative effects from construction noise, the cumulative effects in EIA terms are considered to be short term, negligible and **Not Significant**.
- 12578 Based on the discussion of potential cumulative effects from operational noise, the cumulative effects in EIA terms are considered to be long term, negligible and **Not Significant**.

Major Accidents and Disasters

Construction

- 12579 There is the potential for the construction phase of the Proposed Development to overlap temporarily with other consented or planned developments within the study area, however, for cumulative effects associated with MA&D to arise, there would need to be a realistic pathway for simultaneous incidents occurring across multiple sites and affecting shared receptors.
- 12580 Construction activities would be managed through measures such as Construction Environmental Management Plans (CEMPs) and Construction Traffic Management Plans (CTMPs), further reducing the potential for incidents and ensuring risks are controlled.
- 12581 As such, no likely significant cumulative effects associated with MA&D are anticipated during the construction phase.

Operation

- 12582 During operation, the Proposed Development and surrounding schemes would operate under strict regulatory frameworks, including environmental permitting, safety case requirements, and industry-standard design and operational controls.
- 12583 The potential for cumulative effects would require simultaneous operational failures or major incidents occurring across multiple developments, resulting in combined effects on receptors. This is considered highly unlikely due to:
- The independent operation of each facility;
 - Built-in safety systems, monitoring, and emergency shutdown procedures;
 - Regulatory oversight ensuring risks are reduced to as low as reasonably practicable (ALARP); and
 - The spatial separation between developments, limiting the potential for interaction between incidents.
- 12584 There is no credible pathway for significant cumulative effects associated with MA&D during operation.

Decommissioning

- 12585 The decommissioning phase would involve activities similar in nature to construction, including removal of infrastructure, vehicle movements, and site restoration. As with construction, there is potential for temporal overlap with other developments; however, cumulative effects related to major accidents and disasters would require concurrent and interacting incident scenarios across multiple sites.
- 12586 Given the temporary and controlled nature of decommissioning activities, alongside the implementation of appropriate environmental management measures, health and safety procedures, and traffic management controls, the likelihood of such cumulative events is low.

12587 Therefore, no in-combination effects associated with major accidents and disasters are predicted during decommissioning.

12.6 Summary of In-combination Cumulative Effects

1261 Overall, the in-combination assessment concludes that the interaction of the TKUP project components would not give rise to additional significant environmental effects beyond those identified for the individual project elements.

1262 In summary, the majority of in-combination cumulative effects are assessed as **Not Significant**. This applies to cumulative effects on landscape character, ecology and biodiversity, traffic and transport, air quality during both construction and operation, major accidents and disasters and noise during both construction and operation. The existing industrial and electrical character of the area, together with the limited scale and duration of additional change from the Proposed Development, means that cumulative effects across these topics remain low.

1263 Cumulative effects on visual amenity are more pronounced in certain circumstances. Significant cumulative visual effects are identified during construction and operation for a limited number of receptors, particularly some residential groups in closer proximity to the site and at specific elevated or open viewpoints. However, in all cases, these effects are no greater than those identified for the Proposed Development in isolation and, consequently, no additional significant cumulative effects arise as a result of the Proposed Development. Where significant cumulative effects are identified, these are influenced by the presence and scale of other nearby developments, with the Proposed Development forming one component of a wider cluster of infrastructure.

12.7 Conclusion

1271 This cumulative assessment has considered the potential for cumulative effects arising from the interaction between the Proposed Development and relevant elements of the TKUP and EGL4 projects, together with the interaction between other committed developments within the cumulative study area.

1272 The cumulative assessment has been informed by a proportionate 'short list' of developments, identified having regard to the geographical zone of influence for each environmental topic, the spatial relationship and extent of the developments, anticipated construction and operational programmes, and relevant topic-specific guidance on cumulative assessment.

1273 Where appropriate the assessment first considers the Proposed Development in combination with the relevant elements of the TKUP and EGL4 projects, recognising that a number of these are being progressed through separate consent applications as part of a co-ordinated programme of works. It also considers the cumulative effects of the Proposed Development in combination with other committed developments. The assessment concludes that, whilst some environmental receptors may experience the combined influence of multiple developments, these interactions do not result in additional or materially greater significant effects beyond those identified for the individual project elements, and no additional significant cumulative effects are anticipated.

