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Eastern Link 1 Northern Point of Connection Scoping Report



Eastern Link 1 Northern Point of Connection

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GLOSSARY

Term	Definition
400 kV	400 Kilovolt capacity of a transmission line
AIS	Air Insulated Switchgear
AOD	Above Ordnance Datum
AQMA	Air Quality Management Area
ATC	Automatic Traffic Counter
BAP	Biodiversity Action Plan
BNG	Biodiversity Net Gain
BTO	British Trust for Ornithology
CCI	Cable Consulting International Limited
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CifA	Chartered Institute for Archaeologists
CO	Carbon monoxide
COP26	United Nations Framework Convention on Climate Change Conference of the Parties
CRTN	Calculation of Road Traffic Noise
CTMP	Construction Traffic Management Plan
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMP	Dust Management Plan
DSM	Digital Surface Model
E2DC	Eastern subsea HVDC link: Torness to Hawthorn Pit
E4DC	Eastern Scotland to England link: Peterhead to Drax offshore HVDC
E4L5	Eastern Scotland to England 3rd link: Peterhead to the south Humber Offshore HVDC
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report



Term	Definition
EIA Regulations	The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017
ELC	East Lothian Council
ELLDP	East Lothian Local Development Plan
Electricity Act	The Electricity Act 1989
EMF	Electromagnetic fields
EMP	Environmental Management Plan
ES	Environmental Statement
EU	European Union
ETYS	Electricity Ten Year Statement
GDLs	Gardens and Designed Landscapes
GIS	Gas Insulated Switchgear
GIS	Geographic Information System
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GW	Gigawatt
ha	Hectares
HDD	Horizontal Directional Drilling
HDV	Heavy Duty Vehicle
HER	Historic Environment Record
HES	Historic Environment Scotland
HIA	Health Impact Assessment
HLA	Historic Landscape Assessment
Holford Rules	Guidelines developed in 1959 by Lord Holford which define the principles of route selection for overhead lines which continue to inform transmission line routeing in the UK.
HRA	Habitat Regulation Assessment
HUDU	Healthy Urban Development Unit
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IAQM	Institute of Air Quality Management



Term	Definition
JNCC	Joint Nature Conservation Committee
IEA	Institute of Environmental Assessment
IEMA	Institute of Environmental Management and Assessment
kV	Kilovolt capacity of an overhead line
LAQM	Local Air Quality Management
LBAP	Local Biodiversity Action Plan
LCCA	Land Capability Classification for Agriculture
LCT	Landscape Character Type
LDV	Light Duty Vehicle
LI	Landscape Institute
LDP	Local Development Plan
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
m	Metres
MAFF	Ministry of Agriculture, Fisheries and Food
MHWS	Mean High Water Spring
MITS	Main Interconnected Transmission Line
MLWS	Mean Low Water Spring
MMO	Marine Management Organisation
MS-LOT	Marine Scotland Licensing Operations Team
NCAP	National Collection of Aerial Photography
NnG	Neart na Gaoithe
NO ₂	Nitrogen dioxide
NOA	Network Options Assessment
NRHE	National Record of Historic Environment
NGR	National Grid Reference
NGET	National Grid Electricity Transmission
NRMM	Non Road Mobile Machinery
NPF	National Planning Framework



Term	Definition
NVC	National Vegetation Classification
OHL	Overhead line: an electricity powerline above ground level
ONS	Office for National Statistics
OS	Ordnance Survey
OWF	Offshore Wind Farm
PAN	Planning Advice Note
PEA	Preliminary Ecological Appraisal
Planning Application	An application for planning permission under The Town and Country Planning (Scotland) Act 1997
PM	Particulate matter, with numerical values indicating the maximum size fraction of particulates in mm diameter, e.g. PM10 refers to a size fraction approximating to less than 10 mm in diameter.
Preferred Route	The preferred route identified through the routeing study process. Considered to represent the optimum balance between the various environmental and technical considerations
Proposed Development	Northern Point of Connection of the Eastern Link 1 Project (E2DC)
Project	The Eastern Link 1 Project (E2DC)
UN	United Nations
RSPB	Royal Society for the Protection of Birds
RSS	Regional Spatial Strategy
SAC	A Special Area of Conservation (SAC) protects one or more special habitats and/or species – terrestrial or marine – listed in the Habitats Directive.
SBL	Scottish Biodiversity List
SDP	Strategic Development Plan
Section 37 application	Application for development consent under section 37 of the Electricity Act 1989
SESplan	South East Scotland Strategic Development Planning Authority
SG	Supplementary Guidance (statutory)
SHIAN	Scottish Health and Inequalities Impact Assessment
SIMD	Scottish Index of Multiple Deprivation
SM	Scheduled Monument



