

North Argyll 275 kV Upgrade: Crossaig North Substation Environmental Appraisal

February 2023





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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	



Term/Abbreviation	Expanded Term/Definition	
ENVFOR	The Scottish Government's Environment and Forestry Department	
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	
На	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.	
.CA 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 Crossaig North 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 Section 9 of the Electricity Act 1989 to develop and maintain an efficient, co-ordinated and economical transmission system in its licence area.

The Applicant proposes to construct a new 275/132kV electricity substation at Crossaig, on the east coast of the Kintyre peninsula (located at Grid Reference: NR 82509 50337/Easting182509, Northing 650337). The new substation will be known as Crossaig North substation. This will provide reinforcement to the existing network which will support the continued operation of renewable energy.

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 project is for development categorised as 'national development' within National Planning Framework 4 under National Development 3 (NAD3) entitled 'Strategic Renewable Electricity Generation and Transmission Infrastructure'. The application therefore needs to be determined under national development procedures as outlined within the Development Management Regulations.

Works are required to the 275kV overhead line (OHL) which connects the existing substation with the wider electricity network. These works comprise the construction of two steel lattice towers and new section of overhead line to connect the proposed Crossaig North substation to the existing Inveraray to Crossaig 275 kV OHL, along with temporary OHL works. These will be the subject of an application to the Scottish Ministers under section 37 of the Electricity Act 1989. The works to the OHL are referred to as Associated Development.

The Project

1.3 Although the Proposed Development and the Associated Development are being submitted under separate applications under differing statutory processes, both developments contribute to the overall reinforcement programme at Crossaig and will therefore hereby be referred to as 'the Project'.

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

The Proposed Development which is subject to consent under the Town and Country Planning Act comprises:

- A substation platform extending approximately to 2.4 ha for the new Crossaig North substation;
- A 275 kV Gas Insulated Switchgear (GIS) Building, maximum height 16m;
- A 132 kV Gas Insulated Switchgear (GIS) Building, maximum height 16m;
- Installation of two 275/132 kV supergrid transformers (SGT), rated at 480 MVA, each located in a ventilated building of maximum height 18m;
- Installation of two gantries and electrical equipment to connect the OHL and the proposed substation;
- A temporary works area (TWA) adjacent to the substation site, of approximately 3 ha and areas for temporary peat storage;
- Diesel Generator and 2 automatic voltage regulators;



