Scottish & Southern Electricity Networks

TRANSMISSION

SSEN Transmission

Bingally 400 / 132 kV Substation

Environmental Appraisal

Volume 1

February 2025

Scottish & Southern Electricity Networks
TRANSMISSION

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LIST OF ABBREVIATIONS

AADT	Annual Average Daily Traffic
AAWT	Annual Average Weekday Traffic
AIL	Abnormal Indivisible Load
AIS	Air Insulated Switchgear
AOD	Above Ordnance Datum
ASNW	Ancient Semi-Natural Woodland
ASSI	Areas of Special Scientific Interest
ASTI	Accelerated Strategic Transmission Investment
AWI	Ancient Woodland Inventory
BAP	Biodiversity Action Plan
BCT	Bat Conservation Trust
BESS	British Energy Security Strategy
Bgl	below ground level
BGS	British Geological Survey
BH	Borehole
BNG	Biodiversity Net Gain
BNL	Basic Noise Level
BPM	Best Practicable Means
BS	British Standard
BSI	British Standards Institution
BTO	British Trust for Ornithology
CAR	Controlled Activity Regulation
CCC	Committee on Climate Change
CCRA	Climate Change Risk Assessment
CDG	Carriage of Dangerous Goods
CDM	Construction Design and Management
CEMP	Construction Environment Management Plan
CH_4	Methane
CIEEM	Chartered Institute of Ecology and Environmental Management
CO_2	Carbon dioxide
CRA	Collision Risk Assessment
CRTN	Calculation of Road Traffic Noise
CSM	Conceptual Site Model
CRCE	Centre for Radiation, Chemical and Environmental Hazards
CTMP	Construction Traffic Management Plan
dB	Decibels

dB(A)	Decibel (Ambient)
DESNZ	Department for Energy Security and Net Zero
DIA	Drainage Impact Assessment
DfT	Department for Transport
DMP	Drainage Management Plan
the DMRs	Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013
DMRB	Design Manual for Roads and Bridges
DTM	Digital Terrain Model
DWPA	Drinking Water Protected Area
ECoW	Environmental Clerk of Works
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
EIA Report	Environmental Impact Assessment Report
EMF	Electromagnetic Field
EMI	Electromagnetic Interference
EMP	Environmental Management Plan
EPS	European Protected Species
EQS	Environmental Quality Standards
FIA	Flood Impact Assessment
FRA	Flood Risk Assessment
GCR	Geological Conservation Review
GEMP	General Environmental Management Plan
GHG	Greenhouse Gas
GIS	Geographic Information System
GPP	Guidance on Pollution Prevention
GT	Grid Transformer
GVLIA 3	Guidelines for Landscape and Visual Impact Assessment 3rd Edition
GW	Gigawatt
GWDTE	Groundwater Dependent Terrestrial Ecosystems
Ha	Hectare
HCAA	The Highland Council Archaeological Advisor
HEPS	Historic Environment Policy for Scotland
HER	Historic Environment Record
HES	Historic Environment Scotland
HFCs	Hydrofluorocarbons
HGV	Heavy Goods Vehicle

HND	Holistic Network Design
HRA	Habitat Regulations Appraisal
HwLDP	Highland-wide Local Development Plan
Hz	Hertz
IAQM	Institute of Air Quality Management
ICCI	In-combination Climate Impact
ICE	Inventory of Carbon and Energy
ICNIRP	International Commission on Non-Ionising Radiation Protection
IEMA	Institute of Environmental Management and Assessment
IPCC	Intergovernmental Panel on Climate Change
JNCC	Joint Nature Conservation Committee
kV	Kilovolt
LB	Listed Building
LBAP	Local Biodiversity Action Plan
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LDP	Local Development Plan
LGV	Light Goods Vehicle
LHMP	Landscape Habitat Management Plan
LiDAR	Light Detection and Ranging
LNCS	Local Nature Conservation Site
LNR	Local Nature Reserve
LOD	Limit of Deviation
LVIA	Landscape and Visual Impact Assessment
MBBS	Moorland breeding bird survey
$MtCO_{2e}$	Million Tonnes of Carbon Dioxide Equivalent
NAC	Noise Advisory Council NBN National Biodiversity Network
ND	National Development
ND3	National Development 3
NESO	National Electricity System Operator
NF_3	Nitrogen trifluoride
NGESO	National Grid Energy System Operator
NGR	National Grid Reference
NHZ	Natural Heritage Zone
NIHP	National Institute for Health Protection
NNR	National Nature Reserve
NPF3	National Planning Framework 3 (Scotland)

NPF4	National Planning Framework 4 (Scotland)
NPS	National Policy Statement
N_2O	Nitrous oxide
NS	NatureScot
NRPB	National Radiation Protection Board
NSA	National Scenic Area
NSR	Noise sensitive receptors
NVC	National Vegetation Classification
NVZ	Nitrate Vulnerable Zones
NWSS	Native Woodland Survey of Scotland
OEMP	Operation Environment Management Plan
Ofgem	Office of Gas and Electricity Markets
OHL	Overhead line
OTNR	Offshore transmission network review
OS	Ordnance Survey
PAN	Planning Advice Note
PAS	Publicly Available Standard
PAWS	Plantation on Ancient Woodland
PFCs	Perfluorocarbons
PHLRA	Peat Hazard Landslide Risk Assessment
PIR	Passive Infra-red
PMP	Peat Management Plan
PPC	Pollution Prevention and Control
PPG	Pollution Prevention Guidance
PPV	Peak Particle Velocity
PWS	Private Water Supply
RAG	Red, Amber, Green
RBMP	River Basin Management Plan
RICS	Royal Institute of Chartered Surveyors
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SBL	Scottish Biodiversity List
SBT	Science-based targets
SBTi	Science-Based Targets initiative
SEPA	Scottish Environment Protection Agency
SF_6	Sulphur hexafluoride
SGT	Super Grid Transformer

SHEP	Scottish Historic Environment Policy
SLA	Special Landscape Area
SM	Scheduled Monument
SNCIs	Sites of Nature Conservation Importance
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area
SPP	Scottish Planning Policy
SpPP	Species Protection Plan
SRSG	Scottish Raptor Study Group
SSEN	Scottish & Southern Electricity Networks
SSSI	Site of Special Scientific Interest
STGO	Special Types General Order
SuDS	Sustainable Drainage Systems
TAN	Technical Advice Note
tCO_{2e}	Tonnes of carbon dioxide equivalent
TEC	Transmission Entry Capacity
THC	The Highland Council
UGC	Under Ground Cable
UK	United Kingdom
UKCP18	UK Climate Change Projections 2018
UKHab	UK Habitat Survey
UNFCCC	United Nations Framework Convention on Climate Change
WEWS	Water Environment and Water
WFD	Water Framework Directive
WHO	World Health Organisation
WLA	Wild Land Area
WMP	Water Management Plan
ZTV	Zone of Theoretical Visibility

1 INTRODUCTION AND BACKGROUND

1.1 Overview

1.1.1 This Environmental Appraisal ("EA") has been prepared by AECOM Limited (AECOM) on behalf of Scottish Hydro Electric Transmission plc ("the Applicant") who, operating and known as Scottish and Southern Electricity Networks Transmission ("SSEN Transmission"), own, operate and develop the high voltage electricity network in the north of Scotland and remote Islands. In this EA, 'the Applicant' and 'SSEN Transmission' are used interchangeably unless the context requires otherwise. The EA has been prepared to accompany an application for planning permission under the Town and Country Planning (Scotland) Act 1997 (as amended) ("the 1997 Act")[1].

1.1.2 The Applicant is seeking planning permission under the 1997 Act to construct and operate a new 400 / 132 kilovolts (kV) substation and access track (referred to hereafter as "the Proposed Development") near Fasnakyle within The Highland Council (THC) local authority area. The Proposed Development forms part of an uprating of the existing Beauly-Denny 275 kV circuit to operate at 400 kV under Ofgem's Accelerated Strategic Transmission Investment (ASTI) programme.

1.1.3 The location of the Proposed Development works and components (referred to hereafter as 'the Site') and an overview of the Proposed Development is shown in **Figure 3-1, Volume 2**.

1.1.4 The main components of the Proposed Development comprise a new substation platform with internal access roads, two 400 / 132 kV Super Grid transformers, a new 400kV double busbar, space provision for three 400 kV bays for future connections, a new 132kV double busbar, space provision for four 132 kV bays for future connections, a control room, and approximately 9.5 km of new and upgraded access track.

1.1.5 The Proposed Development would also include the following ancillary works: site clearance, temporary construction compounds and laydown areas, earthworks (including landscaping), relevant public road improvements (including a new bellmouth for the access track at its junction with the A831 drainage, permanent water supply, PIR lighting, security fencing and biodiversity enhancement measures. Full details on all components and construction activities can be found in **Volume 1, Chapter 3 Description of the Proposed Development**.

1.1.6 An Environmental Impact Assessment (EIA) Screening Opinion was requested from THC on 19 April 2024 (24/01648/SCRE). THC response was received in November 2024 confirming that the planning application did not require to be accompanied by an EIA.(refer to **Appendix R Screening Opinion**).

1.1.7 SSEN Transmission is voluntarily submitting this EA as a matter of good practice to support their application for planning permission. The EA evaluates whether any specific environmental risks are likely to occur resulting from the Proposed Development and identifies any mitigation recommended to avoid or minimise any associated environmental risks.

1.1.8 The structure and level of assessment presented within this EA are in line with that which would typically be submitted for an EIA Report for this type of project and its surrounding environmental context.

[1] Scottish Government (1997) *The Town and County Planning (Scotland) Act 1997*, Edinburgh: Scottish Government.

1.1.9 A Planning Statement has been submitted to support the application for planning permission which considers the acceptability of the Proposed Development in the context of the Development Plan and national energy and planning policies.

1.1.10 The Proposed Development represents part of a wider Great Britain upgrade of the electricity network that is required to meet UK and Scottish Government energy targets by 2030. Therefore, to support meeting UK and Scottish Government target dates, in advance of receiving the requested EIA Screening Opinion, and in order to progress the Proposed Development, a decision was required as to whether to adopt the standards of an EIA or to proceed on the basis of a voluntary EA. The most robust approach was to proceed on the basis that an EIA may be required. However, the EIA Screening Opinion was subsequently received on 13 November 2024 confirming that the Proposed Development is not considered to be an EIA development, and accordingly an EIA is not required. Given the timing of the EIA Screening Opinion, and the advanced level of assessment, the structure of the assessments presented within this voluntary EA are in line with that which would typically be submitted for an EIA Report. For the avoidance of doubt, however, this document is the product of a voluntary EA, and not an EIA carried out under the EIA Regulations.

1.1.11 The Proposed Development is expected to be operational in 2029, subject to outage and commissioning sequences and would likely require regular monitoring and maintenance throughout its lifespan.

1.1.12 Associated works for which separate consent is be sought by the Applicant include:

- A permanent tie-in of the Beauly-Denny Overhead Line (OHL) to be pursued through a separate consent application under the Section 37 of the Electricity Act 1989[2] (the "1989 Act") to provide a connection for the Proposed Development onto the new 400 kV circuit (referred to hereafter as ‘proposed Bingally OHL’); and
- A new 132 kV grid connection from the Proposed Development to the existing Fasnakyle Substation. At the time of writing, the technology for this connection is yet to be determined. A separate consent application would be made related to this development.

1.1.13 These works do not form part of the Proposed Development and are therefore not assessed as such in this Voluntary EA Report, although consideration of the potential for cumulative impacts with the Proposed Development is considered, where relevant.

1.2 Background

1.2.1 The Applicant owns and maintains the electricity transmission network across the north of Scotland and holds a transmission licence under Section 6(1)(b) of the 1989 Act. In terms of section 9(2) of the 1989 Act, the Applicant has a statutory duty to develop and maintain an efficient, co-ordinated and economical system of electrical transmission, and a separate duty to facilitate competition between current and new generators of electricity. Where there is a requirement to extend, upgrade or reinforce its transmission network, the Applicant’s aim is to achieve an environmentally aware, technically feasible and economically viable option which, on balance, would cause the least disturbance to the environment and the people who use the area.

[2] UK Government (1989) *The Electricity Act 1989*. Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents

1.2.2 The United Kingdom (UK) Government launched the offshore transmission network review (OTNR) in 2020 to ensure that the transmission connections for offshore wind generation are delivered in the most appropriate way, and to find the appropriate balance between environmental, social and economic costs4[3]. The National Grid, the National Electricity System Operator (NESO), published the Holistic Network Design (HND) Report in July 2025 providing detail on a recommended approach for connecting offshore wind farms, including the associated offshore and onshore transmission network requirements.

1.2.3 By 2030, both the UK and Scottish governments are targeting a big expansion in offshore wind generation of 50 GW and 11 GW respectively. The Scottish Government has also set ambitious targets for an additional 12 GW of onshore wind by 2030.[4] Across Great Britain, including the north of Scotland, there needs to be a significant increase in the capacity of the onshore electricity transmission infrastructure to deliver these 2030 targets and a pathway to net zero.

1.2.4 The Proposed Development forms one of a number of projects required to be delivered as part of Ofgem's Accelerated Strategic Transmission Investment (ASTI) programme for the uprating of the existing Beauly-Denny OHL 275 kV circuit to 400 kV. The original Beauly Denny OHL received consent in 2010 to operate as a double circuit 400kV. At present, one circuit operates at 275 kV and the other at 400 kV. The circuit uprating will result in both circuits operating at 400 kV. No modifications are required to the existing OHL or towers to facilitate this uprating, other than the short connection tying into the Proposed Development.