1274 **Table 12.5** below sets out a summary of the Cumulative Effects.

Table 12.5: Summary of Cumulative Effects

Environmental Topic	Other Developments Considered	Nature of Cumulative Interaction	Additional Significant Effects?
Landscape and Visual	Other committed energy, infrastructure and development proposals	Combined influence of the relevant TKUP and EGL4 projects and other developments within shared landscape and visual contexts.	No
Ecology and Nature Conservation	Other developments with potential habitat or species interactions	Combined habitat disturbance and mitigation requirements.	No
Noise and Vibration	Concurrent construction activities associated with other developments	Temporary overlap of construction noise.	No
Traffic and Transport	Other developments generating construction traffic	Combined use of the local highway network.	No
Other Environmental Topics	Relevant committed developments	Topic-specific cumulative interactions assessed where applicable.	No

Chapter 13: Schedule of Mitigation and Monitoring

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13. Schedule of Mitigation and Monitoring

13.1 Introduction

- 13.1.1 This section summarises the mitigation measures proposed in **Chapters 6–11**. Mitigation measures are proposed to either avoid, reduce or offset impacts, which could otherwise give rise to significant residual environmental effects. In addition, some mitigation measures are proposed as additional good practice measures, which are not required to address likely significant effects. These mitigation measures are set out in **Table 13.1**.
- 13.1.2 It is proposed that the mitigation measures outlined below would be secured through planning condition or appropriate Section 75 or other legal agreement. Pre-construction and construction phase mitigation will be delivered through a CEMP, and other required management plan documents. An outline CEMP is provided in **Technical Appendix 3.1**.

Table 13.1: Environmental Mitigation and Monitoring Schedule

Topic and Ref	Mitigation and Monitoring (Description of Proposed Mitigation, Means of Implementation and Monitoring Requirements)	Timing
Landscape and Visual Amenity (LV)		
LV1	Phasing of development to reduce the prominence of construction works on the local skyline.	Construction - Short Term
LV2	Lighting will be controlled through the implementation of best practice measures, including the use of sufficient lighting units for the task in hand to avoid the need for tall, wide beam lighting units and the reduction of fixed lighting outside working hours. Measures such as avoiding any artificial lighting, unless absolutely critical and the use of hoods, cowls and timers to restrict light spill only to where it is required and for as long as it is required.	Construction - Short Term
LV3	Retention and enhancement of existing vegetation and trees, where possible, and gapping up with native species. Provision of new landscape planting where possible, to soften the appearance of the proposed development in local views.	Medium to Long Term
Ecology and Biodiversity (E)		
E1	Provision of appropriate management plans including: Construction Environmental Management Plan, Ecological Construction Management Plan (incorporating a Landscape Environmental Management Plan). To accompany the construction phase of the proposed development and to ensure appropriate management and operational systems are in place to avoid or minimise adverse pollution, noise, and lighting effects etc.	Construction - Short Term
E2	Compliance with legislation relating to protected species, through a protected species licence or method statement.	Construction - Short Term
E3	Lighting Strategy to be produced, which will protect light sensitive species and those areas/habitats that are important to these species. This includes the hedgerow network and the off-site woodland, and any new habitats created.	Construction - Short Term Operation – Medium to Long Term

