

North Argyll 275 kV Upgrade: Crarae Substation Environmental Appraisal

November 2022



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GLOSSARY OF TERMS AND ABBREVIATIONS

Term/Abbreviation	Expanded Term/Definition
ABC	Argyll and Bute Council
ACoW	Archaeological Clerk of Works
AOD	Above Ordnance Datum
APQ	Area of Panoramic Quality
Attenuation	The reduction of the impact or effect of something. E.g, Noise attenuation comprises the reduction in level of a sound between the source and a receiver due to any combination of effects including distance, atmospheric absorption, acoustic screening, the presence of a building façade, etc.
Backclothing	Where elements (such as a proposed development) are seen below the skyline/horizon, and against a backdrop, thereby making them less prominent (potentially).
BAP	Biodiversity Action Plan
BGS	British Geological Survey
Background Noise	The noise level rarely fallen below in any given location over any given time period, often classed according to day time, evening or night time periods. The LA90 indices is often used to represent the background noise level.
BNG	Biodiversity Net Gain
BOCC	Birds of Conservation Concern
CEMP	Construction Environmental Management Plan
CIRIA	Construction Industry Research and Information Association
CLG	Community Liaison Group
CTMP	Construction Traffic Management Plan
Cumulative Effects	Effects arising from the additional or combination of developments which are in construction, have been consented or are reasonably foreseeable. May be experienced in combination, concurrently or sequentially.
dB	Decibel. A unit of level derived from the logarithm of the ratio between a value and a reference value typically used to describe acoustic quantities. The scale used is the decibel (dB) scale which extends from 0 to 140 decibels corresponding to the intensity of the sound level.
dB(A)	A-weighted decibel. A frequency weighting applied to noise levels to mimic the human ear's response to sound.
Designated Landscape	Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.
EA	Environmental Appraisal
Electricity Work EIA Regulations	Electricity Work (Environmental Impact Assessment) (Scotland) Regulations 2017
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EIA Report	Environmental Impact Assessment Report
ENVFOR	The Scottish Government's Environment and Forestry Department

Term/Abbreviation	Expanded Term/Definition
FCS	Forestry Commission Scotland
FoS	Factors of Safety
GIS mapping	Geographical Information System
GIS	Gas Insulated Switchgear
GLVIA	Guidelines for Landscape and Visual Impact Assessment, Third Edition, published jointly by the Landscape Institute and Institute of Environmental Management and Assessment.
GSP	Grid Supply Point
GWDTE	Groundwater Dependent Terrestrial Ecosystem
Ha	Hectare
HER	Historic Environmental Record
Heritage Asset	Those parts of the historic environment that have significance and are worthy of consideration in planning matters are referred to as heritage assets. Heritage assets include standing, buried or submerged remains, buildings, parks and gardens and areas, sites and landscapes including designated sites and those identified by the local planning authority. World Heritage Sites, Scheduled Monuments, Listed Buildings, protected wreck sites, Inventory Gardens and Designed Landscapes, Inventory Battlefields and Conservation Areas are all heritage assets
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
Hz	Hertz. Standard unit of measurement used for measuring frequency. Sound frequency refers to how quickly the air vibrates, or how close the sound waves are to each other (in cycles per second, or Hertz (Hz)).
IBA	Important Bird Area
IEMA	Institute of Environmental Management and Assessment
km	Kilometre
kV	Kilovolt
Landscape	Human perception of the land conditioned by knowledge and identity with a place
Landscape Character Type	A landscape type will have broadly similar patterns of geology, landform, soils, vegetation land use, settlement and field pattern discernible in maps and field survey records
Landscape Sensitivity (to a specific type of change)	The extent to which a landscape can accept change of a particular type and scale.
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LGV	Light Goods Vehicles
m	Metre
MW	Megawatt