1.2.5 The Proposed Development represents a long-term approach in relation to planning for future transmission infrastructure requirements, particularly having to regard to targets fixed by the Scottish and UK Governments to achieve net zero. Furthermore, as a result of an increase in renewable energy projects, for which access to the electricity network is being formally requested, there is a requirement to increase the capacity of the transmission network in the Fasnakyle area

1.2.6 The Proposed Development is required as the existing Fasnakyle Substation is not large enough to accommodate the additional equipment required to connect the current 275 kV feeds onto the new 400 kV circuit. A more detailed explanation of the need and strategy for the Proposed Development is set out in **Volume 1, Chapter 2 Project Need and Strategy**.

1.2.7 A site selection process was undertaken where 14 initial sites were investigated for the potential location of the Proposed Development, with a further two options identified following public feedback and review of access considerations. Eleven site options were discounted based on their proximity to designations, sensitive habitats, settlements / residential locations, and due to engineering and construction challenges.

1.2.8 Further detail on the process of site selection is discussed in **Volume 1, Chapter 4 The Site Selection Process**.

1.3 Legislative and Statutory Context

1.3.1 Full detailed planning permission for the Proposed Development is sought from The Highland Council under the 1997 Act.

[3] UK Government, 2020. *Offshore Transmission Network Review*. Available at: https://www.gov.uk/government/groups/offshore-transmission-network-review,

[4] Scottish Government, 2023. Renewable Electricity Capacity by 2030; EIR Release. Available at: https://www.gov.scot/publications/foi-202300354295/.

1.3.2 The Applicant, as a transmission licence holder under the 1989 Act has a statutory duty, under paragraph 1 of Schedule 9 of the Electricity Act 1989 'when formulating proposals to generate, transmit, distribute or supply electricity' to:

> *"have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest"; and*
>
> *"do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects".*

1.4 Voluntary EA Report Structure

1.4.1 The Voluntary EA consists of the following volumes:

- Volume 1 – Voluntary EA Report;
- Volume 2 – Figures; and
- Volume 3 – Technical Appendices.

1.4.2 **Volume 1** comprises of the main Voluntary EA Report. This includes an introduction to the Proposed Development, including the need and alternatives. This volume details the key components of the Proposed Development, including construction and operational access requirements. **Volume 1** includes details of the Voluntary EA Report approach and consultation activities which have been conducted to define the scope of the Voluntary EA. **Volume 1** also comprises a series of technical topic-based chapters that include an assessment of the likely significant effects of the Proposed Development on the particular receptors of relevance to each topic-based assessments, a description of the proposed mitigation measures relevant to those assessments and confirmation of the predicted residual effects.

1.4.3 **Volume 2** contains supporting figures referred to in **Volume 1** of the Voluntary EA Report.

1.4.4 **Volume 3** comprises supporting appendices to **Volume 1** of the Voluntary EA Report. Appendices include further detailed reporting or information to support the Voluntary EA Report and technical assessments contained therein.

1.5 Supporting Documents

1.5.1 A Planning Statement is also included with the application as supporting information. The Planning Statement considers the compatibility of the Proposed Development in the context of the Development Plan and national energy and planning policies.

1.5.2 Other reports, drawings and documents that will be submitted as part of the planning application (but not part of this Voluntary EA) will include:

- Habitat Regulations Assessment (HRA) Screening Letter;
- Design and Access Statement;
- a series of technical design drawings;
- Pre-application Consultation Report;
- Socio-economic Report;
- Outline Access Management Plan;
- Substation Flood Risk Assessment;
- Access Track Flood Risk Assessment;
- Substation Drainage Impact Assessment;
- Access Track Drainage Impact Assessment;

- Substation Drainage Strategy Report; and
- Access Track Drainage Strategy Report.

1.5.3 Other reports, drawings and documents that will be submitted as part of the Voluntary EA and in support of the planning application will include:

- Gazetteer (**Appendix B**)
- Photomontages (**Appendix C**)
- Site Photographs (**Appendix D**)
- Biodiversity Net Gain Report (**Appendix E**)
- Habitat Survey Results (**Appendix F**)
- Landscape and Habitat Management Plan (**Appendix G**)
- Phase 1 Geo-Environmental and Geotechnical Desk Study (**Appendix H**)
- Peat Management Plan (**Appendix I**)
- Peat Landslide Hazard Risk Assessment (**Appendix J**)
- Transport Statement (**Appendix K**)
- Noise and Vibration supporting details (**Appendices L-O**)
- Climate Change assessment supporting details (**Appendices P-Q**)
- Screening Opinion (**Appendix R**).

2 PROJECT NEED AND STRATEGY

2.1 Overview

2.1.1 This chapter explains the need for the Proposed Development.

2.1.2 Discussion of the detailed consideration of alternatives that has been undertaken in arriving at the proposed site of the Proposed Development is provided in **Volume 1, Chapter 4 The Site Selection Process.**

2.2 National Significance

2.2.1 In July 2022, National Grid Energy System Operator (NGESO)[5] published the Pathway to 2030 HND, setting out the blueprint for the onshore and offshore electricity transmission network infrastructure required to enable the forecasted growth in renewable electricity across Great Britain, including the UK and Scottish Government's 2030 offshore wind targets of 50GW and 11GW, respectively. This confirms the need for significant and strategic increase in the capacity of the onshore electricity transmission infrastructure to deliver 2030 targets and a pathway to net zero. The need for these reinforcements is underlined within the British Energy Security Strategy, (BESS) (April 2022), which recognised the significant impact on the cost of living from rising gas prices and sets out a plan to increase the supply of electricity from zero-carbon British sources to deliver affordable, clean and secure power in the long term.

2.2.2 SSEN Transmission holds a license under the Electricity Act 1989 for the transmission of electricity in Scotland and has a statutory duty under Schedule 9 of the Electricity Act to develop and maintain an efficient, co-ordinated, and economical electrical transmission system in its licence area. Where there is a requirement to extend, upgrade or reinforce its transmission network, SSEN Transmission's aim is to provide an environmentally aware, technically feasible and economically viable solution which would cause the least disturbance to the environment and to people who use it.

2.3 National Developments

2.3.1 NPF4 identifies 18 National Developments (ND) described as: "*significant developments of national importance that will help to deliver the spatial strategy*". Developments proposed as National Developments are acknowledged as projects expected to provide substantive support to the economy of Scotland in terms of direct and indirect employment and business investment, with wider economic benefits. It adds that: "*Their designation means that the principle for development does not need to be agreed in later consenting processes, providing more certainty for communities, businesses and investors*".

2.3.2 National Development 3 (ND3) "*Strategic Renewable Electricity Generation and Transmission Infrastructure…support renewable electricity generation, repowering, and expansion of the electricity grid. A large and rapid increase in electricity generation from renewable sources will be essential for Scotland to meet its net zero emissions targets. Certain types of renewable electricity generation will also be required, which will include energy storage technology and capacity, to provide the vital services, including flexible response, that a zero carbon network will require. Generation is for domestic consumption as well as for export to the UK and beyond,*

[5] The National Grid Energy System Operator (NGESO) roles and responsibilities for system planning were transferred to National Energy System Operator (NESO) in October 2024 following acquisition by the UK Government, and hereafter, will be referred to as NESO.

with new capacity helping to decarbonise heat, transport and industrial energy demand."

2.3.3 "*The electricity transmission grid will need substantial reinforcement including the addition of new infrastructure to connect and transmit the output from new on and offshore capacity to consumers in Scotland, the rest of the UK and beyond. Delivery of this national development will be informed by market, policy and regulatory developments and decisions*."

2.4 Designation and Classification

2.4.1 The location for ND3 is set out as being "All of Scotland" and the description of need is that "*Additional electricity generation from renewables and electricity transmission capacity of scale is fundamental to achieving a net zero economy and supports improved network resilience in rural and island areas*."

2.4.2 The designation and classes of development which would qualify as ND3, are (a) on and off shore electricity generation, including electricity storage, from renewables exceeding 50 megawatts capacity; (b) new and/or replacement upgraded on and offshore high voltage electricity transmission lines, cables and interconnectors of 132kV or more; and (c) new and/or upgraded Infrastructure directly supporting on and offshore high voltage electricity lines, cables and interconnectors including converter stations, switching stations and substations.

2.5 Statement of Need

2.5.1 In addition to being designated as a National Development, the Proposed Development is explicitly supported by NPF4 under the provisions set out in Policy 11(a)(ii) (Energy)).

2.5.2 The NESO's Pathway to 2030 HND, identified the requirement to reinforce the onshore corridors between Beauly and Peterhead, Beauly and Spittal in Caithness, and an offshore subsea cable between Spittal and Peterhead as well as the need to upgrade the 275kV Beauly-Denny circuit to operate at 400kV. It outlined that these reinforcements would provide the capacity required to take power from large-scale onshore and offshore renewable generation (mainly wind farms) to the northeast mainland of Scotland. From there, it could be transported to demand centres in England via a subsea cable. The Proposed Development is required to enable these connections.

2.5.3 In December 2022, the independent Great Britain energy regulator, the Office of Gas and Electricity Markets (Ofgem), approved the need for the upgrade of the existing Beauly-Denny 275kV circuit as part of the ASTI framework as a Great Britain wide programme of investments. Ofgem's decision approved all of SSEN Transmission's Pathway to 2030 projects, which includes the Proposed Development.

2.5.4 The Proposed Development, alongside several other major network upgrades planned in the north of Scotland, is therefore part of a Great Britain wide programme of works that are required to meet UK and Scottish Government energy targets. There is a clear expectation from Government and the energy regulator, Ofgem, that these projects will be delivered by 2030. More specifically, these projects are needed to deliver Government 2030 renewable targets set out in the BESS.

3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Introduction

3.1.1 This chapter provides a description of the Proposed Development, including details of the key components and information regarding the construction, operation and maintenance of the Proposed Development. This description is also used as the basis for the technical assessments as reported in **Volume 1, Chapters 7-15** of this Voluntary EA Report.

3.2 The Proposed Development Site

3.2.1 The Proposed Development Site (hereafter referred to as "the Site") is illustrated on the Site Location Plan (**Figure 3-1, Volume 2**) and encompasses the Proposed Development components as outlined in **Section 3.3**.

3.2.2 The proposed Bingally substation is located approximately 2.9 km south of Tomich and 5.8 km south of the existing Fasnakyle Substation. The Proposed Development also encompasses approximately 9.5 km of access track. The access track extends from the proposed Bingally substation and broadly follows a northeasterly direction to connect to the A831, at approximately 620 m east of Cannich.

3.3 The Proposed Development Components

3.3.1 The Site Layout Plan as illustrated in **Figure 3-2, Volume 2,** and comprises the following elements:

- Substation platform of approximately 376 m (length) x 271 m (width) with associated earthworks. The substation platform would be 324 m above ordnance datum (AOD);
- Two 400 / 132 kV Super Grid Transformers (SSIs), a 400kV double busbar, space provision for three 400 kV bays for future connections, a 132kV double busbar, space provision for four 132 kV bays for future connections, and ancillary equipment for all bars, bays and transformers;
- A new control building with dimensions 48 m (width) x 24 m (length) x 7 m (height);
- Establishment of approximately 9.5 km of access track, comprising upgrade of approximately 6.1 km of existing track and approximately 3.4 km of new track; and,
- Permanent drainage systems.

3.3.2 While the Proposed Development comprises those components detailed above, individual elements and their locations may be referred to separately as necessary within this Voluntary EA Report. For example, the Proposed Development Site ("the Site"), the location within the Site that the proposed substation would be located ("the proposed substation site"), and the location / area of the proposed access track within the Site ("the proposed access track").

3.3.3 **Figure 3-1** in **Volume 2** shows the location of where the Proposed Development ties-in with the proposed Bingally OHL which is being progressed separately and will not comprise part of the Proposed Development.

400 kV Substation

3.3.4 The proposed substation at Bingally would comprise of a new 400 / 132 kV outdoor Air Insulated Switchgear (AIS) substation to support upgrade of the Beauly-Denny OHL to a 400 kV double circuit. The platform will be constructed of 725mm of free draining granular material, 200mm of free draining Type 3 material and a top layer of 75 mm of free draining 2-11 aggregate (chippings).

Access Track

3.3.5 A new permanent access track from the A831 would be constructed to provide access to the proposed substation site. This access track would utilise existing access track (6.1 km), with the addition of an off-line section where the original Beauly-Denny OHL track was previously reinstated (approximately 3.4 km). The existing access track would require to be widened and extending to allow for construction vehicle access.

3.3.6 Where the proposed access track crosses a waterway or watercourse, the design development has been developed to keep existing track levels where possible to minimise the requirement for any works other than culvert widening.

3.3.7 Temporary access tracks would be established around the proposed substation to allow for the movement of construction workers, plant, equipment and materials between the proposed substation site and the temporary construction compounds.

Site Drainage and Water Management

3.3.8 The Proposed Development would include the construction of two new Sustainable Drainage System (SuDS) ponds designed to manage surface water runoff from the proposed substation site. The ponds have been sized considering the area of the proposed substation site associated earthworks, including partial run-off from the adjacent access track. The outfall from the access track further from the substation is processed separately and will not have a basin.

Temporary Path Diversions

3.3.9 The Proposed Development will include the temporary diversions of two Core Paths (IN05.02 and IN05.03) and the Affric Kintail Way long distance route during the construction phase. Details of these diversions are outlined within the Outline Access Management Plan, included within the application as supporting information.

3.4 Associated Works

3.4.1 The following associated works are proposed as a direct result of the Proposed Development:

- OHL tie-in from the Proposed Development to the existing Beauly-Denny OHL. Consent will be sought by the applicant under section 37 of the Electricity Act.
- A grid connection (either an UGC and/ or OHL) linking the existing Fasnakyle Substation to the Proposed Development, subject to a separate consent application.