Term	Definition
SEPA	Scottish Environment Protection Agency
SLA	Special Landscape Area
SPA	Special Protection Areas (SPAs) are selected to protect one or more rare, threatened or vulnerable bird species listed in Annex I of the Birds Directive, and regularly occurring migratory species.
SP	Scottish Power
SPG	Supplementary Planning Guidance
SPP	Scottish Planning Policy
SPT	Scottish Power Transmission
SSSI	Site of Special Scientific Interest is a statutory designation made by Scottish Natural Heritage under the Nature Conservation (Scotland) Act 2004.
TAN	Technical Advice Note
TJP	Transition Jointing Pit
TO	Transmission Owner
TS	Transport Scotland
UK BAP	UK Biodiversity Action Plan
UKHab	The UK Habitats classification system.
VP	Viewpoints
WeBS	Wetland Bird Survey
WHO	World Health Organisation
XLPE	Cross Linked Polyethylene
ZTV	Zone of Theoretical Visibility



1 INTRODUCTION

1.1 This Document

- 1.1.1 RSK Environment Ltd (RSK) has been engaged by SP Energy Networks to provide environmental support for the Eastern Link 1 Torness to Hawthorn Pit Project which will reinforce the electricity transmission system enabling large volumes of renewable energy generated in Scotland to be transmitted to England.
- 1.1.2 This Scoping Report is provided by SP Energy Networks to East Lothian Council under Regulation 17 of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 in support of a request for a 'Scoping Opinion' on the North Point of Connection. The Scoping Report seeks to focus the EIA on the impacts likely to give rise to significant effects, sets out the proposed scope of and approach to the EIA and seeks feedback on this from East Lothian Council and other stakeholders should they wish to comment.

1.2 Overview of the Proposed Development

- 1.2.1 SP Transmission (SPT) and National Grid Electricity Transmission plc (NGET) are jointly developing proposals for a new subsea High Voltage Direct Current (HVDC) link between Torness in East Lothian, Scotland and Hawthorn Pit in County Durham, England, referred to as Eastern Link 1 (hereafter known as 'the Project'). The Project will reinforce the electricity transmission system enabling large volumes of renewable energy generated in Scotland to be transmitted to England.
- 1.2.2 The Eastern Link 1 Project comprises the components described below:
- **Northern Point of Connection:** Onshore electrical infrastructure in the Torness area in East Lothian;
 - **Marine Cable Route:** Subsea electrical cables in Scottish and English waters; and
 - **Southern Point of Connection:** Onshore electrical infrastructure near to Hawthorn Pit substation, near Seaham, County Durham.
- 1.2.3 Figure 1.1 presents an overview of the HVDC system.

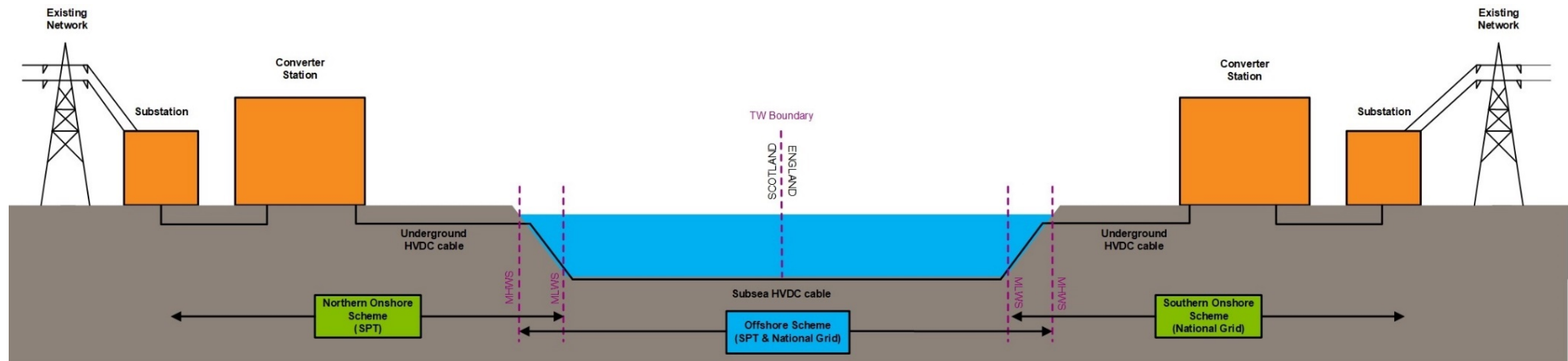


Figure 1.1: HVDC System Overview



- 1.2.4 The Northern Point of Connection will enable the Eastern Link HVDC cables to come ashore and connect with the existing 400kV transmission line in the Torness area.
- 1.2.5 The Northern Point of Connection works will provide a landfall southeast of Thorntonloch beach for the HVDC marine cables to come ashore; a new converter station located immediately adjacent to the existing Dunbar Energy Recovery Facility (ERF) at Oxwell Mains (converting HVDC to Alternating Current (AC) electricity) and a new substation at Branxton to be connected to the existing 400kV network. In addition, approximately 6 km of buried HVDC cables to connect the landfall location to the converter station and approximately 3 km of buried HVAC cables to connect the converter station to the substation.
- 1.2.6 Certain elements of the Northern Point of Connection works will need to be progressed in advance of other elements. As a result, SP Energy Networks intend to submit two separate planning applications to East Lothian Council under The Town and Country Planning (Scotland) Act 1997, as amended. These will comprise: i) full planning application to construct and operate the substation at Branxton, and ii) outline planning application to construct and operate the converter station, landfall (down to Mean Low Water Spring (MLWS)) and connecting buried HVAC and HVDC cables. The requirement for consent for works relating to overhead lines under Section 37 of the Electricity Act 1989 and the availability of exemptions will be considered once design of the project is further progressed.