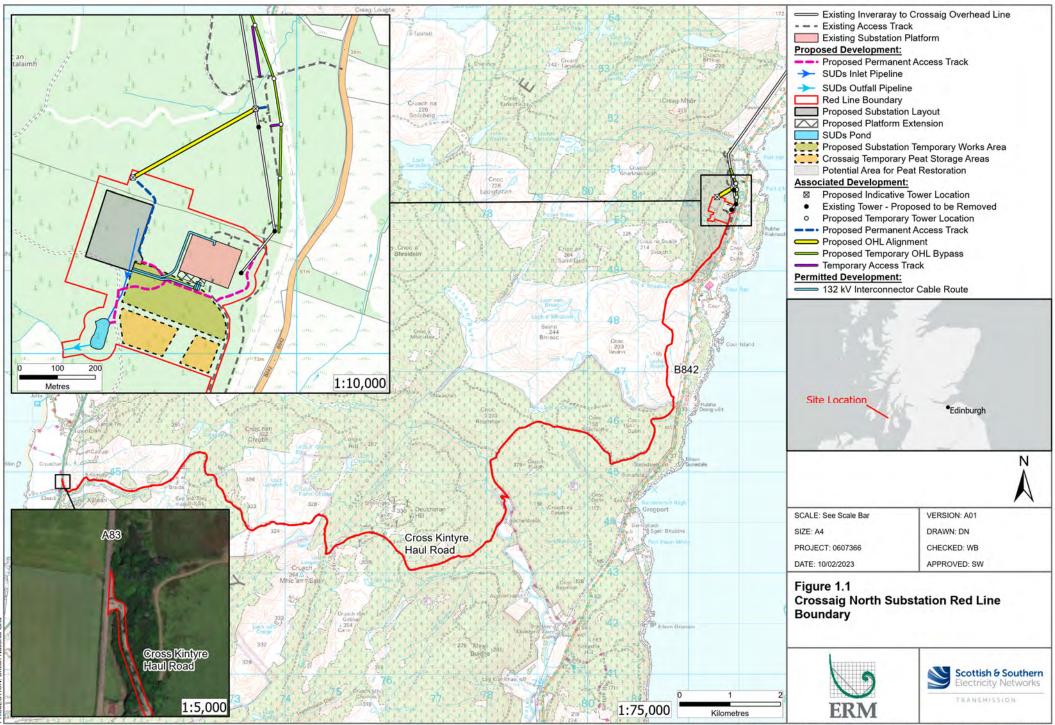
- Borehole for water and septic tank;
- Turning and parking areas;
- Use of existing forestry access tracks (those being the existing Cross Kintyre Haul Road and Cour Estate track), approximately 25 km in length to enable access to the existing Crossaig substation.
 Ongoing maintenance of this track will be required;
- Construction of a section of permanent access track, approximately 660 m in length between the
 existing Crossaig substation and the proposed Crossaig North substation and for access to the SuDS
 pond;
- A 2.4 m high security fence of palisade construction around the substation perimeter; and
- Foul and surface water drainage (Sustainable Drainage System (SuDS) pond and outfall pipe);
- An extension to the south of the substation platform at the existing Crossaig substation of approximately
 0.13 ha to support electrical equipment and associated access
- Tree and vegetation clearance required to accommodate both the Proposed Development and the Associated Development

Works are required within the existing Crossaig substation platform to which Permitted Development rights apply. Those include construction of a single storey building extension to accommodate expansion of the existing protection room and to facilitate installation of electrical equipment. The proposed 132 kV interconnector cables between the existing substation and the proposed substation, as seen in **Figure 1.1**, would be installed underground and Permitted Development rights apply to those activities.

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

- Construction of one new terminal lattice steel tower and one new lattice steel angle tower to support a
 new OHL connection from the existing Inveraray to Crossaig OHL into the new 275 kV Crossaig North
 substation including new downlead terminations from the terminal tower to the substation gantries;
- Four temporary towers or masts and associated temporary OHL diversion to facilitate the build of the new towers to avoid double-circuit network outages;
- A new section of permanent access track approximately 225 m long connecting the Crossaig North substation to the southernmost proposed permanent (terminal) tower and a 25 m long track connecting the northern most proposed permanent (angle) tower to the existing track;
- A temporary access track 134 m long, connecting existing private forestry tracks to the northern most proposed temporary tower;
- A temporary access track 22.7m long connecting existing private forestry tracks to the most southerly proposed temporary tower; and
- Dismantling of three redundant lattice steel towers near the existing Crossaig substation;
- Tree and vegetation clearance.

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





1.4 Environmental Appraisal

The Applicant recognises that the Project has the potential for effects on the environment. As such, 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 the respective applications for consent. A planning statement has been prepared that considers the Proposed Development and the Associated Development in the context of planning policy.

1.4.1 Screening Request

A request for an EIA Screening Opinion for the Proposed Development was submitted to Argyll and Bute Council (ABC) in August 2021. ABC provided a Screening Opinion for the Proposed Development (see **Annex B**) on 22nd March 2022 which 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) (noted that one has been provided with the screening documents);
- 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.

ABC have subsequently confirmed by email dated 28/3/22 that a design and access statement is not required due to the type of development.

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 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 and follows the recommendations of the local planning authorities and statutory authorities regarding surveys and mitigation.