3.4.2 These works do not fall under the remit of the Proposed Development, however, are described in the cumulative developments in **Volume 1, Chapter 5 EA Approach and Methodology** of this Voluntary EA Report and, where appropriate, cumulative impacts of the OHL tie-in works and the Bingally to Fasnakyle 132 kV grid connection are identified in **Volume 1, Chapters 7-15** of this Voluntary EA Report.

3.4.3 Existing 275 kV plant at Fasnakyle Substation will be removed and replaced, as detailed below, however these works do not fall within the remit of the Proposed Development as they can be carried within permitted development parameters:

- Two 275 / 33kV SGTs will be removed and replaced with two 132 / 33 kV Grid Transformers (GTs) at the existing Fasnakyle 275 kV Substation.
- Three 275 kV Circuit Breakers and two sets of 275 kV Surge Arresters will also be removed from the existing Fasnakyle 275 kV Substation and will be replaced with 132 kV SF6-free equivalents.

- All other 275 kV plant at existing Fasnakyle 275 kV Substation will be assessed for its long-term suitability for re-use at 132 kV and will be replaced if determined unsuitable.

3.5 Construction

3.5.1 The main construction elements associated with the Proposed Development are as follows (and are shown in **Figure 3-3 in Volume 2**):

- Establishment of temporary construction compounds (including office and welfare facilities and laydowns areas for materials);
- Establishment of temporary and permanent access tracks;
- Ground works to achieve a level area at the Site for the proposed substation platform (including a cut-fill exercise to minimise import or export of materials, tree felling and stump removal);
- Delivery of components and materials to the Site;
- Installation of transformers and associated equipment;
- Remedial works to reinstate the immediate vicinity, and any ground disturbed to pre-existing condition; and
- Inspections and commissioning.

Construction Compounds

3.5.2 Temporary construction compounds would be required during construction to provide laydown areas, office, welfare and car parking areas and holding and servicing space for construction plant. The temporary construction compound areas are illustrated in **Volume 2, Figure 3-3**, and are as follows:

- Temporary Office and Welfare Compound: located around 50 m north of the proposed substation site covering an area of 7,763 m^2;
- Temporary Compound 1: a temporary laydown/ stockpile area located within 200 m northeast of the proposed substation site, covering a combined area of 22,483 m^2;
- Temporary Compound 2: a temporary laydown/ stockpile area located within 100 m east of the proposed substation site, covering a combined area of 7,997 m^2;
- Temporary Compound 3: located from 150 m east of the proposed substation site, this temporary area will be used as a material stockpile area, borrow pit, peat stockpile area and permanent peat restoration area, covering an area of 122,933 m^2;
- Temporary Compound 4: a temporary material processing area located within 100 m south of the proposed substation site, covering an area of 22,041 m^2; and
- Temporary Compound 5: located approximately 1km south from the Site entrance, covering an area of approximately 39,825 m^2. This area would be utilised for car parking and will include additional office and welfare facilities for site staff and temporary storage for excavated materials. The full extent of this area may be refined during detailed design and prior to commencement of works, such that the footprint area may be reduced.

3.5.3 Temporary construction lighting would be used within construction compounds and active work areas around the Site. These would be removed during operation. The permanent lighting arrangement is discussed within **Section 3.6**.

Delivery of Structures and Materials

3.5.4 All materials would be delivered to the construction compounds. Concrete would be delivered to the Site pre-mixed. Hardcore and earthworks materials for the construction of the Proposed Development would be a combination between site won, through cutting of the existing surface to construct the platforms and locally imported materials. Where possible, the use of site won materials would be prioritised over imported materials to reduce the impact on the local roads and the environment.

Construction Programme

3.5.5 It is anticipated that construction of the Proposed Development would take approximately 3 years, although detailed programming of the works would be the responsibility of the Principal Contractor in agreement with SSEN Transmission.

Construction Hours of Work

3.5.6 Construction activities would in general be undertaken during daytime periods. Working hours are currently between approximately 07:00 to 19:00 March to September and 07:30 to 17:30 (or within daylight hours) October to February, Monday to Friday. Weekend working would consist of Saturdays only between 07:00 and 13:00 all year round. Working hour assumptions would be agreed with THC.

Construction Traffic

3.5.7 A Construction Traffic Management Plan (CTMP) would be prepared by the Principal Contractor prior to any works commencing, in consultation with THC and Transport Scotland, as required. The CTMP would describe all mitigation and signage measures that are proposed on the public road network. A draft CTMP is provided in **Volume 3, Appendix K, Transport Statement**. Further detail on the anticipated traffic movements associated with construction of the Proposed Development, and an assessment of the likely effects and suggested mitigation measures, is provided in **Volume 1, Chapter 11 Traffic and Transport**.

Reinstatement

3.5.8 Following commissioning of the Proposed Development, all temporary construction areas would be reinstated. Reinstatement will form part of the contractual obligations with the Principal Contractor and will include the removal of all temporary access tracks and Site works.

Landscape Mitigation Measures and Biodiversity Enhancement

3.5.9 Additional landscape mitigation measures, and new planting requirements for the purposes of visual screening and/ or to help assimilate the Proposed Development into the surrounding landscape would be considered with regard to existing planting plans. Such measures would also seek to provide habitat, biodiversity, and opportunities for ecological enhancement. Further details on landscape mitigation measures are provided in **Chapter 7 Landscape and Visual Impact** and within the landscape and habitat management plan is presented in **Appendix G, Landscape and Habitat Management Plan**.

3.6 Operations and Maintenance

Operational infrastructure

3.6.1 A need for permanent operational facilities has been identified to support operational requirements:

- Lighting – proposed substation equipment would not be illuminated at night during normal operation. Floodlights would be installed but would only be used in the event of a fault during the hours of darkness; or during the over-run of planned works; or when sensor are activated as security lighting for night-time access. The access track would not be lit under normal operation.
- Permanent Access – as discussed in **Section 3.3** above, approximately 9km of access track would be established to allow for operational and maintenance personnel to access the Site.
- Security fencing – a 4 m high palisade fence would be installed around the proposed substation platform.
- Power will be provided to the substation and control building via two earthing transformers, connected to the SGTs within the substation. Potable water will be supplied from an off-platform borehole, with foul water being discharged to a septic tank, also sited off-platform.

Staff

3.6.2 Staff attendance would be on an ad hoc basis for maintenance and fault repairs only.

Maintenance Programme

3.6.3 Regular inspections of equipment would be undertaken to identify any deterioration of components, and these parts will be replaced where needed.

3.7 Decommissioning

3.7.1 It is anticipated that the Proposed Development will be operational in perpetuity. The individual components of the Proposed Development will be maintained or replaced as part of a regular maintenance and monitoring regime. Due to the nature of the Proposed Development, in that it is supporting the ongoing transmission of electricity in the wider area, it is treated as being of a permanent nature and as such decommissioning is not considered in this Voluntary EA Report.

3.8 Mitigation Proposals

3.8.1 Mitigation measures are measures which reduce the potential adverse effects of a proposal. There are two types of mitigation which are considered within this Voluntary EA Report:

- Embedded Mitigation: This relates to measures that are adopted as part of the design and are an inherent part of the Proposed Development (i.e. do not require additional action, including assessment to be taken). This also includes mitigation measures that would be implemented as a result of following construction good practice.
- Additional Mitigation: This relates to measures which have been identified during the assessment of effects in **Volume 1, Chapter 7 - 15** and would be implemented by SSEN Transmission in order to minimise the likely significant effects.

Embedded Mitigation

3.8.2 The layout and design of the Proposed Development has specifically considered the potential impacts on sensitive receptors and features of the surrounding environment. The iterative design process has sought to minimise the potential permanent effects of the Proposed Development on landscape, visual, protected species, habitats, trees, and noise receptors.

3.8.3 Design environmental embedded mitigation measures for the Proposed Development are listed in **Table 3-1** below.

Table 3-1 Design Environmental Embedded Mitigation Measures

Mitigation Reference	Mitigation Title	Description
EM1	Construction Hours of Work	Construction activities would in general be undertaken during daytime periods. Working hours are currently between approximately 07:00 to 19:00 March to September and 07:30 to 17:30 (or within daylight hours) October to February, Monday to Friday. Weekend working would consist of Saturdays only between 07:00 and 13:00 all year round. Working hour assumptions would be agreed with THC.
EM2	Lighting requirements	Proposed buildings would not be illuminated at night during normal operation. Floodlights would be installed but would only be used when operational or maintenance activities are being undertaken at the substation during the hours of darkness; or during the overrun of planned works; or when sensor activated as security lighting for night-time access. The access track would not be lit under normal operation. As far as possible, works should be carried out in daylight to minimise the risk of disturbing protected or notable nocturnal species. If any temporary artificial lighting is required for construction works, this should be strongly directional and directed only on to the works area, and be turned off when not required, to minimise light spill and adverse effects on nocturnal wildlife.
EM3	Delivery and sourcing of structures and materials.	Materials would be a mix of site won and locally sourced materials. Concrete would be delivered to site pre-mixed, where possible. Hardcore and earthworks materials for the construction of the Proposed Development would be a combination of site won, through cutting of the existing surface to construct the platforms and locally imported materials. Site won materials would be prioritised over imported materials to reduce the impact on local roads and the environment.
EM4	Screening of Proposed Development	All landscape and visual mitigation are embedded and covered in detail in **Chapter 7 Landscape and Visual** and **Appendix G**. Key embedded mitigation measures relevant to landscape and visual impacts include: • Siting of the substation infrastructure within the context of existing plantation forestry and adjacent to the existing substation, therefore limiting wider landscape fragmentation; • Native broadleaf woodland planting within the site boundary to screen and aid landscape integration; and • Peatland restoration within the site and creating transitions between the hard surfaces and woodland proposals.
EM5	Contractor's Environmental Management Team	An Environmental Manager would be appointed by the Principal Contractor for the duration of the construction phase. Their role would include coordinating input from specialists, reviewing incoming information from additional surveys, and coordinating any

Mitigation Reference	Mitigation Title	Description
		subsequent recommendations of mitigation measures and licensing requirements. The Environmental Manager would be responsible for continued review of incoming information and coordinating any additional specialist input to meet the Proposed Development's environmental obligations. An Environmental Clerk of Works (EnvCoW) would be appointed by the Principal Contractor to monitor, report and advise on the environmental compliance of the construction works. The EnvCoW would report to the Environmental Manager and Applicant. The EnvCoW would be competent, demonstrated by relevant experience and accreditations.
EM6	Construction Environmental Management Plan (CEMP), General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs).	Mitigation measures will be implemented through the use of a CEMP which will cover all the receptors associated with the Proposed Development. The adoption of the applicable GEMPs will reduce the probability of a pollution incident occurring and reduce the magnitude of any incident due to a combination of good site environmental management procedures, including minimising storage of soil volumes, soil management, staff training, availability of contingency equipment and emergency plans. The adoption of applicable SPPs will provide guidance and agreed procedures for the protection of species and their habitat during construction works. The relevant GEMPs can be found in **Appendix S.**
EM7	CTMP	A CTMP would operate throughout the duration of the construction programme. **Appendix K** contains a draft CTMP. A detailed CTMP including the following is expected to be conditioned and provided once a Principal Contractor is appointed: • Site and the entry / exit arrangements from public roads; • Traffic routeing plans – defining the routes to be taken by HGVs to the Site avoiding sensitive locations; • Construction traffic hours and delivery times; • Strategy for traffic management and measures for informing construction traffic of local access routes, road restrictions (statutory limits: width, height, axle loading and gross weight), timing restrictions (if applicable) and where access is prohibited; • Measures to protect the public highway (e.g. wheel wash facilities and regular inspection of road condition throughout Proposed Development construction); • Measures for the monitoring of the CTMP to ensure compliance from construction drivers and appropriate actions in the event of non-compliance; • Mechanism for responding to traffic management issues arising during the works (including concerns raised from the public) including a joint consultation approach with relevant road authorities; and • Staff Travel Plan designed to reduce the number of staff Car / LGV trips to and from Site.
EM8	Biodiversity Net Gain (BNG)	A BNG assessment has been undertaken for the Proposed Development. A BNG Report (**Appendix E**) and Landscape and Habitat Management Plan (**Appendix G**) have been prepared as part of the measures necessary to achieve SSEN's target BNG figures. The Landscape and Habitat Management Plan (LHMP) details specific requirements for enhancement measures (e.g. blanket bog restoration, woodland creation/enhancement).