Term/Abbreviation	Expanded Term/Definition
Magnitude (of change)	A term that combines judgements about the size and scale of the effect, the extent of the area over which occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Methodology	The specific approach and techniques used for a given study.
Mitigation Measures	Measures including any process, activity or design process to avoid, reduce, remedy or compensate for adverse impacts of a development.
Mph	Miles per hour
NHZ	Natural Heritage Zone
NS	Nature Scot
NETS SQSS	National Electricity Transmission System Security and Quality of Supply Standard
NGR	National Grid Reference
NS	NatureScot
OHL	Overhead Line
PMP	Peat Management Plan
RAMSAR Site	Wetlands of International Importance designated under the Ramsar Convention.
Residual Effects	Effect of development after mitigation/embedded mitigation or design proposals are taken into account
RLB Site	Redline boundary site; the redline boundary site for the purpose of this planning application, comprising the Substation Site and additional land take to accommodate ancillary works
SAC	Special Area of Conservation
SEPA	Scottish Environment Protection Agency
Setting	Setting is more than the immediate surroundings of a site or building, and may be related to the function or use of a place, or how it was intended to fit into the landscape of townscape, the view from it or how it is seen from areas round about, or areas that are important to the protection of the place, site or building (SPP 2014).
SSEN Transmission	Scottish and Southern Electricity Networks Transmission plc
Significance	A measure of importance or gravity of the environmental effect defined by significance criteria specific to the environmental topic
Skylining	The proposed development (or aspects of it) would be seen on the skyline. The contrast between the proposed development and the sky would generally render the proposed development more visible/prominent in views than if it were backclothed by topography.
SM	Scheduled Monument
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
Substation Platform	The level platform to be delivered within the Substation Site.
Substation Site	The Crarae Substation Site

Term/Abbreviation	Expanded Term/Definition
SUDS	Sustainable Urban Drainage System
Town and Country Planning EIA Regulations	Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017
Visual Amenity	A particular composition of landscape elements that contribute to a view, or views.
Visualisation	A computer simulation, photomontage or other techniques illustrating the predicted appearance of a development from a known location
VP	View Point
Wireline	A computer-generated line drawing of the DTM (digital terrain model) and the proposed development from a known location.
WoSAS	West of Scotland Archaeology Service
WLA	Wild Land Area
ZTV	Zone of Theoretical Visibility. A map, usually digitally produced, showing areas of land within which a development is theoretically visible. Also known as a Viewshed.

1. INTRODUCTION AND SCOPE

1.1 Background to the Project

This Environmental Appraisal Report (“EA Report”) has been prepared by Environmental Resources Management (ERM) 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 transmission system in the north of Scotland and remote islands. In this EA Report, the Applicant and SSEN Transmission are used interchangeably unless the context requires otherwise,

The Applicant has a statutory duty under Schedule 9 of the Electricity Act 1989 to develop and maintain an efficient co-ordinated and economical electrical transmission system in its licence area.

The Applicant proposes to construct a new 275 kV electricity substation, with associated overhead line works in the vicinity of the existing Crarae substation (located at Grid Ref 196140 697498). The new substation will connect into the recently completed overhead line between Inveraray and Crossaig which is capable of operation at 275kV but at present is routed into the existing substation, so the overhead line requires to be realigned to connect into the new substation. The substation and overhead line will support the export of renewable energy generated within the Argyll area.

1.2 Consent Requirements

The Applicant is seeking consent from Argyll and Bute Council under the Town and Country Planning (Scotland) Act 1997 (as amended) for construction and operation of the substation (hereby referred to as ‘the Proposed Development’).

The size of the grid transformers falls under the National Planning Framework 3 Annex 3 description of High Voltage Electricity Transmission Network and is therefore categorised as ‘National Development’ under the Town and Country Planning (Hierarchy of Development) (Scotland) Regulations 2009 (The Hierarchy Regulations).

The works to the overhead line (hereby referred to as ‘the Associated Development’) which comprise the construction of three steel lattice towers to support overhead line conductors will be the subject of an application to the Scottish Ministers under section 37 application of the Electricity Act 1989.