1.3 Project Need

- 1.3.1 The UK is the world leader in offshore wind energy and its target of becoming net-zero in all greenhouse gases by 2050 for England and Wales and 2045 for Scotland is now enshrined in law. In addition, the Government has shown clear commitment to developing offshore wind at scale through the recent Ten Point Plan and Energy White Paper, identifying a target of delivering 40GW of wind energy by 2030 which is enough to power every home in the UK.
- 1.3.2 North Sea developments, including offshore wind and interconnectors, will be essential to meeting these climate change targets and driving economic growth across the country.
- 1.3.3 As the country transitions away from traditional forms of fuel to power vehicles and heat homes there will be a greater need for green electricity. By the end of this decade every home in the country will be powered by offshore wind. To move this green energy from its source and into people's homes and

businesses there will be a need to increase the capability of the electricity transmission network.

- 1.3.4 Significant offshore wind generation is being developed off the east coast of Scotland. The existing transmission network does not have enough capacity to cope with the level of connections required and therefore network reinforcements are required. In January 2021, National Grid Electricity System Operator published its sixth Network Options Assessment (NOA) which describes the major projects considered to meet the future needs of Britain's electricity transmission system as outlined in the Electricity Ten Year Statement (ETYS) 2020 and recommends which investments in the year ahead would best manage the capability of the transmission networks against the uncertainty of the future.
- 1.3.5 In January 2021, National Grid Electricity System Operator published its sixth Network Options Assessment (NOA) which describes the major projects considered to meet the future needs of Britain's electricity transmission system as outlined in the Electricity Ten Year Statement (ETYS) 2020 and recommends which investments in the year ahead would best manage the capability of the transmission networks against the uncertainty of the future.
- 1.3.6 The NOA (2021) recommends the development of a number of HVDC reinforcements between the east coasts of Scotland and England. These additional reinforcements will transport renewable and low carbon energy from Scotland to England and will in turn support the UK and Scottish Government Net Zero targets and the transition to a low carbon economy. These transmission assets will primarily consist of marine HVDC subsea cables connected onshore via an onshore converter to convert between HVDC and HVAC and vice-versa and would be bi-directional transmission reinforcements.
- 1.3.7 The NOA (2021) provides a recommendation to proceed with the following HVDC link projects between Scotland and England:
- Eastern subsea HVDC link: Torness to Hawthorn Pit (E2DC)
 - Eastern Scotland to England link: Peterhead to Drax offshore HVDC (E4DC)
 - Eastern Scotland to England 3rd link: Peterhead to the south Humber Offshore HVDC (E4L5)
 - Eastern subsea HVDC link from south east Scotland to south Humber area (TGDC)
- 1.3.8 SPT is the transmission licence holder in the south of Scotland. SP Energy Networks operates, maintains and develops the network of electricity cables,

overhead lines and substations on behalf of SPT. SP Energy Networks has a legal duty to develop and maintain an efficient, co-ordinated and economic electricity system.

- 1.3.9 SP Energy Networks are working in partnership with Scottish and Southern Electricity Networks Limited and NGET to develop the Eastern Link E2DC and E4DC Projects. It is anticipated that each Transmission Owner (TO) will be responsible for their own onshore consents (planning applications etc) and will jointly apply for marine licences.
- 1.3.10 This report considers the Northern Point of Connection of the Eastern Link 1 Project (E2DC) only, herein referred to as the 'Proposed Development'.
- 1.3.11 The Proposed Development will enable the Eastern Link to come ashore and connect with the existing 400kV transmission line in the Torness area.. SP Energy Networks currently has a connection agreement in place to connect Berwick Bank Offshore Wind Farm (OWF) to the transmission system. The substation forming part of the Proposed Development will provide the point of connection.

1.4 Requirement for EIA

- 1.4.1 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 herein referred to as the 'EIA Regulations', implement the requirements of the European Directive on EIA into UK law. These regulations include two schedules, which specify the types of proposal that should be subject to mandatory EIA and those for which the need for EIA should be determined by the relevant competent authority. Further schedules also specify the criteria for determining the need for EIA and the information to be included within the resultant EIA Report (EIAR).
- 1.4.2 The Proposed Development does not fall under Schedule 1, and therefore a mandatory EIA is not required. Similarly, the Proposed Development does not obviously fall within any of the categories of development outlined in Schedule 2 of the EIA Regulations. However, planning guidance states that it should not be presumed that developments falling below the Schedule 2 thresholds could never give rise to significant effects, especially where the development is in an environmentally sensitive location. The fundamental test to be applied in each case is whether that particular type of development and its specific impacts are likely, in that particular location, to result in significant effects on the environment.