Mitigation Reference	Mitigation Title	Description
EM9	Reinstatement	Following commissioning of the Proposed Development, all temporary construction areas would be reinstated. Reinstatement would form part of the contract obligations for the principal contractor and would include the removal of all temporary access tracks and work sites.
EM10	Access track alignment: habitat	The proposed access track makes use of and follows the existing access track, except where it passes through the outer north-western part of Corrimony RSPB Reserve. By this means habitat losses have been kept to a minimum.
EM11	Construction noise	Construction noise would be managed by embedded mitigation implemented as outlined within the CEMP and CTMP. This includes but is not limited to: • Avoiding high intensity activities outside of standard hours when in close proximity to NSRs, these activities should be planned for standard hours where practical; • Abiding by any agreed construction noise limits at nearby NSRs; • Avoidance of working in the more sensitive evening and night times where possible; • Ensuring that processes are in place to minimise noise before works begin and ensuring that BPM are being achieved throughout the construction programme; • Ensuring that modern plant is used, complying with the latest European noise emission requirements. Selection of inherently quiet plant where possible; • Hydraulic techniques for breaking to be used in preference to percussive techniques where practical; • Use of rotary bored rather than driven piling techniques where this is possible; • Off-site pre-fabrication where practical; • All plant and equipment being used for the works to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use; • All contractors to be made familiar with current legislation and the guidance in BS 5228 (Parts 1 and 2); • Loading and unloading of vehicles, dismantling of site equipment such as scaffolding or moving equipment or materials within the Site to be conducted in such a manner as to minimise noise generation; • Where possible, the noisiest items of plant would be located the furthest distance from the nearby NSRs. Plant known to emit noise strongly in one direction would, where practicable, be orientated so that the noise is directed away from NSRs; • Machines such as cranes that may be in intermittent use would be shut down between work periods or would be throttled down to a minimum. Machines would not be left running unnecessarily; • Appropriate routing of construction traffic on public roads and along access tracks, to minimise noise level increase; • Consultation with THC and local residents to advise of potential noisy works that are due to take place when they may be considered a cause of disturbance; and

Mitigation Reference	Mitigation Title	Description
		• Noise complaints should be monitored, reported to the contractor and immediately investigated. Regular communication with the local community throughout the construction period would also serve to publicise the works schedule, giving notification to residents regarding periods when higher levels of noise may occur during specific operations, and providing lines of communication where complaints can be addressed. A communication plan would be included in the Final CEMP as required. The appointed Principal Contractor would be encouraged to be a member of the 'Considerate Constructors Scheme'[6]. A Final CEMP would be prepared prior to works commencing, including setting out provisions to ensure that noise and vibration impacts relating to construction activities are minimised based on the measures outlined above. To assist in the preparation of the Final CEMP and CTMP, a detailed noise and vibration assessment would be undertaken, if required, once the Principal Contractor is appointed to identify specific mitigation measures for the Proposed Development (including construction traffic).

[6] Considerate Contractors Scheme, n.d. Available at: https://www.consideratecontructors.com/.

4 THE SITE SELECTION PROCESS

4.1 Introduction

4.1.1 This chapter describes the site selection process, including consideration of reasonable alternatives assessed by the Applicant. It discusses the main reasons for selecting the site for the Proposed Development, and the design and layout options that have been considered.

4.1.2 The need for the project and the work undertaken by SSEN Transmission to assess the strategic electricity transmission infrastructure requirements to identify the most appropriate, viable, and long term, enduring technical design solution are explained in **Volume 1, Chapter 2 Project Need and Strategy**.

4.1.3 The following stages are described in this Chapter, along with their respective outcomes:

- Development considerations and design solutions;
- The approach to the site selection process;
- A summary of the outcomes of each site selection stage including the alternative sites considered and consultation responses, where relevant; and
- How alternatives have been considered through the EA process.

4.2 Development Considerations

4.2.1 SSEN Transmission has obligations under section 9 of the Electricity Act 1989[2] to *'develop and maintain an efficient, co-ordinated and economical system of electricity transmission'.*

4.2.2 As a transmission licence holder under the 1989 Act, when formulating relevant proposals, the Applicant has a statutory duty under paragraph 3 of Schedule 9 to the 1989 Act to:

> *"have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest"; and*
>
> *"do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects".*

4.2.3 Furthermore, the requirements of the Construction (Design and Management) Regulations 2015[7] (CDM Regulations) require that the Proposed Development design aims to minimise hazards and reduce risks during construction.

4.2.4 Taking account of these obligations, SSEN Transmission has considered technical, economic and environmental factors in evaluating reasonable alternatives for the Proposed Development.

4.3 Approach to Site Selection

4.3.1 Internal guidance for the selection of new electricity transmission substation sites has been developed by SSEN Transmission. This guidance provides a framework to ensure environmental, technical, and economic considerations are consistently and robustly identified and appraised at each stage of the site selection process. In

[7] The Construction (Design and Management) Regulations 2015. Available at: http://www.legislation.gov.uk/uksi/2015/51/contents/made [Accessed July 2024].

line with the guidance, the principal site selection stages for the Proposed Development were:

- Stage 0: Strategic Options Assessment;
- Stage 1: Initial Site Screening;
- Stage 2: Detailed Site Selection; and
- Post Site Selection Activities: Consenting Process.

4.3.2 Each stage is an iterative process and involves an increasing level of detail and resolution, bringing cost, technical and environmental considerations together in a way which seeks to achieve the best balance at each stage.

4.3.3 Site location options were identified for the project following desk-based review and site walkovers, giving due consideration to the principles set out in the SSEN Transmission guidance.

4.3.4 The method of identifying a Preferred Site involved the following four key tasks:

- Identification of the baseline situation;
- Identification of feasible site options;
- Environmental, technical and economic comparative assessment of site options; and
- Identification of a Preferred Site to take to external consultation.

4.3.5 The detailed methodology for each stage noted above can be found in the guidance document. For Stage 2: Detailed Site Selection, all criteria within the respective categories (engineering, environmental and cost) were assigned RAG (Red, Amber, Green) ratings against a pre-defined list of descriptors and thresholds. The principle of the rating key is shown below in **Table 4-1 RAG Rating Key**.

Table 4-1 RAG Rating Key

Performance	Comparative Appraisal
Most preferred ↓ **Least preferred**	Low potential for the development to be constrained.
	Intermediate potential for the development to be constrained.
	High potential for the development to be constrained.

4.3.6 The substation site selection process also took into consideration the required connections that the Proposed Development will facilitate (as detailed in **Volume 1**, **Chapter 2 Project Need and Strategy, Section 2.5.2**). As such, the site selection process also considered the potential impact of the associated connections in line with SSEN Transmission's Routeing guidance document.

4.3.7 Following the identification of a Preferred Site, stakeholder consultation was undertaken (refer to **Section 6.2**) to present the site options and the rationale for, and approach to, the selection of the Preferred Site. Feedback from stakeholders (including statutory, non-statutory and the wider public) on the sites was reviewed and, where feasible, amendments or further analysis was undertaken to address concerns or alternatives put forward. Following the completion of the consultation process, a Preferred Site to be taken forward to the consenting process was selected.

4.4 Summary of Site Selection Process

4.4.1 Site selection was conducted to identify of the most appropriate location to site the Proposed Development. The site selection process has followed formal internal guidance to enable a consistent and rigorous selection process. The site selection process has three key stages, each increasing in detail and definition. Technical, environmental, and cost considerations are brought together in a way which seeks the best balance in accordance with SSEN Transmission's Network Operator's Licence and the Electricity Act 1989. This staged process leads to the identification of a finalised proposed substation site, which will be taken forward for planning.

4.5 Stage 0: Strategic Options Assessment

4.5.1 The initial stage is to establish the need for the project (as outlined in **Chapter 2**) and to select the preferred strategic option to deliver it.

4.5.2 A strategic options assessment has been undertaken by SSEN Transmission. The outcome of this strategic options assessment identified the following key requirements for the new site:

- Proximity to the existing Fasnakyle Substation site due to the need to facilitate a connection between the two substations. This was set nominally at 5 km for an effective Search Area;
- Large enough to accommodate the estimated size of development outlined in Volume 1, Chapter 3 Description of the Proposed Development;
- In areas which do not contain environmental designations and where SSEN Transmission can look to minimise impacts on local environmental receptors; and
- Additional capacity to accommodate future connections.

4.5.3 The outcome of the strategic options assessment informed the identification of 16 sites to take forward as part of the Stage 1: Initial Site Screening Stage.

4.6 Stage 1: Initial Site Screening

4.6.1 This stage identifies technically feasible, economically viable and environmentally acceptable site options within a defined area. The search area may vary depending on terrain, other infrastructure, designated areas and features and connection options. The aim is to identify several potential sites which are initially assessed for suitability and to identify which of the identified sites can be shortlisted for further assessment.

4.6.2 At this stage, 14 options were identified as part of site selection, all within a 2.5 km search area either side of the Beauly-Denny overhead line running north along the line to Corrimony and south to Dundreggan.

4.6.3 The 14 site options were evaluated in detail using a combination of multicriteria analysis, site walkovers and desktop study to identify options to progress to Stage 2 analysis. The locations are shown on **Figure 4-1** below.

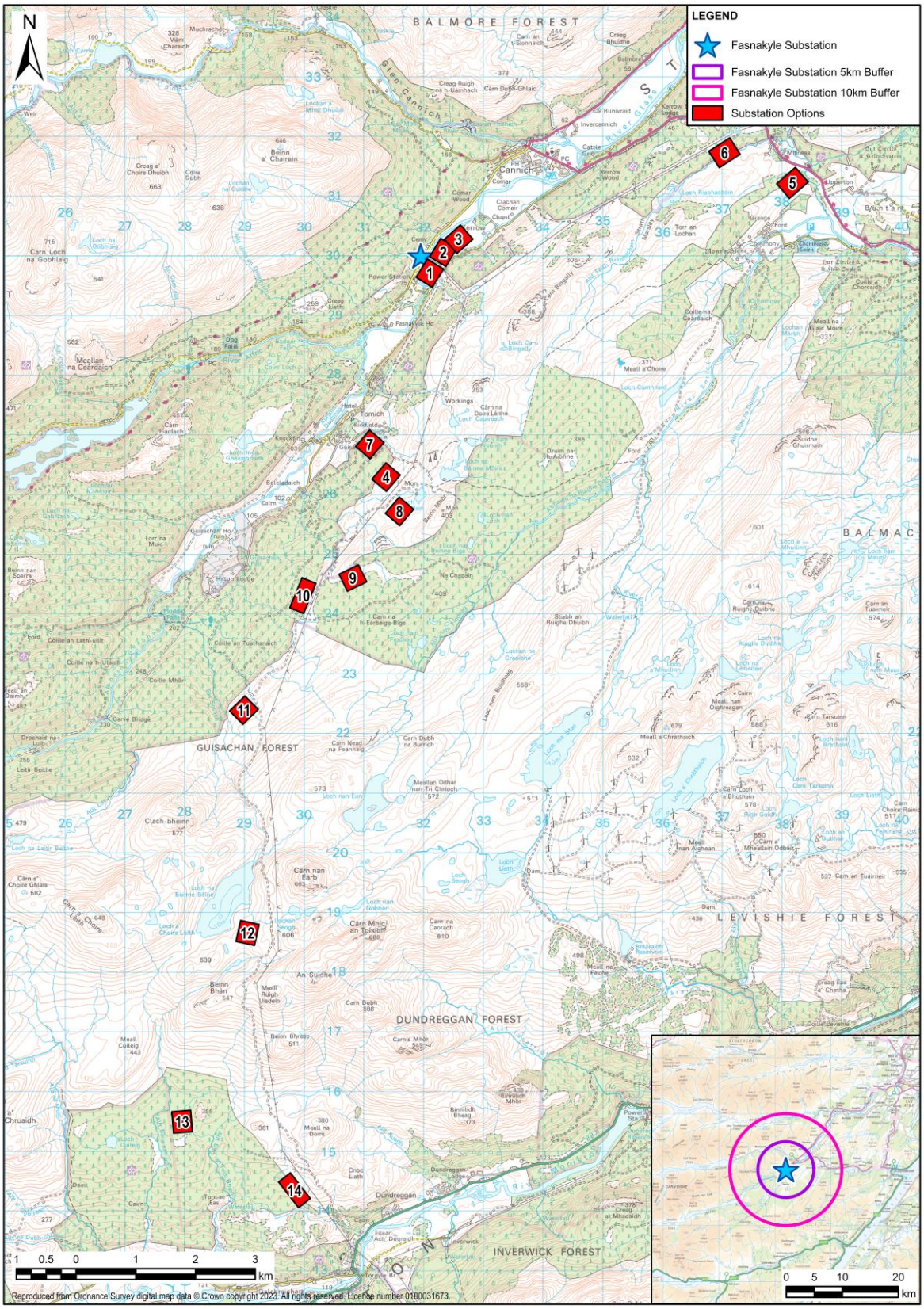


Figure 4-1 Stage 1 Site Locations

4.6.4 In line with SSEN Transmission's internal site selection guidance and using the Red, Amber, Green (RAG) matrix, 11 options were discounted from further assessment. This was based on proximity to designated areas and local settlements, visual impact, ecological constraints, and connectivity to existing and

future infrastructure around Bingally, when compared to the three shortlisted sites (Options 4, 9, and 10).

4.6.5 Following consultation from local residents and further assessments highlighting the constraints surrounding access to those sites progressed to Stage 2, a further review of areas to the northeast of the initial study areas was undertaken. A further two sites were identified (Site 15 and 16, as shown on **Figure 4-2**).