1.3 The Project

Although the Proposed Development and the Associated Development are being submitted under separate consenting regimes, both developments are integral to the development at Crarae and will therefore hereby be collectively referred to as ‘the Project’.

The location and layout of the Project is shown on **Figure 1.1**.

The Proposed Development, which is the subject of an application under the Town and Country Planning Act comprises:

- A substation platform in the region of 1.43 ha;
- A transformer building, control building and Gas Insulated (GIS)¹ Switchgear substation building;
- A temporary works area (TWA) compound adjacent to the Substation Site, of approximately 0.67 ha;
- Access to the substation platform over an existing forestry access track, approximately 4.7 km in length to the new access track being constructed for the new substation referred to below;
- Construction of a new permanent access track from the existing forestry track to the substation, approximately 350 m long; and

¹ Within a GIS, live electrical equipment uses special gas as the insulating medium, usually sulphur hexafluoride (SF₆) gas. The live electrical equipment is enclosed in a building, rather than exposed. The use of gas reduced the clearance distances required between electrical equipment, resulting in a small footprint, when compared to using an Air Insulated Switchgear (AIS) solution.

- Landscape planting to screen the Proposed Development and provide biodiversity enhancement.

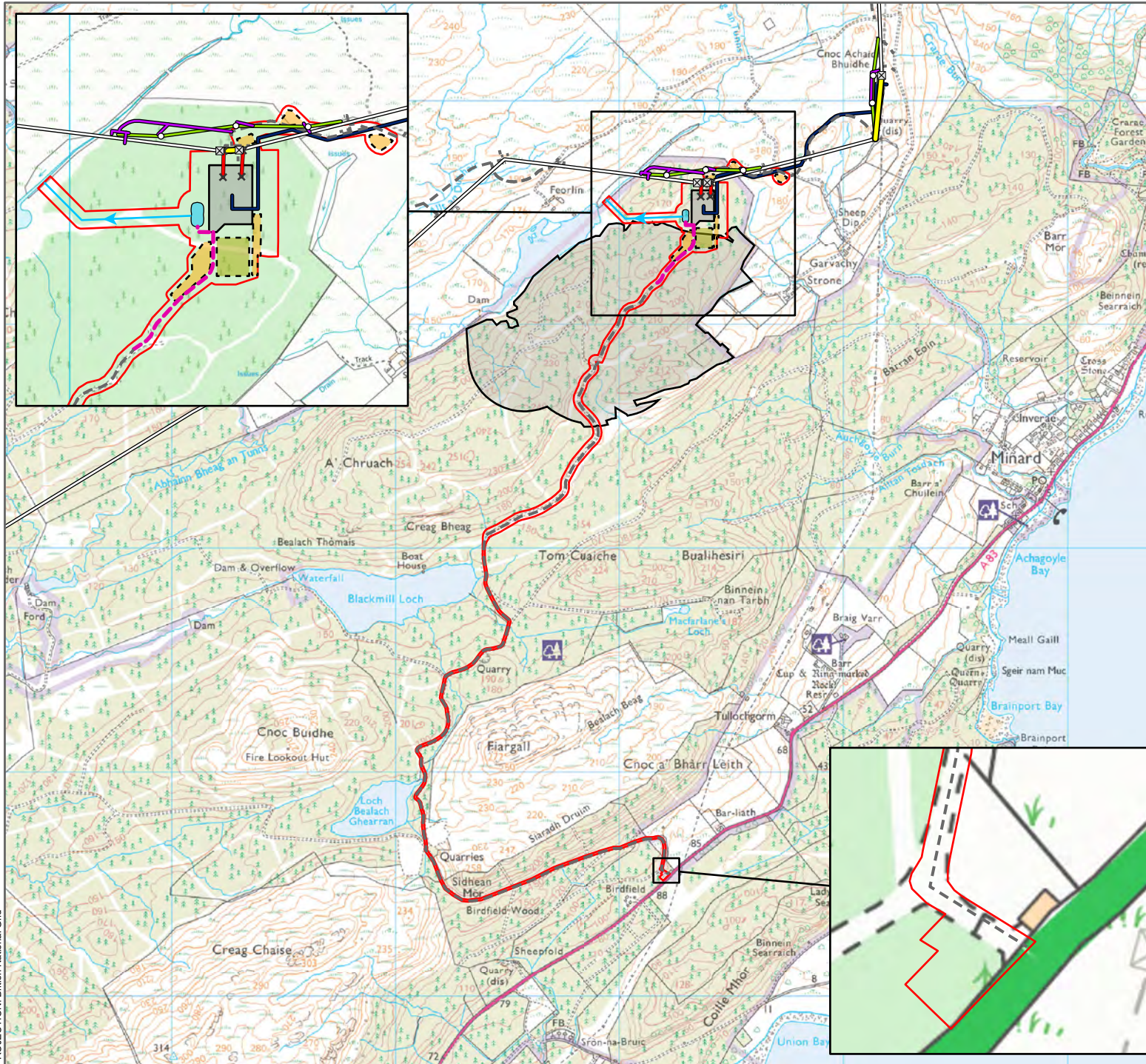
Components of the Associated Development subject to Section 37 of the Electricity Act 1989:

- Construction of two new terminal lattice steel towers to support the connection into the new 275 kV Crarae substation including new downlead terminations;
- Construction of one angle lattice steel tower to replace the existing terminal tower at the existing 132 kV Crarae substation including realignment of the OHL;
- Five temporary towers or masts and associated temporary OHL diversions to facilitate the build of the new towers to avoid long network outages;
- Approximately 622 m of temporary access tracks providing access to the existing Inveraray to Crossaig overhead line (OHL);
- Dismantling of one lattice steel tower located between the two new terminal towers at the new 275 kV Crarae substation.

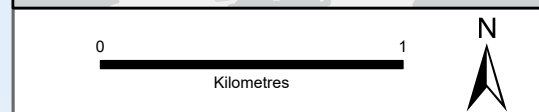
The existing terminal tower at the existing 132 kV substation will also be removed however this is located within the existing ownership boundary.

In addition, the proposed 33 kV interconnector cable as seen in **Figure 1.1** would be undergrounded to facilitate a connection back to the windfarm generation owner and can be carried out under Permitted Development rights.

Further details on the Project Description can be found in **Chapter 2: Project Description**.



- Existing Inveraray to Crossaig Overhead Line
- - - Existing Access Track
- Proposed Development:**
- Proposed Permanent Access Track
- SUDs Outfall Pipeline
- Town & Country Planning Boundary
- Proposed Substation Layout
- SUDs Pond
- Proposed Substation Temporary Works Area
- Temporary Peat Storage Area
- Potential Area for Peat Restoration
- Permitted Development:**
- 33kV Interconnector Cable Route
- Associated Development:**
- ⊗ Proposed Tower Location
- Proposed Temporary Tower Location
- Proposed OHL Alignment
- ✂ OHL Downloads
- Proposed Temporary OHL Bypass
- Temporary Access Track



SCALE: See Scale Bar	VERSION: A03
SIZE: A4	DRAWN: DN
PROJECT: 0607366	CHECKED: WB
DATE: 18/11/2022	APPROVED: SW

Figure 1.1
Crarae Substation Red Line
Boundary



PROJECTION: British National Grid

1.4 Environmental Appraisal

The Applicant recognises that the Project has the potential for effects on the environment. As such, a number of environmental studies have been carried out, the results of which are detailed in this Environmental Appraisal (EA).

This document considers the potential for environmental effects associated with the Proposed Development and the Associated Development both separately and in conjunction to accompany their respective planning applications. Separate planning statements have been prepared that consider the Proposed Development and the Associated Development in the context of current planning policy.