- 1.4.3 SP Energy Networks made a formal request for a Screening Opinion to East Lothian Council under the EIA Regulations to determine whether the Proposed Development is likely to have significant effects on the environment and the need for a statutory EIA. East Lothian Council responded to the request for a Screening Opinion on 2 March 2021, concluding that formal statutory EIA would be required for the Proposed Development.
- 1.4.4 Two planning applications will be submitted to East Lothian Council for the onshore works. Each application will be accompanied by its own EIAR relating to the specific components of the Proposed Development, assessed taking account of cumulative effects of the remaining components as well as other unrelated developments. Each of the EIARs will take account of the information regarding the Proposed Development available at that time.
- 1.4.5 EIA screening decisions for the Marine Cable Route from the Marine Scotland Licensing Operations Team (MS-LOT) and the Marine Management Organisation (MMO), and for the Southern Point of Connection from Durham County Council, determined those components of the Project not to be 'EIA development'.

1.5 Purpose of this Scoping Report

- 1.5.1 The key objectives of this report are summarised as follows:
- To provide initial details on the Proposed Development.
 - Identify the key potential impacts of the Proposed Development and outline the scope of further studies to be undertaken.
 - Obtain agreement on the scope of work, which will be undertaken to ensure that the level of environmental studies and mitigation satisfies the needs of all interested parties.
- 1.5.2 This Scoping Report is provided by SP Energy Networks to East Lothian Council under Regulation 17 of the EIA Regulations in support of a request for a 'Scoping Opinion'. The report seeks to focus the EIA on the impacts likely to give rise to significant effects.

1.6 EIA Team

- 1.6.1 RSK has undertaken the preparation of this Scoping Report on behalf of SP Energy Networks. This report has been prepared under the supervision of, and reviewed by, persons having suitable competency in environmental impact assessment, which is also a requirement of RSK's continued registration on the

Institute of Environmental Management and Assessment's (IEMA's) 'EIA Quality Mark' scheme.

1.7 Document Structure

1.7.1 This report is structured as follows:

- Chapter 2: provides national and local planning context;
- Chapter 3: provides a description of the main elements of the Proposed Development;
- Chapter 4: describes the proposed scope and methodology for the EIA;
- Chapters 4 to 17: provide a scoping stage assessment for each of the identified environmental receptors, summarise existing baseline information relating to the environmental characteristics of the area identified for the Proposed Development, identify the potential for significant effects and outline how the environmental effects will be predicted and assessed in each case. Where it is proposed to scope issues out of further assessment, this is described;
- Chapter 18: provides a summary of the proposed scope; and
- Chapter 19: poses a series of questions to focus the scoping exercise and describes the next steps in the EIA process.

1.8 Consultation

- 1.8.1 SP Energy Networks is committed to consulting with statutory and non-statutory bodies throughout the development process, not only as a statutory duty within the planning system, but as a measure to involve and gain feedback from as broad a range of consultees and stakeholders as possible.
- 1.8.2 Consultation with statutory consultees and other organisations has taken place to obtain environmental data. Meetings with statutory consultees have also been held as part of the options appraisal phase of the project.
- 1.8.3 Consultation will continue as part of the next stage of the project. This will include public consultation scheduled to be undertaken in summer 2021.
- 1.8.4 All representations received during the consultation process will be considered and used to inform the EIA process.

2 PLANNING CONTEXT

2.1 National Planning Framework (NPF3)

- 2.1.1 The current (third) National Planning Framework (NPF3)¹ identifies national developments and other strategically important development opportunities in Scotland, sets the context for development planning in Scotland and provides a framework for the spatial development of Scotland as a whole. It was laid before the Scottish Parliament on 23rd June 2014. As well as setting the context for development planning, it is the long term spatial expression of the Scottish Government's Economic Strategy and plans for infrastructure investment and development priorities over the next 20 to 30 years with a focus on supporting sustainable economic growth and the transition to a low carbon economy. NPF3 acknowledges that electricity grid enhancements will facilitate increased renewable electricity generation across Scotland and that strengthening the grid is essential in unlocking these resources both onshore and offshore. The classes of development considered to be national development and that fulfil this need are defined in NPF3: paragraph (2) (a) of Annex A's fourth development priority statement:

"2— Description of Classes of Development: Development consisting of:

- a. new and/or upgraded onshore electricity transmission cabling of or in excess of 132 kilovolts, and supporting pylons
- b. new and/or upgraded onshore sub stations directly linked to electricity transmission cabling of or in excess of 132 kilovolts."

The Proposed Development is therefore national development within NPF3.

- 2.1.2 NPF3 acknowledges that these classes of development are needed to support the delivery of an enhanced high voltage electricity transmission grid which is vital in meeting national targets for electricity generation, statutory climate change targets, and security of energy supplies. Whilst this establishes a need for the Proposed Development all necessary assessments and consents are still required for such development.
- 2.1.3 Cockenzie and the Forth Coast area extending to Torness is identified in NPF3 as an 'area of co-ordinated action' and considered to be a potentially important energy hub within the NPF3 strategy, helping to deliver a low carbon Scotland.

¹ <https://www.gov.scot/publications/national-planning-framework-3/>

NPF3 expects developers to work together to minimise impacts by combining infrastructure where possible.