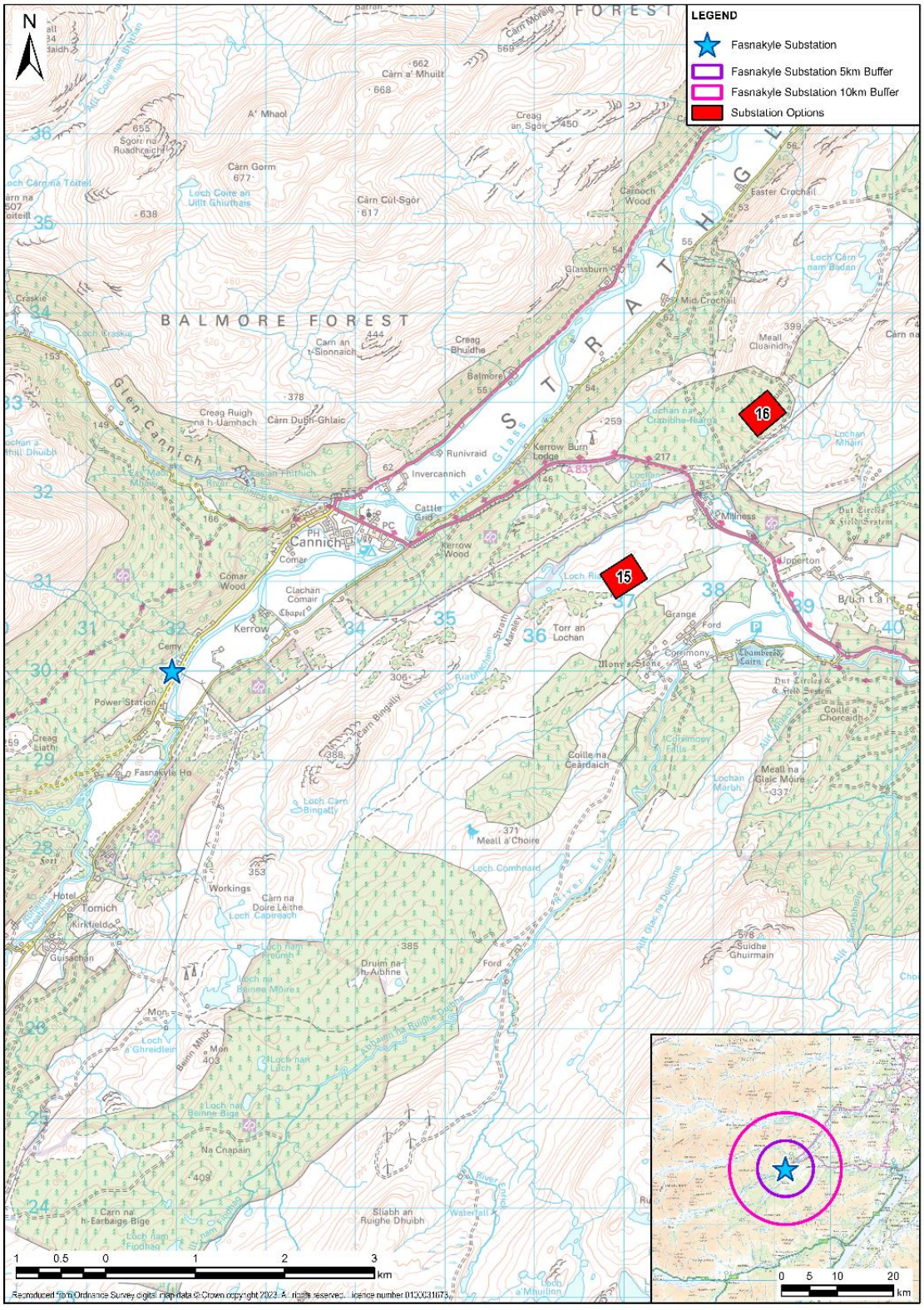


Figure 4-2 Additional Sites for Consideration in Stage 1

4.6.6 Following additional Stage 1 site selection assessment for Site 15 and 16, the final sites which were taken forward for Stage 2 Detail Site Selection were Sites 4, 9, 10 and 15.

Site Identification and Appraisal

4.6.7 The appraisal of site Options involved the systematic consideration against the topic areas noted in **Table 4-2** below.

Table 4-2 Topic Areas

Environmental	
National Heritage	Designations
	Protected Species
	Habitats
	Ornithology
	Hydrology / Geology
Cultural Heritage	Designations
	Cultural Heritage Assets
Landscape and Visual	Designations
	Landscape Character
	Visual Amenity
Land Use	Agriculture
	Woodland / Forestry
	Recreation
Planning	Policy
	Proposals
Technical	
Connectivity	Existing circuits / network
	Future development possibilities
	Interface with other SSE businesses (business separation)
	DNO connection
Footprint Requirements	Unique hazards Technology
	Adjacent land use
	Space availability
Hazards	Flooding Unique Hazards
	Existing utilities
Ground Conditions	Topography
	Geology
Environmental Conditions	Elevation
	Salt pollution (salinity)
	Flooding
	Carbon footprint

Environmental	
	SF6
Commercial	Capital Costs
	Operational Costs

4.7 Stage 2 Detailed Site Selection

4.7.1 The following part of this Chapter summarises the Site Options appraised during Stage 2 of the site selection process. A summary of the Site Options identified and appraised is set out, together with the main environmental and technical constraints identified during the appraisal. Confirmation of the preferred site (i.e. taken to consultation), a summary of consultation responses, and confirmation of the proposed site (i.e. following consultation is provided.

4.7.2 A total of four individual Site Options were shortlisted from Stage 1 and taken forward to Stage 2. These sites were taken forward as they were determined to be the most technically feasible, economically viable and environmentally acceptable Site Options.

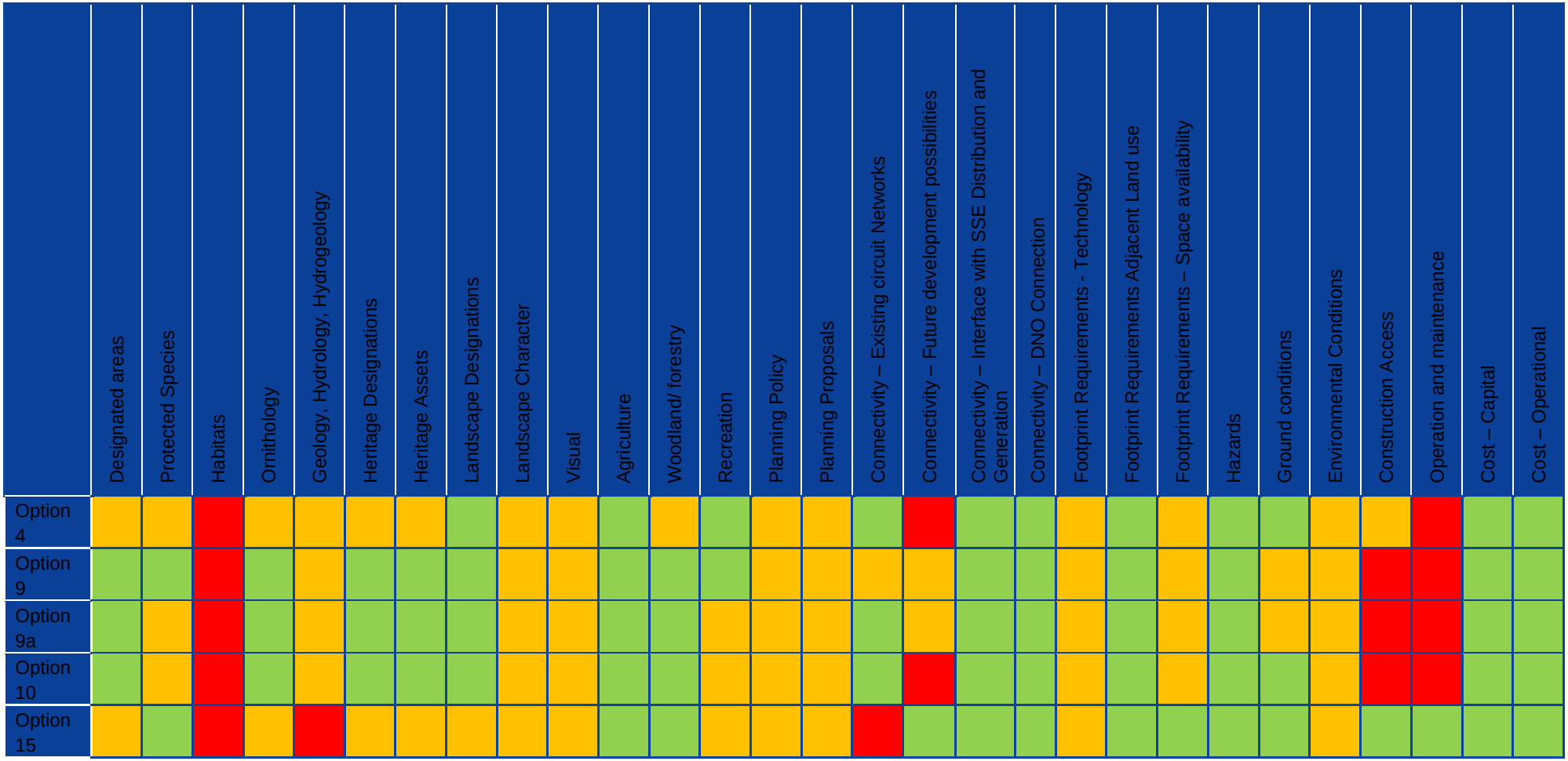
4.7.3 During Stage 2, Site 9 was micro-sited to create a new site (9a) which was additionally investigated during Stage 2. This was to provide an alternative Site 9 which was identified to be located within habitats that are suboptimal for protected species and within Class 1 Peat (Carbon Peatland Map 2016 definition - Nationally important carbon-rich soils, deep peat and priority peatland habitat). Site 9a is located in an area which avoids two areas of Class 1 Peat.

4.7.4 The following part of this section summarises the Options appraised during Stage 2. It includes a summary of the main environmental and engineering criteria used during the appraisal, an overview of factors in comparison with other sites, confirmation of the Preferred Site following the detailed analysis, a summary of consultation responses, and confirmation of the Proposed Site to be taken forward to the next stage – Post Site Selection Activities: Consenting Process.

Detailed Site Selection Appraisal Overview

4.7.5 **Table 4-2** below provides a summary of the key differentiating factors between each of the Options.

Table 4-2 Summary RAG



Summary of Comparative assessment

4.7.6 A summary of the five options is outlined below:

- Site 4: This site is located east of Tomich approximately 28 km southwest of Beauly and 40 km southwest of Inverness, on low grade grazing land (Classes 5.2 & 6.3). Tomich Holidays are located approximately 800 m northwest which contains multiple Listed Buildings. The river Abhainn Deabhag is located approximately 1.3 km to the west of the site.
- Site 9: This site is located approximately 2.3 km southeast of Tomich which is situated approximately 28 km southwest of Beauly and 40 km southwest of Inverness. The site is located on low grade grazing land (Class 6.3). The Highland Council Core Path IN05.03 exists approximately 170 m west of the site. Ancient Woodland Inventory Areas are located approximately 500 m from the site. Planning proposal 19/-5046/SCOP exists within the boundaries of Site 9 (c. 200 m east of the nearest turbine).
- Site 9a: This site is a re-sited version of Site 9, located approximately 200 m southwest of Site 9 and approximately 2.1 km southeast of Tomich which is situated approximately 28 km southwest of Beauly and 40 km southwest of Inverness. The site is located on low grade grazing land (Class 6.3). The Highland Council Core Path IN05.03 exists approximately 45 m west of the site. Ancient Woodland Inventory Areas are located from approximately 500 m from the site. Planning proposal 19/-5046/SCOP exists within the boundaries of Site 9a (c. 220 m east of the nearest turbine).
- Site 10: This site is located approximately 2.6 km southwest of Tomich which is situated approximately 28 km southwest of Beauly and 40 km southwest of Inverness. The site is located on low to moderate grade grazing land (Classes 5.1, 5.3 & 6.3). Highland Council Core Path IN05.03 exists within the southeast of the site. An unnamed watercourse exists within approximately 35 m to the northwest of the site.
- Site 15: This site is located approximately 20 km southwest of Beauly and 32 km southwest of Inverness. The site is located approximately 2.5 km east of Cannich. The A831 is to the north of the site. The site is located on low grade (Class 4.1) agricultural land. An area of Ancient Woodland (semi-natural origin) borders the site to the west. There is an unnamed watercourse approximately 30 m south of the site. The River Enrick is located approximately 350 m northwest, and 870 m southeast of the site and exhibits a Moderate Overall WFD status.

4.7.7 Environmental and engineering surveys have been undertaken for these options to supplement information gathered from desk-based assessments. The in total, five options were comparatively assessed against environmental, engineering, and cost factors.

<u>Preferred Site</u>

4.7.8 Option 9a was identified as the Site for the Proposed Development as it was identified as the best on balance for environmental and engineering factors. Option 9a is the least constrained by watercourses, recreational aspects, proximity to cultural heritage assets and Native Woodland.

4.7.9 Option 9a has the least significant gradient average across the site and is more centrally located for connections. After consideration of capital and operational costs, Option 9a is neutral between the options for cost.

4.7.10 Therefore, Option 9a was to be taken forward to consultation. **Section 4.8** outlines the responses received from stakeholders.

4.7.11 Following review of consultation responses, SSEN Transmission determined that, subject to further consideration of environmental constraints and sensitivities at the site selection stage, the Preferred Site (Site 9a) should be taken forward as the Proposed Site.

4.8 Reporting of Options Appraisal and Consultation

4.8.1 The appraisal of Options was set out in greater detail in the Consultation Document[8], published in March 2024. The Consultation Document provided a summary of project need, the option process that had been undertaken and a description of the Options appraised. The Consultation Document sought comments from stakeholders and members of the public on the option studies undertaken, and the rationale for, and approach to, the selection of the preferred site. The different stakeholder groups consulted are listed below:

- Statutory consultees;
- Non-statutory consultees;
- Community members and local organisations; and
- Landowners and occupiers.

4.8.2 Consultation events took place on the following dates:

- Stage 1 and Stage 2 Digital Consultation Document presented the key information alongside interactive maps and images, which was presented to statutory consultees in September 2023;
- One public in-person and one virtual consultation event (September 2023) provided on Stage 1 and 2 Site Selection public engagement;
- One public in-person meeting with Strathglass Community Council to present project updates (November 2023);
- Statutory Consultee meeting (November 2023) to discuss the Substation Site Selection process;
- A Consultation Booklet and a feedback form for public consultation (March 2023) was made available at in-person events;
- Posters and communications in community councils;
- Two rounds of Pre-Application Public consultation events (March and June 2024); and
- Design Workshop Pre-Application meeting with THC (July 2024).

4.8.3 A range of responses were received from stakeholders, including concerns about the potential environmental impacts, particularly on local biodiversity and impacts on the local community including visual and tourism impacts[9].