1.4.1 Screening Requests

A request for an EIA Screening Opinion for the Proposed Development was submitted to Argyll and Bute Council (ABC) in August 2021 (see Annex B). ABC provided a Screening Opinion for the Proposed Development on the 22nd March 2022. ABC confirmed that an EIA is not required in this instance however stated that due to the scale and nature of the development, and the quality and sensitivity of its landscape setting, an EA should be submitted with any planning application. They advised that the EA should address the following matters:

- Landscape and Visual Amenity;
- Bare land Zone of Theoretical Visibility (ZTV);
- Land Use designations material to the proposal;
- Ecology and Nature Conservation surveys;
- Ornithology surveys;
- Cultural Heritage;
- Forestry;
- Proposed landscaping and screening to substation compound;
- Design of SuDS proposals to promote biodiversity;
- Traffic and Transport;
- Hydrology, Hydrogeology and Soils;
- Amenity and Health;
- Recreation and Tourism;
- A design and access statement; and
- Construction methodology and waste plan to include noise assessment in respect of construction methodology should any protected species or sensitive receptors be identified within the locality of the proposal that could be adversely impacted by construction noise.

A request for an EIA Screening Opinion for the Associated Development was submitted to the Energy Consent Unit (ECU) in August 2021. In February 2022, further information was requested by the ECU regarding the Applicant's Screening Request for the Project. Additional information regarding the Project's characteristics was provided in February 2022, which included indicative locations of the proposed substation and temporary works area, access tracks and indicative section of proposed OHL diversion. Figures detailing proposed works in relation to ecological designations were also provided as part of the additional information, along with details of cumulative developments to be assessed within the EA.

It was confirmed on the 10th May 2022 that the Associated Development is unlikely to result in effects on the environment which are significant enough to require the submission of an EIA Report.

1.5 Environmental Appraisal Methodology

This EA considers the potential for environmental effects associated with the construction and operation of the Project follows the recommendations of the local planning authorities and statutory authorities regarding surveys and mitigation.

Whilst not a formal Environmental Impact Assessment (EIA) in accordance with EIA Regulations, this appraisal has followed a similar approach of identifying the sensitivity of the receiving environment, assessing the magnitude of change or effect that the Project may have and the subsequent significance of this effect or change on the receiving environment. An illustration of the appraisal matrix is shown in **Table 1.1**.

Sensitivity may be physical, biological, cultural or human and refers to the capacity to accommodate a change. Where the resource is physical (for example, a water body) its quality, sensitivity to change and importance (on a local, national and international scale) are considered. Where the resource/receptor is biological or cultural (for example, a bird population), its importance (for example, its local, regional, national or international importance) and its sensitivity to the specific type of impact are considered. Where the receptor is human, the vulnerability of the individual, community or wider societal group is considered.

Magnitude describes the degree of change that the impact is likely to impart upon the resource/receptor and is a function of the following impact characteristics:

- Extent;
- Duration;
- Scale;
- Frequency; and
- Likelihood (for unplanned events only).

Table 1.1 Environmental Appraisal Matrix²

		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

1.6 Mitigation

The findings of the technical environmental studies have been used to inform the design of the project, and hence achieve a 'best fit' with the environment. This approach has been adopted in respect of the Project; where potentially significant effects have been identified, their avoidance or minimisation has been prioritised at the design stage. This is referred to within this EA Report as 'embedded mitigation', i.e., mitigation that is embedded within the project design, and includes best practice as well as design features.

In line with the mitigation hierarchy identified in the updated PAN 1/2013 (V1.0, 2017)³, the strategy of avoidance, reduction, and remediation is a hierarchical one, which seeks to:

- First to avoid potential effects;

² This is the standard SSEN Transmission approach as applied on all Developments

³ Planning Advice Note 1/2013: Environmental Impact Assessment, V1, Scottish Government, 2013

<https://www.gov.scot/publications/planning-advice-note-1-2013-environmental-impact-assessment/documents/>

- Then to reduce those which remain; and
- Lastly, where no other measures are possible, to propose compensatory measures.