Topic and Ref	Mitigation and Monitoring (Description of Proposed Mitigation, Means of Implementation and Monitoring Requirements)	Timing
E4	Provision of a range of durable bird and bat boxes to be erected on retained mature trees within the green infrastructure areas that will not be subject to light spill.	Long Term
Traffic and Transportation (T)		
T1	A Construction Environmental Management Plan (CEMP) is recommended to be prepared with one of the aims to reduce the transport impacts of the construction traffic servicing the proposed development.	Construction - Short Term
T2	A Construction Traffic Management Plan is recommended to be prepared to reduce the transport impacts of the construction traffic servicing the proposed development.	Construction - Short Term
Air Quality (AQ)		
AQ1	Implement a Construction Environmental Management Plan to include the site communications, management, monitoring, preparation and maintenance, vehicle/machinery operating, operation, waste management, construction and trackout measures set out in Table 9.7 .	Construction - Short Term
AQ2	Adhere to the NRMM emissions standards for NO ₂ and PM ₁₀ outlined in the Road Vehicles and Non-Road Mobile Machinery (Type-Approval) (Amendment and Transitional Provisions) (EU Exit) Regulations 2022 (Statutory Instrument, 2022).	Construction - Short Term
Major Accidents and Disasters (MAD)		
MAD1	Utility searches and pipeline operator consultation to inform detailed design and construction activities, with adherence to agreed protection measures, permit-to-dig procedures and safeguards where works are undertaken in proximity to buried infrastructure and Major Accident Hazard Pipelines.	Construction – Short Term
MAD2	Implementation of a Construction Environmental Management Plan (CEMP), including pollution prevention, storage and handling procedures, spill response measures and environmental controls during construction and decommissioning activities.	Construction – Short Term
MAD3	Implementation of a Construction Traffic Management Plan (CTMP) and adherence to best practice construction methods to reduce the likelihood of major road traffic accidents associated with construction and decommissioning traffic.	Construction – Short Term

Topic and Ref	Mitigation and Monitoring (Description of Proposed Mitigation, Means of Implementation and Monitoring Requirements)	Timing
MAD4	Security measures including perimeter fencing, CCTV, 24-hour remote monitoring, competent personnel and emergency response procedures to reduce risks associated with vandalism, electrocution, fire and operational incidents.	Operational – Medium to Long Term

Chapter 14:

Summary of Effects

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14.1 Summary of Effects.....14-3

14. Summary of Effects

14.1 Summary of Effects

14.1.1 A summary of the identified effects for each environmental topic is provided in **Table 14.1**.

Table 14.1: Summary of Effects

Environmental Topic	Summary of Residual Effects
Landscape and Visual Amenity	The following receptors are likely to experience significant residual effects during construction: • The site character and its immediate surroundings (parts of LCT 186); • Users of small sections of The Fife Pilgrim Way West (including Core Paths R410, R519, R520, R817) but not the route overall; • Users of sections of Core Paths R580 and R581, but not the routes overall; • Users of sections of Core Path R828 and R583 (PVPs EDP 11 and 12) but not on the routes overall; • Users of sections of the B9097 as the route passes the site, but not the road overall; and • Residential Groups A to C. During operation the likely (Year 1) significant effects would be on the following landscape and visual receptors: • The site character and its immediate surroundings (parts of LCT 186); • Users of short sections of The Fife Pilgrim Way West (including Core Paths R410, R519, R520, R817) but not the route overall; • Users of sections of Core Paths R580 and R581, but not the routes overall; • Users of sections of Core Path R583 (PVPs EDP 11) but not on the route overall; • Users of sections of the B9097 as the route passes the site, but not the road overall; and • Residential Groups B to C. During operation the likely residual (Year 15) significant effects would be on the following landscape and visual receptors: • The site character and its immediate surroundings (parts of LCT 186); • Users of sections of Core Paths R580 and R581, but not the routes overall; and • Residential Group C. •
Ecology and Biodiversity	No significant effects during the construction or operational effects are anticipated to Important Ecological Features.
Transport and Access	Negligible effects during construction on the local road network. (Operational effects Scoped Out).
Air Quality	No significant adverse construction or operational effects on air quality.
Noise	No significant adverse construction or operational effects the noise environment.

Environmental Topic	Summary of Residual Effects
Major Accidents and Disasters (MA&D)	No significant adverse construction or operational effects on MA&D.
Cumulative and Interactive Effects	No significant interactive cumulative effects. No new or greater significant cumulative landscape or visual effects arise as a result of the addition of the Proposed Development. No other significant in-combination cumulative effects.

Chapter 15:

References

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15.13 Chapter 13: Schedule of Mitigation and Monitoring

None.

15.14 Chapter 14: Summary of Effects

None.