4.8.4 Some responses questioned the need for the Proposed Development. In many cases, those questioning the need have done so as the electricity this project will transmit is not all required by consumers in the north of Scotland. However, this project, which is part of a major upgrade of the electricity transmission network across Great Britain, is needed to unlock the north of Scotland's vast renewable electricity resources and transmit that power to demand centres. The renewable electricity that this project will transport will play a key role in meeting UK and Scottish Government renewable energy and climate change targets.

[8] SSEN (2024). Report on Consultation Fasnakyle Area Substation. Available at: https://www.ssen-transmission.co.uk/globalassets/projects/beauly-denny-400kv-upgrade-project-downloads/bdup---bingally/report-on-consultation---fasnakyle-area-substation.pdf (Accessed October 2024)

[9] SSEN (2024). Bingally Consultation Feedback Booklet. Available at: https://www.ssen-transmission.co.uk/globalassets/projects/beauly-denny-400kv-upgrade-project-downloads/bdup---bingally/bingally-pre-application-consultation-feedback-booklet.pdf (Accessed October 2024)

4.8.5 Comments received from stakeholders in response to the Consultation Document or following consultation events, were documented in the Report on Consultation, published in November 2023. The Report confirmed that the preferred Site was taken forward.

4.8.6 Further information on consultation undertaken is reported in **Volume 1, Chapter 6 Scope and Consultation**.

5 EA APPROACH AND METHODOLOGY

5.1 Introduction

5.1.1 As discussed within **Section 1.1.10**, this Voluntary EA report has been prepared based on the structure and assessment methodology of an EIA. This report, however, is a Voluntary EA Report and has not been carried out under the EIA Regulations.

5.1.2 This chapter sets out assessment methodology applied to the evaluation of effects, approach to mitigation and assessment of the significance of likely environmental effects. The chapter also outlines the structure of the Voluntary EA Report.

5.2 Identification of Baseline

5.2.1 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.

5.2.2 The baseline scenario was established through the following methods, where relevant:

- Site visits and surveys;
- Desk-based studies;
- Review of existing information;
- Modelling;
- Review of relevant national and local planning policies;
- Consultation with the relevant statutory consultees; and
- Identification of Sensitive Receptors.

5.3 Assessment of Likely Significant Environmental Effects

5.3.1 For the purposes of this Voluntary EA Report, the terms used in the assessment of effects are generally defined as follows:

- Temporary - where the effect occurs for a limited period of time and the change at a defined receptor can be reversed;
- Permanent - where the effect represents a long-lasting change at a defined receptor;
- Direct - where the effect is a direct result (or primary effect) of the Proposed Development;
- Indirect - a knock-on (or secondary) effect which occurs within or between environmental components, may include effects on the environment which are not a direct result of the Proposed Development, often occurring away from the proposals or as a result of a complex biological or chemical pathway;
- Cumulative - these effects may arise when more than one development of a similar scale and nature combine to create a potentially greater impact than would result from the Proposed Development alone (see also Table 5-2 below);
- Beneficial - an effect beneficial to one or more environmental receptors; and
- Adverse - a detrimental, or adverse, effect on one or more environmental receptors.

5.3.2 Where a more appropriate effect duration scale or definition of the above terms is applicable to a technical discipline this is clearly outlined within the technical chapters (refer to **Volume 1**, **Chapters 7-15**).

5.3.3 The result of the assessment is the determination of whether the likely effect of the Proposed Development on the receptor in the study area would be significant or not significant, and adverse or beneficial. Receptor should be defined as meaning the

factors of the natural and built environment, including people and communities, that may be significantly affected by the Proposed Development. Examples include cultural heritage, landscapes, populations, animal and plant species, and the water environment.

5.3.4 Where no published standards exist, the assessments presented in the technical chapters describe the professional judgements (assumptions and value systems) that underpin the attribution of significance. For certain technical topics, such as ecology, widely recognised published significance criteria and associated terminology have been applied and these are presented in the technical chapters and associated appendices where relevant.

5.3.5 The assessment of significance has considered the magnitude of change (from the baseline conditions), the sensitivity of the affected environment/receptors and (in terms of determining residual effects) the extent to which mitigation and enhancement will reduce or reverse adverse effects. In addition, further influences such as those listed below have been factored into the assessment using professional judgement:

- Likelihood of occurrence;
- Geographical extent;
- The value of the affected resource;
- Adherence of the proposals to legislation and planning policy; and
- Reversibility and duration of the effect.

5.3.6 The magnitude (scale) of change for each effect has been identified and predicted as a deviation from the established baseline conditions, for the construction and operational phases of the Proposed Development. The scale used high, medium, low, and negligible criteria, as seen in **Table 5-1**.

5.3.7 The sensitivity of the receptor / receiving environment to change has been determined using professional judgement, consideration of existing designations (such as Sites of Special Scientific Interest (SSSIs)) and quantifiable data, where possible. The scale used high, medium, low, and negligible criteria, as seen in **Table 5-1**.

5.3.8 Each effect has been assessed taking account of the predicted magnitude of change and the sensitivity of the receptor as shown in **Table 5-1** below to determine an overall significance.

Table 5-1 Matrix for Determining the Significance of Effects

		Sensitivity of Receptor/Receiving Environment to Change/Effect			
		High	**Medium**	**Low**	**Negligible**
Magnitude of Change/Effect	**High**	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

5.3.9 Major and moderate effects are considered to be significant. Minor and negligible effects are not considered significant.

5.3.10 Specific criteria have been adopted for certain technical assessments published by professional bodies (such as for landscape and visual impact assessment and the

assessment of ecological effects). Where applicable, these are provided in the respective technical chapters.

5.3.11 The characteristics of an effect will vary depending on the duration of the activity causing the effect, the sensitivity of the receptor and the resultant change. It is therefore necessary to assess whether the effect is temporary or permanent; beneficial and adverse, and indirect or direct. Effects that are temporary are usually reversible and generally confined to the construction period.

5.4 Cumulative Effects

5.4.1 There are two aspects to Cumulative Effects, defined as follows:

- In-combination effects: The combined effect of the Proposed Development together with other reasonably foreseeable developments (taking into consideration effects at the site preparation and earthworks, construction, and operational phases); and
- Effects Interactions: The combined or synergistic effects caused by the combination of a number of effects on a particular receptor (taking into consideration effects at the site preparation and earthworks, construction and operational phases), which may collectively cause a more significant effect than individually. A theoretical example is the culmination of disturbance from dust, noise, vibration, artificial light, human presence and visual intrusion on sensitive fauna (e.g. certain bat species) adjacent to a construction site.
- Cumulative effects have been assessed within each technical topic chapter and are discussed in **Volume 1**, **Chapter 15 Cumulative Effects**, of this Voluntary EA Report.

5.4.2 The potential for cumulative effects is considered in relation to other approved developments within the study area relevant to each particular issue. The basis for this is that only these developments have the potential to result in significant cumulative effects in combination with those arising from the Proposed Development. The final list of development to be considered in the cumulative effects assessment is frozen one month prior to publication to allow sufficient time to compile the Voluntary EA Report.

5.4.3 Consultation with THC in relation to the Voluntary EA resulted in a request for a number of developments to be considered for cumulative assessment; the details of which are provided in the following table. The location of each development is shown, indicatively, on **Figure 5-1 (Volume 2, Appendix A)**.

Table 5-2 Cumulative impacts with nearby proposed developments

Ref. (on Figure 5-1)	Development	Planning reference & description	Potential for cumulative impacts with the Proposed Development
1	Bingally OHL (referred to as 'proposed Bingally OHL')	ECU00005145 The installation of two new towers (including a temporary diversion requiring two temporary towers) to facilitate the tie-in of the existing Beauly-Denny overhead line into the proposed Bingally 400 kV substation.	Cumulative impacts associated with the construction and operation phase of the development due to their proximity to each other / interface. This development would occur simultaneously and within the Site.
2	Bingally to Fasnakyle UGC / OHL Grid connection	Not in Planning Portal The installation of a 132 kV UGC / OHL to connect the Proposed	Cumulative impacts associated with the construction and operation phase of the development due to their proximity to each other /

Ref. (on Figure 5-1)	Development	Planning reference & description	Potential for cumulative impacts with the Proposed Development
		Development to the existing Fasnakyle Substation.	interface. This development would occur within the Site.
3	Tomchrasky Wind Farm OHL connection	Not in Planning Portal The installation of an OHL connection from Tomchrasky Wind Farm to the Proposed Development.	Cumulative impacts associated with the construction and operation phase of the development due to their proximity to each other / interface. This development would occur simultaneously and within the Site.
4	Fiodhag Wind Farm	**19/05046/SCOP** ECU00001969 Construction of wind farm comprising of 46 turbines (height to blade tip 149.9 m). Status: Scoping Application Decision Issued (January 2020).	Cumulative impacts associated with the construction and operation phases of both developments due to their relative proximity.
5	Fasnakyle Energy Storage	**22/04640/SCRE** **23/04100/FUL** Battery energy storage facility comprising access track, compound of battery and electrical equipment, stores, meter building, water tank, ancillary structures, fencing, security cameras, landscaping bunds, new trees. Status: 'Screening Application EIA not Required' (November 2022). 23/04100/FUL submitted in August 2023 Under Consideration.	Cumulative impacts associated with the construction and operation phases of both developments due to their relative proximity.
6	Kerrow Farm BESS	**23/01025/SCRE** Battery energy storage system (BESS), multiple containerised storage units, associated infrastructure, control building, switch room, lights and associated works. Status: 'Screening Application EIA not required' (March 2023).	Cumulative impacts associated with the construction and operation phases of both developments due to their relative proximity.
7	Chrathaich Wind Farm	**21/02152/SCOP** 18 June 2021 - Scoping Application Decision Issued Erection and operation of a wind farm for a period of 30 years, comprising of 14 wind turbines with a maximum blade tip height of 149.9m, access tracks, borrow pits, substation, control building, and ancillary infrastructure. **ECU00004704** 23/03311/S36	Cumulative impacts associated with the construction and operation phases of both developments due to their relative proximity.

Ref. (on Figure 5-1)	Development	Planning reference & description	Potential for cumulative impacts with the Proposed Development
		7 October 2024 - Awaiting Decision, S36 Raise No Objection	
8	Erection of OHL	ECU Reference: **ECU00004569** (original application: **ECU00004792**) Erection of small two span spur and free standing pole for communications mast on the 33 kVA OHL by Benevean Dam, Tomich Status: 'Consented, EIA not required'	Cumulative impacts associated with the construction and operation phases of both developments due to their relative proximity.
9	Cnoc Farasd Wind Farm	ECU Reference: **ECU00005214** Status: 'Scoping Report submitted.' A wind farm consisting of 9 turbines up to 220m tip height, battery storage and associated infrastructure.	Cumulative impacts associated with the construction and operation phases of both developments due to their relative proximity.

5.4.4 The individual topic based technical chapters of this Voluntary EA Report consider the cumulative effects of the Proposed Development with other existing or future committed development that have the potential to result in significant cumulative effects in combination with those resulting from the Proposed Development.

5.5 Approach to Mitigation

5.5.1 Mitigation measures are identified to prevent, reduce or remedy any potentially significant adverse environmental effects identified, beyond that already taken into account as normal good practice (i.e. embedded mitigation for example, the CEMP). Such measures would be implemented during detailed design, construction and / or operation of the Proposed Development. Each technical chapter of this Voluntary EA Report details the measures recommended to mitigate identified likely significant effects, and a summary of the recommended mitigation measures is provided in **Volume 1, Chapter 16 Schedule of Environmental Mitigation**.

5.5.2 Any remaining predicted effects after taking into account available mitigation measures are known as 'residual effects'. This assessment takes into account the mitigation as specified in the Voluntary EA Report to identify the residual effects, based on the assumption that the identified mitigation is implemented. The residual predicted effects are discussed for each potential effect that has not been scoped out of the assessment and a significance level identified.

6 SCOPE AND CONSULTATION

6.1 Introduction

6.1.1 Scoping of potential likely significant effects having regard to the physical impacts of a project provides a basis for ensuring that the assessment of environmental effects is appropriately limited to issues of genuine potential significance. Consultation and engagement with stakeholders early in the process, with advice and input from key consultees being sought at the early stages of a project, helps greatly to inform decisions about the design and EA work for a project.

6.1.2 This chapter describes the pre-application consultation and the consultations that were undertaken to inform the local community of the Proposed Development. This chapter also includes a brief description of the environmental receptors of potential significance associated with the Proposed Development which are addressed in detail in the Voluntary EA Report, and those that are scoped out.

6.2 Consultation Undertaken

6.2.1 Consultation and engagement with stakeholders was undertaken early in the process, with advice and input from key consultees being sought at the early design stages of a project, to inform decisions about the Proposed Development.

6.2.2 A Pre-Application Consultation process is a requirement of section 35C of the Town and Country Planning (Scotland) Act 1997 (as amended) ('TCPA 1997') in accordance with requirements prescribed in the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 (as amended) (The DMRs).

6.2.3 Regulation 4 of the DMRs requires that pre-application consultation is carried out for all national and major developments. National and major development types are defined by the Town and Country Planning (Hierarchy of Development) (Scotland) Regulations 2009 ('the Hierarchy Regulations').

6.2.4 National developments are developments or classes described as such in NPF4. Development is major development if it meets the thresholds or criteria associated with different development types in the Schedule attached to the Hierarchy Regulations. All developments that are not national or major are classified as local developments and are not required to undergo pre-application consultation.

6.2.5 The proposal is classified within NPF4 as a 'National Development'.

6.2.6 The following sections outline consultation undertaken for the Proposed Development.

6.3 Consultation with the Local Community

6.3.1 SSEN Transmission has sought to maintain an open dialogue with local communities within vicinity of the Proposed Development throughout the evolution of the project. This has included engaging with local elected members such as Ward Councillors and Community Councils and engaging with landowners, residents and businesses that may be affected by the Proposed Development.