Appropriate mitigation measures are discussed within each technical chapter as relevant.

1.7 Cumulative Developments

Each technical assessment considers the nature of effects and includes cumulative effects with other developments where appropriate. These are effects that result from incremental changes caused by past, present or reasonably foreseeable developments together with the Development being assessed. For the cumulative assessment, the combined effects of several developments in isolation may be insignificant but cumulatively when considered with other developments have a significant effect.

The extent of any cumulative assessment is defined in each technical assessment chapter and is undertaken for all technical assessments. Where no cumulative effects are likely, this is stated.

1.8 Consultation

1.8.1 Public Consultation

SSEN Transmission has consulted through pre-application consultations to inform and consult with local communities and members of the public interested in the Project.

SSEN Transmission has carried out pre-application consultations to inform and engage with local communities and members of the public with an interest in the Project.

As a result of the Covid 19 pandemic and in line with Scottish Government guidance on pre-application consultations for major planning applications, during the Covid 19 emergency period, face to face events had to be cancelled. To ensure effective engagement on the Project, the Applicant developed an online consultation tool to enable the local community and stakeholders to experience the full exhibition at home on a PC, tablet or mobile device. It was designed to look and feel like a face-to-face consultation in a community hall, with exhibition boards, maps, interactive videos and the opportunity to share views on the proposals. A virtual consultation event was launched on 14th July 2021 and closed on 29th July 2021. In addition, live chat sessions were held on 14th, 15th, and 29th of July 2021.

To comply with the formal pre-application process for major developments⁴ SSEN Transmission carried out virtual Pre-Application Virtual Public Exhibitions to allow members of the public to obtain information and pass comment on the Proposed Development. These virtual events were held on the 8th and 9th December 2021 to consult on the Project. In addition, SSEN Transmission hosted an invitation only webinar for the local community councils, councillors, MSP and MP held on 14th December 2021. This webinar allowed locally elected representatives to voice any further questions following SSEN Transmission's virtual exhibition. Details of these exhibitions, and other pre-application consultations, are included in a Pre-Application Consultation (PAC) Report which accompanies the planning application and are also available on the project website <https://www.ssen-transmission.co.uk/projects/argyll-and-kintyre-275kv-substations>.

1.8.2 Stakeholder Consultation

Consultation was sought from a range of stakeholders including:

- Argyll and Bute Council (ABC);
- Historic Environment Scotland (HES);
- NatureScot;

⁴ Argyle and Bute Council. URL: https://www.argyll-bute.gov.uk/sites/default/files/planning-and-environment/2_pac_general_guidance_note_2013.pdf

- Scottish Environmental Protection Agency (SEPA);
- Scottish Forestry;
- Scottish Government (Energy Consents Unit);
- Scottish Water;
- Transport Scotland;
- Argyll District Salmon Fishery Board (ADSFB);
- Royal Society for the Protection of Birds (RSPB);
- Argyll Fisheries Trust; and
- ScotWays.

In October 2021, ABC were consulted on viewpoints and photomontage locations. ABC raised no objection to the viewpoints proposed and these have informed assessment within the **Chapter 3: Landscape and Visual Appraisal**.

HES advised that all options at Crarae should be carefully assessed in terms of their impact on the setting of the Crarae Inventory Garden and Designed Landscape, including views from the garden as well as views towards the garden across Loch Fyne. HES recommends this should be informed by ZTV models and visualisations where appropriate. Photomontages are found in **Annex E** of this EA whilst the archaeological and cultural heritage assessment can be seen in **Chapter 7: Archaeological and Cultural Heritage Appraisal**.

In September 2021, NatureScot were consulted in relation to Ornithology and deemed the use of survey information dating from 2015/16 to be acceptable on the condition that the baseline habitat conditions have not changed since these initial surveys. They also advised that there is potential for divers to breed on Loch Feorlin, which is in the vicinity of the Project. This can be found in the **Chapter 4: Ecology and Ornithology Appraisal**.