Whilst not a formal Environmental Impact Assessment (EIA), 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 for 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 Matrix¹

		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

¹ This is the standard SSEN Transmission approach as applied on all Developments



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), the strategy of avoidance, reduction, and remediation is a hierarchical one, which seeks to:

- · Avoid potential effects;
- · Reduce those effects which remain; and
- Where no other measures are possible, lastly 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.

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 enable 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 Developments² 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 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.ssentransmission.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);

² 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 Government Energy Consents Unit (ECU);
- Historic Environment Scotland (HES);
- NatureScot;
- Scottish Environmental Protection Agency (SEPA);
- Scottish Forestry;
- Scottish Government (Energy Consents Unit);
- Scottish Water:
- Transport Scotland;
- Royal Society for the Protection of Birds (RSPB);
- Argyll District Salmon Fishery Board (ADSFB);
- 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 the assessment contained within **Chapter 3: Landscape and Visual Appraisal**.

HES stated that the proposed access route to the Proposed Development from the A83 lies within close proximity to the Category A-listed Killean, The "Dolls' Houses" (LB43266). On 31st January 2022, they recommended that setting impacts on this asset should be assessed with visualisations if appropriate. The archaeological and cultural heritage assessment is available as **Chapter 7: Archaeological and Cultural Heritage Appraisal**.

In September 2021, NatureScot were consulted on 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. NatureScot also advised that the Project has the potential for visibility from the North Arran Wild Land Area (WLA) and National Scenic Area (NSA), however, the substation would sit behind the existing Crossaig substation. Further details on these designations can be found within **Chapter 3: Landscape and Visual Appraisal**. Furthermore, the Project lies within golden eagle range G/KM2. Consultations were undertaken with the Argyll Raptor Species Group (ARSG), Scotland's Raptor Study Group (SRSG) and The Royal Society for the Protection of Birds (RSPB) which confirmed the presence and likely absence of several bird species. The Ornithological Appraisal can be found in **Chapter 4: Ecology and Ornithology** of this EA.

SEPA acknowledged that the Project appeared to avoid areas of peat. Detailed peat probing was undertaken across several site visits between November 2021 and July 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 advised that the Project would impact commercial woodland to some extent. An assessment on forestry impacts is detailed in **Chapter 5: Forestry Appraisal** of this EA.

Scottish Water advised that the Project is sited within Drinking Water Catchments and may have various impacts on Scottish Water Assets. Further consultation with Scottish Water was undertaken to ensure potential impacts on the water environment were understood and assessed. A hydrology, hydrogeology and geology appraisal is included within **Chapter 6: Hydrology, Hydrogeology and Geology Appraisal** of this EA.

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 Environmental Health Officer 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 **Annex S** of this EA and is summarised 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. Transport Scotland's response has been noted and helped inform the assessment. An assessment of traffic and transport has been complete within **Chapter 9: Transport Appraisal** of this EA.

1.9 Structure of the Environmental Appraisal

The EA is structured as follows:

- Chapter 2 Project Description
- Chapter 3 Landscape and Visual Appraisal
- Chapter 4 Ecology and Ornithology Appraisal
- Chapter 5 Forestry Appraisal
- Chapter 6 Hydrology, Hydrogeology and Geology Appraisal
- Chapter 7 Archaeology and Cultural Heritage Appraisal
- Chapter 8 Noise Appraisal
- Chapter 9 Transport Appraisal
- 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 Opinion
- 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 Appraisal (HRA)
- Annex J: Forestry
- Annex K: Drainage Strategy and Drainage Plans
- Annex L: Hydrology Methodology
- Annex M: Private Water Supply Risk Assessment
- Annex N: Water Construction Management Plan
- Annex O: Peat Management Plan
- Annex P: Peat Slide Risk Assessment



- Annex Q: Routeing Report
- Annex R: Cultural Heritage Appraisal and Site Gazetteer
- Annex S: Noise Assessment Report
- Confidential bird annex