6.3.2 To present the approach to developing the Proposed Development, potential site options being considered and the site selection process, an initial in-person, non-statutory consultation took place on the 05 September 2024. This was followed by a supplementary virtual consultation event on Thursday 7 September 2023. In conjunction, a Consultation Document was issued to relevant stakeholders and published on the project webpage. The event was followed by a 6-week feedback

period from 5th September to 17 October 2023 to gain views and feedback from the local community and stakeholders. A Report on Consultation was published in March 2024 concluding the site selection process and presenting the chosen Site.

6.3.3 At the request of Strathglass Community Council, the project team attended a meeting with members of the community and representatives from the community council on Wednesday 22 November 2023, to present project updates since the consultation event and provide an opportunity for questions. Seven members of the community attended this meeting.

6.3.4 The first Pre-Application Consultation event was held on Wednesday 27 March 2024 with consultation materials published two weeks prior. This event provided the opportunity for members of the public, local stakeholders, and statutory authorities to view the Proposed Development during the detailed design stage, ask questions and provide feedback in person. The feedback period ran until 8 May 2023.

6.3.5 The second Pre-Application Consultation event was held on Tuesday 18 June 2024 to provide feedback to members of the public in respect of comments received as regards the proposed development from earlier consultation, and to provide further opportunity to view information about the project, ask questions and provide feedback in person.

6.3.6 **Table 6-1** details the feedback that was received during the consultation events in relation to seeking consent for the construction and operation of the Proposed Development. A total of 67 people attended the site selection consultation, 66 people attended the first Pre-Application Consultation event and 38 people attended the second Pre-Application Event. During the six-week feedback periods, 15 responses to the site selection event and 11 responses to the Pre-Application Consultation events were received and are also included in **Table 6-1**. Both event feedback and statutory stakeholder feedback received during the consultation process are included.

6.4 Consultation with Local Planning Authority and Stakeholders

6.4.1 SSEN Transmission have also sought to engage with the Local Planning Authority as well as relevant statutory and non-statutory stakeholders throughout the project's development.

6.4.2 A Site Selection Major Pre-Application Meeting was held on Thursday 21 November 2023 hosted by THC with relevant stakeholders in attendance. The issued response following the meeting highlighted key points to consider including:

- Potential Landscape and Visual impacts specifically from the public road through Tomich upland locations in the wider surrounding area, notably from Glen Affric National Scenic Area located to the west. The cumulative impacts of surrounding wind energy developments, including Corrimony and Bhlaraidh Wind Farms, should also be taken into consideration.
- The potential impact on peat. It was noted NPF4 Policy 5 - Soils confirms proposals will only be supported if they are designed and constructed in accordance with the mitigation hierarchy by first avoiding and then minimising the amount of disturbance and in a manner that protects soil from damage including from compaction and erosion, and that minimises soil sealing. A full peat assessment will be required to be undertaken to assess the extent of its presence.
- How the site will be accessed during the construction and operational phases. Estimated quantities, vehicle types and patterns of construction-related traffic

should be outlined. It was noted that construction traffic should not be routed through Tomich.

- The development's impact on core paths and public rights of way. The impact both during the construction and operational phases of the development should be assessed and mitigated and form the basis for an access management statement.

6.4.3 A Design Workshop Major Pre-Application Meeting was held on Thursday 25 July 2024 hosted by THC with relevant stakeholders in attendance. The issued response following the meeting highlighted key points to consider including:

- Further information to be provided on the comparison of excavated peat volumes between the site options to demonstrate the development is actively avoiding unnecessary impact on peat.
- Clarification of peat re-use and reinstatement options.
- Clarification on further methodologies to potentially minimise the impact on peat.
- Inclusion within the planning application of figures to show a graphical indication of the proposed development and wireframe/blocks overlaid on photos give further context to the likely position of the proposed development and/or visibility from the viewpoint locations.
- Confirmation no construction traffic is to be routed through Tomich.

6.4.4 Following consideration of the responses received, a further review of key design parameters was completed in order to address feedback received from the consultation.

6.4.5 **Table 6-1** summarises how the design for the Proposed Development was modified in response to the representations received.

Table 6-1 Consultation Feedback

Theme	Response
Landscape and visual amenity Concern about visual impact of substation in the wider Glen Affric area, potential light pollution and limited screening opportunities.	As part of the planning application, we are undertaking a Landscape and Visual Impact Assessment which will consider views of the Proposed Development from residential properties, other sensitive receptors and key local viewpoints with the aim of designing the proposed substation to minimise visual impacts. Design considerations will aim to reduce the platform level and building heights (reducing the potential for sky lining) and installing hard and soft landscaping to screen the site from key viewpoints. Building colours can have a significant role in reducing visual impact and will be agreed through the planning process. We will work with THC, the local Community Council and our Landscape Architects to ensure appropriate viewpoints are captured within the assessment and appropriate design mitigation is put forward in the planning application. During construction, lighting will be switched off when not in use and overnight. Construction working is likely to be during daytime periods only. During winter months when there is reduced daylight, lighting will be required to aid construction activity. A Light Management Plan will be adopted by our contractor to minimise any impacts associated with this. During operation, lighting would be installed at the substation but would only be used in the event of a fault during the hours of darkness, during the over-run of planned works, or when sensor activated as security lighting for nighttime access.
Access road Comments regarding the proposed access road location, length and width, and the environmental impact it will have; impact to public access for pedestrians, cyclists and horse riders.	We are aware of the community concerns regarding the potential impact of the proposed access road. The impact on core paths has also been highlighted by THC as part of this consultation. The environmental assessment will assess the impact on core paths and public rights of way and detail how access will be managed and maintained throughout construction and operation, including accommodating continued public access where possible. This assessment and reporting will be submitted as part of a planning application
Noise Comments on noise during construction period and substation in operation. Request for more information on noise mitigation measures.	We recognise that noise impacts during construction and operation of our assets can be a concern to residents. Potential noise impacts during construction and operation will be assessed within the environmental assessment. The proposed development would be required to meet noise limits set by THC. Appropriate mitigation would be implemented to ensure these limits are met at all noise sensitive receptors. The environmental assessment (which will include details on the background noise monitoring) will be publicly available when the application is submitted to THC.

Theme	Response
Local wildlife and habitats Concern for impact on Glen Affric wildlife and habitats including peat and bog habitats and red listed birds. Request for further information on how the project will enhance plant and animal life	Environmental assessment survey work is currently underway to establish the full extent of all habitats and protected species present on site. Where sensitive habitats and species are present we will seek to avoid them wherever possible, but where unavoidable, suitable mitigation measures will be identified and agreed in consultation with the Planning Authority and NatureScot. Where mitigation measures are agreed, these will be passed onto the contractor in the form of a Commitments Register, supported by our own Species Protection Plans and General Environmental Management Plans, to ensure that the measures are implemented as required. These measures will also form part of the CEMP for the project.
Traffic and construction Concerns raised about impact of construction traffic on the road network, including the A831 between Drumnadrochit and Cannich. Request for measures implemented to ensure traffic avoids Tomich.	We understand that with large construction projects, increased construction traffic and road condition will often cause concern. In developing the Bingally 400 kV substation proposals, traffic and road use is a primary consideration for us and our contractors. An outline CTMP is currently in development and will be included in the planning application. This will detail expected traffic volumes and will be utilised during detailed design to optimise vehicle routes to and from the site. We will liaise with the Local Planning Authority to ensure any traffic management and traffic calming measures are implemented for the duration of the works, and all permanent works required are installed.
Water soils and drainage Concern for drainage from the development and potential impact on local water courses. Local knowledge shared regarding local rivers, lochs and areas of risk. Request for information on how water pollution will be negated.	Full Drainage Impact and Flood Risk Assessments (DIA / FRA) are currently being undertaken and will be supported by a Drainage Strategy for the site, which will ensure that surface water run-off is controlled to a level equivalent to the current run-off rate of the site to ensure no worsening of the current situation. The Drainage Strategy, DIA and FRA will form part of the planning application submission and will be assessed by the Planning Authority and SEPA. A full Private Water Supply (PWS) survey has been undertaken of potentially affected PWS in proximity to the site to understand the full impact of the development and any mitigation measures required to preserve residents' PWS provision. Please also see our 'Protecting Private Water Supplies' handout for more information, available from our project webpage or at our consultation events.

Theme	Response
Holistic overview and connections Industrialisation of the area from current developments and future developments connecting into the substation.	A list of projects that hold contracts for Transmission Entry Capacity (TEC) with National Grid, the Electricity System Owner is available from their website: nationalgrideso.com/data-portal/transmission-entry-capacity-tec-register. We recognise that other future projects may connect into the substation and we know that residents are keen to understand the full extent of renewable developments being proposed in the area. The environmental assessment will include cumulative assessments considering other development projects in the area. Applications to connect to the transmission network in our license area are made to National Grid NESO and undergo a lengthy process of assessment before we begin to develop a network connection for those developments. We aim to be transparent about the renewable developments looking to connect to our network but are not permitted to disclose any details of these developments until they are in the public domain.
Information provision Feedback that information presented has not provided enough detail on project plans and impact on the community and environment	At the first Pre-Application Consultation event held in March 2024, we presented a high-level design in order to gather initial feedback from stakeholders and the community. This consultation event is the second and final statutory event where we are presenting our final substation design. We understand we were not able to answer all of your questions throughout this process as we undertake surveys and progress design. Further project updates and refinement at this stage have been provided within this booklet, and all final information and detail on the project will be provided within the planning application.
Tourism Concern for impact on tourism and visitors to the area.	For each project we develop, we conduct a Landscape and Visual Impact Assessment. In this assessment, we consider the likely significant effects on visual amenity arising from the proposed development during construction and operation, including from tourism and recreation sites, and where possible mitigate any potential impacts.

Theme	Response
Health Mental and physical health concerns for local community due to concern about the impact to the natural environment.	We are mindful of the uncertainty that our proposals can pose to communities that may be affected. Our process for project development seeks to identify proposed options that provide an appropriate balance across a variety of considerations and interests. We aim to do this as swiftly as possible in order to minimize the duration of uncertainty for affected communities. However, we are also committed to providing sufficient time and opportunity for all stakeholders to feed into each stage of our project development process, so that views can be understood and wherever possible incorporated into design decisions. This is a balance which has to be carefully managed. Our staff are cognisant of the impact and uncertainty that is being felt within communities and have taken a number of steps to minimise this for the people who may be affected. Some of the steps we have taken include working closely with communities at early stages, being transparent on decision making, having clear routes of communication with our stakeholders through multiple methods such as public exhibition events, community council meetings, website updates and via the Community Liaison Manager. Whilst we have committed to these steps, we understand that everyone may be impacted in different ways and would be interested in your views regarding any additional activities that would help to address your specific concerns. We remain committed to promoting developments that maintain or enhance economic opportunity and achieve the long-term ambitions to ensure a net zero future, while protecting and restoring the natural environment.
Community benefit opportunities Opportunities for Community Benefit Funding shared including provisions for cyclists and pedestrians in the area; re-purposing disused sites in the area; funding and compensation.	We'd like to thank residents for providing their feedback suggesting community benefits they would like to see implemented within the local area. While some of the suggestions are outside of the scope of the project to deliver, it is our intention to work with the community to further explore opportunities in this area. This feedback has been noted and when it is appropriate to do so, will be considered by our construction team, contractors and our community benefit fund team. SSEN Transmission is in the process of establishing a Community Benefit Fund which will enable us to work directly with local communities to support initiatives across northern Scotland and help fund projects that can leave a lasting, positive legacy. We appreciate that as the fund is being developed the information, we've been able to share has been limited. More information regarding the community benefit funding will be available later this year. In terms of broader community benefits, our Pathway to 2030 projects will boost the economy, support local jobs and businesses. Recent studies show our Pathway to 2030 programme could contribute over £6 billion to the UK's economy, support 20,000 jobs across the UK and benefit Scotland by around £2.5 billion, supporting 9,000 Scottish jobs.

6.5 Scope of this EA

6.5.1 The scope of the Voluntary EA has been informed by the Applicant's knowledge of the Site environmental constraints determined during:

- Site selection appraisal
- Environmental baseline surveys
- Pre-application consultation feedback
- Stakeholder consultations
- Screening Opinion
- An Informal scoping exercise completed by EA topic specialists based on professional judgement.

6.5.2 **Table 6-2** provides a summary of environmental topics scoped in and scoped out of this Voluntary EA Report.

6.5.3 This summary is not intended to be all-encompassing and contains only the main points which are considered to be of particular relevance to the context of the technical chapters (**Volume 1, Chapters 7-15** of this Voluntary EA Report). For example, points of note relating to certain guidance documents have not been included.

Table 6-2 Summary of Environmental Topics Scoped In / Out of the EA

Topic	Scoped in	Scoped Out
Landscape Character and Visual Impact	All aspects of LVIA in accordance with the good practice guidelines, with the exception of the issues scoped out.	Potential impacts on receptors including landscape designations that are located beyond 10 km or where forestry would screen views of the Proposed Development.
Ecology	Impacts of construction and operation on: • Habitats; • Changes to hydrological conditions which may affect vegetation and habitats; • Loss of habitats; • Creation of barriers to animal movements; • Temporary disturbance and / or displacement of species; and • Species mortality.	Potential impacts on the following ecological receptors: • The River Moriston Special Area of Conservation (SAC); • The Glen Affric National Nature Reserve (NNR); • Wildcat priority areas; • Great Crested Newt; • Fish; and • Ancient and / or Long Established Woodland.
Ornithology	Impacts of construction and operation on: • Loss of habitat; • Disturbance and / or displacement of birds during construction and / or operation; and • Bird species mortality.	Potential impacts on the following ornithological features: • The Glen Affric NNR; and • The loss of breeding sites for the general breeding bird assemblage.
Forestry	Forestry aspects to be assessed under LVIA and Ecology chapters: • Impacts on individual native forest edge trees; and • Impacts on commercial forestry.	• Individual EA has been scoped out.