- 2.1.4 NPF3 confirms that there will be no nuclear new build in Scotland, although potential extensions to the operating life of the existing nuclear power stations at Hunterston B and Torness are not ruled out.
- 2.1.5 The Scottish Government is currently preparing the fourth NPF (NPF4) looking ahead to 2050. NPF4 will guide spatial development, set out national policies, designate national developments and reflect regional spatial priorities. NPF4 will also incorporate Scottish Planning Policy (see below). The timeframe for delivering NPF4 has recently been extended to account for the COVID-19 pandemic. An interim position statement on NPF4 to inform further early engagement, was published in November 2020. Public consultation commenced on 15th December 2020. A fuller consultation draft is anticipated to be published in Autumn 2021. Subject to Parliamentary timetabling, it is anticipated that NPF4 would be approved and adopted in spring / summer 2022.

2.2 Scottish Planning Policy (SPP)

- 2.2.1 Scottish Planning Policy (SPP) was published in June 2014 (and revised in December 2020) and is a statement of Scottish Government policy on nationally important development and land use planning. SPP sets out national planning policies which relate to the preparation of development plans, design of development and determination of planning applications. It is intended to promote consistency in the application of policy across Scotland and explain how the outcomes for Scotland defined in NPF3 and SPP can be delivered on the ground.
- 2.2.2 A Low Carbon Place is one of the four planning outcomes supporting the vision for the planning system in Scotland and SPP notes that:

“Our spatial strategy facilitates the development of generation technologies that will help to reduce greenhouse gas emissions from the energy sector” (SPP, para 152);

“Efficient supply of low carbon and low cost heat and generation of heat and electricity from renewable energy sources are vital to reducing greenhouse gas emissions” (SPP, para 153);

“The planning system should support the development of a diverse range of electricity generation from renewable energy technologies – including the expansion of renewable energy generation capacity” (SPP, para 154); and

“Strategic development plans should support national priorities for the construction or improvement of strategic energy infrastructure, including generation, storage, transmission and distribution networks” (SPP, para 156)”.

- 2.2.3 SPP and NPF3 are material considerations when determining applications such as for the Proposed Development.

2.3 Planning Advice Notes (PANs)

- 2.3.1 Planning Advice Notes (PANs) and associated guidance set out detailed advice from the Scottish Government in relation to a number of planning issues. Relevant PANs and guidance, whilst not being statements of policy, are important tools for ensuring consistency and best practice is applied throughout the environmental assessment and development planning processes. Relevant PANs include the following:

- [PAN 1/2013 Environmental Impact Assessment](#);
- [PAN 60 Planning for Natural Heritage](#);
- [PAN 68 Design Statements](#);
- [PAN 75 Planning for Transport](#);
- [PAN 79 Water and Drainage](#);
- [PAN 3/10 Community Engagement](#);
- [PAN 1/2011 Planning and Noise](#); and
- [PAN 2/2011 Planning and Archaeology](#).

2.4 Regional Planning Policy

- 2.4.1 The South East Scotland Strategic Development Planning Authority (SESplan) is a partnership between six local authorities that includes both East Lothian Council and Scottish Borders Council. SESplan works collaboratively and involves engaging key stakeholders and the wider community to prepare and deliver a Strategic Development Plan to cover Edinburgh and South East Scotland. The Strategic Development Plan sets out the broad strategic planning vision, strategy and policies for the region. The current adopted SESplan Strategic Development Plan was approved by Scottish Ministers on 27th June 2013 and will cover the period to 2032.
- 2.4.2 The current SESplan makes reference to key strategic improvements to transport and other infrastructure which are required for existing and future development including electricity grid reinforcements in the East Coast region.

- 2.4.3 The Planning (Scotland) Act 2019 came into force on 25th July 2019 and introduced a number of changes to development planning in Scotland. These include the abolition of Strategic Development Plans, a new requirement to prepare Regional Spatial Strategies, and changes to the Local Development Plan preparation process.
- 2.4.4 Prior to the new Planning (Scotland) Act 2019, SESplan prepared a replacement Strategic Development Plan (SDP2) which was submitted to Scottish Ministers for examination on Monday 26th June 2017. The examination of this plan concluded in July 2018 and on 25th March 2019, Scottish Ministers decided to reject the plan.
- 2.4.5 As there is now no provision within the Planning (Scotland) Act 2019 for Strategic Development Plans, no further work is being undertaken on SDP2.
- 2.4.6 Instead, the Planning (Scotland) Act 2019 requires Local Planning Authorities to prepare a Regional Spatial Strategy (RSS), the geographical area of which will be defined by those planning authorities who contribute towards each RSS. For East Lothian and South East Scotland, the RSS is likely to be based (in part) upon SDP2 as that plan, although not progressed due to transport related issues, remains relevant to the future and development of the South East Scotland area.
- 2.4.7 The interim RSS for the South East of Scotland, agreed in September 2020, prioritises a number of strategic outcomes, the most relevant being carbon and climate change, and the need to develop an adaptable, more resilient region. Under this theme, addressing the “biodiversity crisis” is explicit. It states “Existing renewable energy across the region can be enhanced by a wide range of as yet unused opportunities including... further offshore wind energy. These should be promoted and linked in with future investment and development” and “It is vital to recognise the interrelationship between climate change and biodiversity/ecosystems loss and promote the prioritisation of biodiversity and net biodiversity gain. The development of offshore wind energy is supported however, careful consideration needs to be given to addressing the requirements for landbased infrastructure to support offshore wind energy”.