SEPA acknowledged that the Project appears to avoid areas of peat. Detailed peat probing was undertaken in November 2021 and February 2022, to ensure the Project was further designed to avoid deep areas of peat. A Peat Management Plan (PMP) is provided as **Annex O** of this EA.

Scottish Forestry advises that the Project will impact commercial woodland to some extent. The RSPB stated that they have no major concerns regarding the preferred site for the Project, which they also state falls within areas of commercial forestry highlighted as Class 5 peatland. RSPB recommend that, for any area of woodland that is removed, native broadleaves such as oak, hazel and rowan are planted to compensate for this loss. The cumulative area of removed woodland should be planted at one site rather than different patches as this will provide the most habitat for wildlife and be of greatest benefit. Scottish Forestry and RSPB comments have been considered in the assessment of Forestry within in the **Chapter 5: Forestry Appraisal**.

Scottish Water advises that the Project does not fall into any Drinking Water Catchments. The Proposed Development will be unlikely to have any impacts on Scottish Water Assets. Scottish Water flagged potential assets, namely a potential asset pipe and a hydrant. Near the Site entrance. Scottish Water have asked that the hydrant is blocked off, by fencing for example, to prevent this. Scottish Water stated there was no further mitigation required.

A Private Water Supply Risk Assessment (PWSRA) has been undertaken for the Project and can be seen in **Annex M**. The PWSRA aims to identify all PWS within a 2 km radius of the Project and seeks to confirm the location of the source water for the supplies, through consultation with the Council's Environmental Health Officer (EHO) and residents, along with site visits. This process informs the risk assessment of the effects of the Project on the private water supply, source water and associated distribution infrastructure. A site visit to facilitate the PWSRA was undertaken on 14th and 15th February 2022.

Consultation was undertaken with the EHO at ABC to agree the survey and assessment methodology to be adopted for the noise impact assessment. This included agreement of the assessment criteria and that baseline

noise surveys were required, given the separation distance to the nearest noise sensitive receptor. The full noise impact assessment can be found in **Chapter 8: Noise Appraisal**.

Transport Scotland advised that although there will be no direct impact on the trunk road network, a threshold assessment of the potential impact of construction traffic will be required to see if there is a requirement for a detailed assessment of potential related environmental effects. An assessment of traffic and transport has been complete within the **Chapter 9: Transport Appraisal** of this EA.

Argyll District Salmon Fishery Board (ADSFB) responded stating that they would not be providing a comment on the consultation. The RSPB noted that they have no major concerns in relation to the Project which falls within areas of commercial forestry highlighted as Class 5 peatland.

1.9 Structure of the Environmental Appraisal

The EA is structured as follows:

- Chapter 2 – Project Description
- Chapter 3 – Landscape and Visual
- Chapter 4 – Ecology and Ornithology
- Chapter 5 – Forestry
- Chapter 6 – Hydrology, Hydrogeology and Geology
- Chapter 7 – Archaeology and Cultural Heritage
- Chapter 8 – Noise
- Chapter 9 – Traffic and Transport
- Chapter 10 – Summary of Mitigation

The following supporting information is provided in the following Annexes:

- Annex A: General Environmental Management Plans
- Annex B: EIA Screening Request
- Annex C: Landscape Assessment Methodology
- Annex D: Landscape Character Sensitivity Table
- Annex E: Photomontages and Landscape Figures
- Annex F: Ornithology Consultation
- Annex G: Extended Ecology Phase 1 Habitat Survey
- Annex H: Species Protection Plans
- Annex I: Habitats Regulations Assessment (HRA)
- Annex J: Forestry Assessment
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- Annex Q: Transformer Delivery Route Report
- Annex R: Cultural Heritage Appraisal and Site Gazetteer
- Annex S: Noise and Vibration