Topic	Scoped in	Scoped Out
Cultural Heritage	Impacts of construction and operation on: • Physical impacts on previously unrecorded heritage assets; and • Setting of assets.	No cultural heritage issues have been scoped out at this stage.
Traffic, Transport and Access	A Traffic, Transport and Access assessment in accordance with the 2023 Institute of Environmental Assessment (IEMA) Guidelines[10].	Of the categories included in the 2023 IEMA Guidelines, it is proposed only Hazardous Loads are scoped out of the Voluntary EA Report.
Hydrology, Hydrogeology, Geology, Soils and Peat	Construction and operational impacts for all receptors, covering: • Soils; • Geology; • Land Contamination; • Hydrogeology; and • Surface water.	No receptors for hydrology, hydrogeology, geology, soils and Peat can be scoped out at this stage.
Noise and Vibration	Impacts of construction on nearby residential noise sensitive receptors.	Potential impacts from: • Construction and operational vibration; and • Operational road traffic noise.
Climate Change	Impacts and operation on: • Green House Gas; • Climate Change Risk; and • In-combination Climate Impact (ICCI) Assessment.	Potential impacts of sea level rise on the Proposed Development.
Land Use and Agriculture	None.	Potential impacts of land use and agriculture.
Socio-economic and Tourism	None.	Potential impacts on job opportunities.
Population and Human Health	None.	Potential impacts from: • Electric and Magnetic Fields (E); • Electromagnetic Interference (EMI); and • Air quality. An individual human health chapter has been scoped out – population and human health assessment is proposed to be covered by other EA chapters.
Material Assets and Waste	None.	An individual assessment of Material Assets and Waste is scoped out. Potential land contamination impacts will be addressed under the **Chapter 12 Hydrology, Hydrogeology, Geology, Soils and Peat.**

[10] IEMA, 2023. Environmental Assessment of Traffic Movement. Accessible at: https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement.

Topic	Scoped in	Scoped Out
Major Accidents and Disasters	None.	An individual Risk of Major Accidents and / or Disasters Assessment is scoped out. Major accidents and disaster plans are included within SSEN Group's Crisis Management and Continuity Plans.

6.6 Key Scoping Issues

6.6.1 In response to the Screening Opinion and consultation received through the ongoing stakeholder consultation exercise, issues relating to the following key environmental areas associated with the Proposed Development have been identified as the most relevant to the Proposed Development and are therefore discussed and addressed in the EA Report:

Landscape and Visual Impact

6.6.2 The potential effects of the Proposed Development on landscape and visual impact include:

- Temporary or permanent physical change to the landscape as a result of the construction and operation of the Proposed Development;
- Temporary or permanent change to perceptual aspects of the landscape character and / or landscape designations resulting from nearby construction or operational activities; and
- Temporary or permanent disruption or change to views experienced from receptors and at viewpoints as a result of visibility of construction activity, or the operation of the Proposed Development.

Ecology

6.6.3 The potential effects, some of which may be significant from the construction and operation of the Proposed Development on ecological features can be categorised as follows:

- Permanent habitat loss (e.g. the substation platform and permanent access tracks);
- Temporary habitat loss (e.g. temporary construction compounds and underground cables);
- Habitat degradation as a result of pollution incidents (e.g. fuel or oil spills);
- Permanent or temporary changes to hydrological conditions which may affect vegetation and habitats (e.g. indirect impacts on groundwater dependent terrestrial ecosystems (GWDTE));
- Loss of habitat supporting protected and / or notable species;
- Creation of barriers to animal movements (e.g. the construction of watercourse crossings could inhibit the movement of otter or fish);
- Temporary disturbance and / or displacement of species during construction;
- Disturbance and / or displacement of species during operation; and,
- Potential for direct mortality of species during construction (e.g. as a result of increased vehicular traffic, or as a result of pollution incident).

6.6.4 Recommendations to prevent negative impacts on important habitat features are provided in **Volume 3, Appendix G LHMP**.

Ornithology

6.6.5 The potential significant effects from the construction of the Proposed Development on ornithological features can be categorised as follows:

- Permanent or temporary loss of habitat which supports important species of birds;
- Temporary disturbance and / or displacement of species of birds during construction;
- Disturbance and / or displacement of species during operation; and,

- Potential for direct mortality of species during construction (e.g. as a result of increased vehicular traffic, or as a result of pollution incident).

Cultural Heritage

6.6.6 Due to the nature of the construction works proposed, the potential impacts resulting from construction of the Proposed Development could include:

- Permanent physical impacts on previously unrecorded heritage assets due to construction of the main site, access tracks and temporary construction works;
- Temporary impacts on the setting of heritage assets due to the introduction of elements such as machinery and lighting during construction; and
- The Proposed Development also has the potential to result in permanent impacts on the setting of assets due to the introduction of the new substation and associated infrastructure.

Traffic, Transport and Access

6.6.7 Potential impacts resulting from the construction and operation of the Proposed Development could include:

- Severance of communities due to major traffic route changes or changes in traffic flow;
- Fear and intimidation caused by the perceived vulnerability of people with regard to all moving objects;
- Increased road user and pedestrian safety risks; and
- Increased road vehicle user and passenger delay due to increased construction or operational traffic.

Hydrology, Hydrogeology, Geology, Soils and Peat

6.6.8 The proposed development has the potential to give rise to effects on soils, hydrogeology, or hydrology.

6.6.9 During the construction and operational phases, excavation, temporary storage, backfilling and compaction of soils during construction and maintenance works represents a potential effect for geology and soils.

6.6.10 Disturbance of potentially contaminated soils and perched groundwater and creation of new pathways allowing migration of such contaminants to reach sensitive receptors (including construction workers, site users and the water environment) during construction.

6.6.11 During the construction and operational phases there are potential adverse effects on the water environment (including PWS, GWDTEs and other uses of water). They include:

- Contamination of groundwater and surface water bodies from fuels, solvents, oil and other construction chemicals from chemical spillages through runoff to surface water bodies and unnamed watercourses or infiltration to groundwater aquifers;
- Contamination from high levels of fine sediment in runoff (including the potential wash out of fine sediment from temporary spoil heaps, embankments, and access tracks);
- The effects of diffuse urban pollutants in surface water runoff (that may contain metals, hydrocarbons, and inert solids etc.) entering the ground and moving towards a receptor; and

- Flood risk to the Site during construction and potential impacts outside the Site boundary.

6.6.12 The potential secondary receptors are GWDTEs and PWS (if close by to the works, including access roads)

6.6.13 Operational impacts on the water environment are expected to be minimal.

Noise and Vibration

6.6.14 Possible effects associated with construction and operation of the Proposed Development includes:

- Effects of preparatory works and construction noise (including traffic) on the surrounding area and on the nearest residential properties;
- Cumulative noise effects with other developments during preparatory works and construction of the substation; and
- Effects of noise from the maintenance works required during operation of the connection.

Climate Change

6.6.15 The Proposed Development could result in Greenhouse Gas (GHG) emissions to the environment, which contribute to climate change, and the effects of climate change on the Proposed Development and sensitive receptors nearby.

6.7 Scoped-out Issues

6.7.1 It is considered that the following topics are not required to be the subject of detailed EA work as it considered that they are not likely to give rise to significant effects.

6.7.2 Where not all aspects of a topic were scoped out, a chapter is included in the Voluntary EA Report with appropriate explanation provided. Individual elements scoped out of any particular topic are detailed in the relevant technical chapter.

Forestry

6.7.3 The majority of the potential impacts on Forestry would arise from the construction of the Proposed Development. Woodland within the Site comprises of commercial forestry which has been felled since 2016 and replanted. Compensatory planting required can be derived from the area of regenerating crops, with no risk of extended impacts from windthrow due to the crop stage.

6.7.4 Only individual native edge trees would be affected by the access track establishment during construction. The existing fragmented areas of native woodland would be retained and effects of the individual edge tree removal would not be significant for forestry.

6.7.5 Given the extent of impact on forestry is considered not significant during construction and operation of the Proposed Development, the potential effects of planting and woodland design for compensation are assessed appropriately within **Chapter 7 Landscape Character and Visual Impact**, and **Chapter 8 Ecology**.

Socioeconomics and Tourism

6.7.6 The Proposed Development may give rise to local employment opportunities during the construction phase, which in turn may give rise to individual cases of displacement impacts on local employers, i.e. the number of jobs accounted for by

the loss of jobs elsewhere in the locality. These impacts, should they occur, would be highly localised and on an individual basis. As such, they are not considered to be significant and will not be considered further within the Voluntary EA Report. The Proposed Development is not predicted to have any direct impacts on local social conditions.

6.7.7 There is potential for a permanent diversion of Core Path IN05.03 to maintain access during construction and operation of the Proposed Development. This will be discussed within the Access Strategy (included within the planning application as supporting information)Visual impacts on these receptors are analysed further in **Chapter 7 Landscape and Visual Impact** and **Chapter 8 Ecology**, and where required, mitigation measures are recommended to minimise potential impacts.

Population and Human Health

6.7.8 The Proposed Development has limited potential to give rise to some localised and temporary construction related air quality impact associated with dust (foundation construction and passage of vehicles along access tracks) and construction plant exhaust emissions. The occurrence and significance of dust generated by construction activities is extremely difficult to estimate and depends on meteorological and ground conditions at the time and location of earthworks however the nature of the construction activities is that it will be relatively low impact. The potential for nuisance effects on residential or recreational amenity will be limited and will be strictly controlled in accordance with a detailed CEMP. There is no potential for significant operational air quality impacts.

6.7.9 Electromagnetic fields (EMF) arise from electric charges. To prevent known effects of EMFs on health, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) developed health protection guidelines in 1998 for both public and occupational exposure. In the UK, the National Institute for Health Protection's (NIHP) Centre for Radiation, Chemical and Environmental Hazards (CRCE) has set out guidelines for exposure to EMFs. In March 2004, the UK adopted the ICNIRP 1998 guidelines on the advice of the National Radiological Protection Board (now part of NIHP CRCE). These guidelines set conservative exposure levels for the public to electric and magnetic fields, and they are endorsed by the World Health Organisation and the UK Government. The NIHP CRCE keeps under review emerging scientific research and/or studies that may link EMF exposure with health problems and provides advice to the Department of Health and Social Care on the possible need for introducing further precautionary measures.

6.7.10 All new transmission and related infrastructure is required to comply with the government policy of adopting the guidelines of the ICNIRP on exposure to EMF. The Applicant ensures at all times that it complies with relevant legislation, which in turn is based on the advice of the UK Government's independent scientific advisers, to ensure the appropriate level of protection for the public from these fields. In determining the level of impact, SSEN Transmission closely observe these independent guidelines which in conjunction with a Code of Practice, published in 2012 by industry and the Department for Energy and Climate Change (now part of the Department for Energy Security and Net Zero), sets out all the practical details needed to apply the exposure limits for substations.

6.7.11 EMF resulting from the Proposed Development are compliant with National Policy and Industry Standards as specified with the Energy Network Association Code of Practice and Electricity Safety, Quality and Continuity Regulations 2002. Consequently, SSEN Transmission can demonstrate that levels of exposure are

within the limits set within these standards, within the exposure guidelines as specified in the Code of Practice on compliance, and with the policy on phasing as specified in the Code of Practice on optimal phasing, no significant effects are likely to result from radiation and EMFs.

6.7.12 Corona discharge is unlikely to cause significant interference to very high frequency reception (i.e. FM radio or digital radio and television which operate in the ultra-high frequency range). The Proposed Development is located in a predominantly rural area, with the closest residential properties located approximately 1.2 km west from the Proposed Development in Tomich, and no sensitive receptors have been identified within 200 m of the Proposed Development.

6.7.13 Overall, it is not anticipated the Proposed Development would cause significant unsafe exposure to EMF or interference to very high frequency reception for any receptors. Other environmental factors that impact upon human health will be addressed within **Chapter 7 Landscape Character and Visual Impact**, **Chapter 11 Traffic and Transport, Chapter 12 Hydrology, Hydrogeology, Geology, Soils and Peat**, **Chapter 13 Noise and Vibration** and **Chapter 14 Climate Change**.

Material Assets and Waste

6.7.14 During construction of the Proposed Development, the management of excavated surplus material would be required. It is anticipated that excavated material could be utilised around the substation Site to reduce the amount of road haulage to and from the Proposed Development. However, it is noted that this assumption is to be agreed between SSEN Transmission and the landowners prior to carrying out.

6.7.15 Associated impacts of excavation of soils and the redistribution across the proposed substation site includes potential land contamination, which will be assessed further in **Chapter 12 Hydrology, Hydrogeology, Geology, Soils and Peat**.

Major Accidents and Disasters

6.7.16 The potential for effects related to accidents and disasters are likely to be limited to arising through unplanned power outages, due to extreme weather or structural damage. Crisis management and continuity plans are in place across the SSEN Group. These are tested regularly and are designed for the management of, and recovery from, significant energy infrastructure failure events. Where there are material changes in infrastructure (or the management of it) additional plans are developed.

6.7.17 Furthermore, the Principal Designer would be required to fully assess risks and mitigate these risks as appropriate during the construction stage under the requirements of the Construction (Design and Management) Regulations (2015)[11]. As assessment of the potential significant effects on the vulnerability of the Proposed Development will be ongoing as discussed, EA work within this report is not required.

[11]Legislation.gov.uk (2015) The Construction (Design and Management) Regulations (2015) [online]. Available at: The Construction (Design and Management) Regulations 2015 (legislation.gov.uk)