2.5 Local Planning Policy

- 2.5.1 As the Proposed Development is located within the East Lothian administrative area, the relevant Development Plan for the site comprises the East Lothian Local Development Plan (ELLDP) (adopted 27th September 2018). The ELLDP sets out planning strategy and policies to guide future development within East Lothian using development requirements set out in the Strategic Development Plan. The ELLDP is supported by statutory Supplementary Guidance (SG)

documents and non-statutory Supplementary Planning Guidance (SPG), , topic-based policy material, which provides further detail on the range of matters in the ELLDP.

- 2.5.2 The ELLDP sets out planning strategy and policies to guide future development within East Lothian using development requirements set out in the Strategic Development Plan. The ELLDP is supported by statutory Supplementary Guidance and non-statutory Supplementary Planning Guidance that is topic-based policy material too detailed for inclusion within ELLDP.
- 2.5.3 ELLDP plan policies that will feature heavily in the Planning Statement and are generally supportive of the Proposed Development, are outlined in Table 2.1 below and relate to:
- The Torness Consultation Zone (Policy OI2)
 - Forth Coast Area of Co-ordinated Action (Development Proposal PROP EGT3)
 - Enhanced High Voltage Electricity Transmissions Networks (PROP EGT4)
 - Development in Coastal Areas (Policy DC6)
 - Protection of Mineral Reserves (Policy MIN1)
 - Special Landscape Areas (Policy DC9).

Table 2.1 Key Local Plan policies

Policy	Summary	Relevance
Policy OI2: Torness Consultation Zone	Requires that all relevant planning applications received within a 3km radius of the Torness Nuclear Power Station are referred to the Office for Nuclear Regulation [as a statutory consultee] for its observations.	Accidents and Disasters
PROP EGT2: Torness Power Station	Safeguards land for power generation. Notes that the power station is expected to remain operational until at least 2030.	

Policy	Summary	Relevance
Policy MIN1: Protection of Mineral Reserves	States that proposals for permanent development will not be permitted where this would result in the sterilisation of mineral deposits that have, or can be shown to have a real prospect of being extracted economically (except where the development is to meet the development requirements of the Strategic Development Plan).	Geology, Hydrogeology and Ground Conditions
PROP MIN2: Safeguard Oxwellmains Limestone Quarry	Safeguards an area in the vicinity of the existing operational Limestone Quarry at Oxwellmains to allow for continued limestone extraction.	
PROP EGT3: Forth Coast Area of Co-ordinated Action	Supports the principle of electricity grid connections on the Forth coast from Cockenzie to Torness to facilitate off-shore energy generation, provided that: 1) infrastructure is combined wherever possible; 2) connection to existing infrastructure at Cockenzie and Torness is prioritised; and 3) proposals must not have an adverse effect on the integrity of the Firth of Forth SPA or any other European site either alone or in combination with other projects and plans. States that opportunities for new grid connections in proximity to existing electricity grid infrastructure	Ecology and Ornithology Cumulative Impacts Sustainability and Climate Change

Policy	Summary	Relevance
	at Cockenzie and Torness should be prioritised before the use of any other location on the coast is considered.	
Policy EGT4: Enhanced High Voltage Electricity Transmissions Networks	Places emphasis on the Council to support enhancement of the high voltage electricity transmission network in locations defined by operational requirements, subject to acceptable impacts on the landscape, visual amenity, communities, natural and cultural heritage and the provision of appropriate mitigation where required.	Landscape and Visual Amenity Archaeology and Cultural Heritage Recreation, Tourism & Socio-economics
Policy DC6: Development in Coastal Areas	Designates the coastal area as a constrained coast (generally undeveloped areas where new coastal development should generally be avoided). New development may be acceptable in where there is an operational requirement for a coastal location, for example appropriate tourism proposals or infrastructure, including flood defences or onshore development proposed in association with offshore energy projects.	Hydrology and Flood Risk Ecology and Ornithology Recreation, Tourism & Socio-economics
Policy DC9: Special Landscape Areas	Development within or affecting Special Landscape Areas will only be permitted where: 1) it accords with the Statement of Importance and does not harm the	Landscape and Visual Amenity

Policy	Summary	Relevance
*Special Landscape Areas Supplementary Planning Guidance applies.	special character of the area; or 2) the public benefits of the development clearly outweigh any adverse impact and the development is designed, sited and landscaped to minimise such adverse impacts.	

2.5.4 Other relevant ELLDP policies relevant to the Proposed Development, for which compliance will need to be demonstrated through environmental assessment, include:

- General Transport Impact (T2);
- Active Travel Routes and Core Paths (T4);
- Waste Management Safeguards (W1);
- Construction Waste (W4);
- Protection of Sites of Special Scientific Interest and Geological Conservation (NH2);
- Protection of Local Site (NH3);
- European Protected Species (NH4);
- Biodiversity and Geodiversity interests (NH5);
- Protecting Soils (NH7);
- Trees and Development (NH8);
- Water Environment (NH9);
- Sustainable Urban Drainage Systems (NH10);
- Flood Risk (NH11);
- Air Quality (NH12);
- Noise (NH13);
- Listed Buildings (CH1);
- Development Conservation Areas (CH2);
- Scheduled Monuments and Archaeological Sites (CH4);
- Battlefields (CH5); Gardens and Designed Landscapes (CH6);
- Landscape Character (DP1);
- Major Development Sites (DP4) and Mineral Development Sites (MIN1).

East Lothian Local Development Plan 2 (LDP2)

East Lothian Council is preparing a new Local Development Plan (LDP2) to replace the current ELLDP. It is in the early stages of preparation including information gathering, research and engaging with stakeholders.

2.6 Other Considerations

Scottish Energy Strategy

- 2.6.1 The Scottish Energy Strategy² was published on 20th December 2017 and sets a 2030 target for the equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied by renewable sources. This builds on the previous target set in 2009, which required 30% of Scotland's heat, transport and electricity needs to be met by renewable sources.
- 2.6.2 An Energy Strategy position statement was published on 16th March 2021, which provides an overview of the key short- and mid-term priorities for supporting the energy sector in the lead up to the UN Framework Convention on Climate Change Conference of the Parties (COP26).
- 2.6.3 Whilst the 2017 Scottish Energy Strategy remains in force, the position statement sets out a programme of work across the energy sector. For onshore and offshore renewable energy supply, it reiterates the need to enable early progress on vital upgrades to the east coast interconnectors and onshore infrastructure, including new and upgraded connections across the Scottish border, to help meet the Net Zero target.

² <https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/>



3 PROJECT DESCRIPTION

3.1 Consideration of Alternatives

- 3.1.1 An options appraisal process was undertaken in general accordance with SP Energy Network's 'Major Electrical Infrastructure Projects – Approach to Routeing and Environmental Impact Assessment' (2015) in order to identify preferred site and routeing options for the following key components of the Proposed Development:
- Substation site;
 - Converter station site;
 - Landing point (landfall) for the subsea cables on the coastline, including consideration of nearshore constraints;
 - The underground cable connection from the landfall to the proposed converter station site; and
 - The underground cable connection from the proposed converter station site to the proposed substation site.
- 3.1.2 The detailed site and routeing appraisal integrated consideration of environmental constraints and potential disturbance, with technical feasibility, economic viability and deliverability. The aim of the study was to identify, develop and assess a number of potential options and determine preferred options that meet the technical requirements of the electricity system, which are economically viable and cause, on balance, the least disturbance to the environment and the people who live, work and enjoy recreation within it.
- 3.1.3 The initial needs case for the Eastern Link 1 reinforcement identified the connection point as being a new substation located on the existing 400kV circuits near to the existing Torness substation site. This location is on the east coast, with access to the existing 400kV network via two 400kV double circuits, minimising the onshore works required for connection to the Main Interconnected Transmission System (MITS). Other connection locations were considered and ruled out at an early stage in development due to existing infrastructure, access to the east coast and network location relative to existing and expected generation. SP Energy Networks currently has a connection agreement in place to connect Berwick Bank Offshore Wind Farm (OWF) to the transmission system. The substation forming part of the Proposed

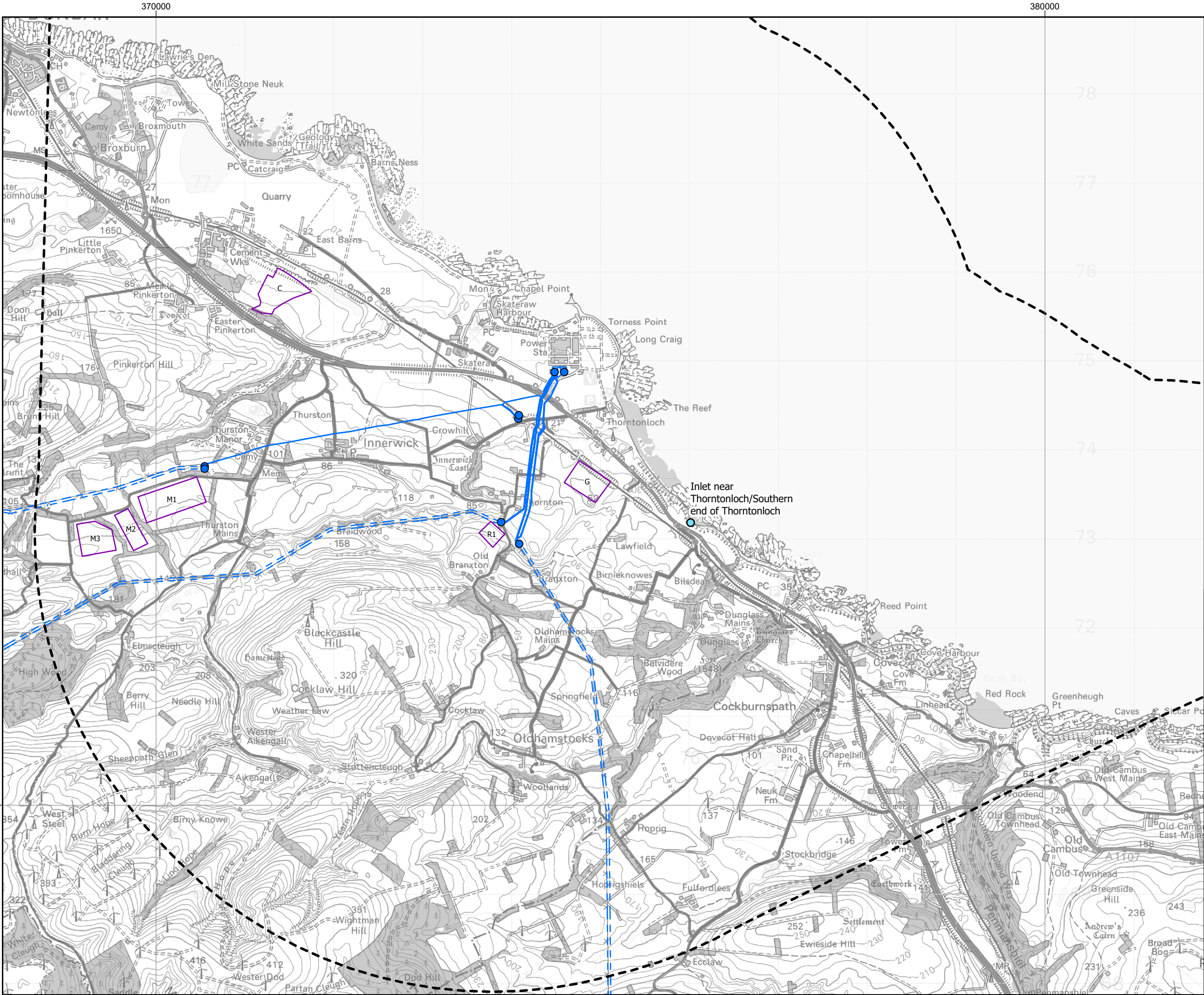
Development will provide the point of connection. The Berwick Bank OWF connection forms a separate project (currently at scoping phase).

- 3.1.4 The site and routeing appraisal comprised the following key activities:
- Review of previous options appraisal reports from 2013-2014;
 - Collation of environmental constraints data (national and local level);
 - GIS mapping; and
 - Ground truthing site visits (Autumn 2019).
- 3.1.5 A long-list of 15 potential converter station locations, 5 potential substation locations and 8 landfall locations was initially considered. Those sites considered potentially feasible following ground-truthing were taken forward for options appraisal. Each feasible converter station, substation and landfall option was appraised against the following key environmental aspects considered likely to influence the selection of a preferred location:
- Landscape and Visual;
 - Ecology;
 - Historic Environment; and
 - Transport and Access.
- 3.1.6 Consideration was also given to other factors including key land use issues (including flood risk and contaminated land), and technical and economic constraints.
- 3.1.7 Following the initial appraisal of converter station, substation and landfall options, a short-list of options was identified. Those sites with the least relative potential to accommodate the required infrastructure within the context of the environmental, technical and economic constraints were excluded from further consideration.
- 3.1.8 For the short-listed sites, potential cable corridor options from landfall to converter station and from converter station site to substation were identified. The cable route corridor options appraised key environmental aspects considered likely to influence the selection of a preferred cable route. Factors including cable crossings (e.g. watercourses, rail and road crossings), corridor length and the position of 'pinch points' were also taken into account during the corridor appraisal. An assessment of each of the cable corridor options in terms of engineering (including topographical and geological features, ground conditions, access, crossing positions at watercourses, utility crossings, ground suitability and flood risk), technical and cost issues was completed by Cable Consulting International Ltd (CCI).

- 3.1.9 As part of the appraisal process, stakeholder feedback on the options considered was sought. This included an options appraisal workshop held in July 2020 with members of the planning and landscape teams at East Lothian Council, NatureScot, Scottish Environment Protection Agency (SEPA) and Historic Scotland. Discussions were also held with EDF Energy in terms of the licenced nuclear site boundary. Further discussions were held with East Lothian Council in early 2021 to discuss the site options.
- 3.1.10 The short-listed sites options are shown in Figure 3.1.
- 3.1.11 Based on consideration of the technical, economic and environmental factors relating to each of the site options and cable route corridor options, the following options were identified as being preferred for the Proposed Development:
- substation adjacent to the existing sealing end compounds at Branxton;
 - converter station located to the immediate east of Dunbar Energy Recovery Facility (ERF) at Oxwell Mains;
 - landfall southeast of Thorntonloch Beach; and
 - a cable route corridor to facilitate connection between the landfall and converter station, and converter station and substation, which combines both the HVDC and HVAC cables.
- 3.1.12 The substation and converter station will be connected via underground AC cables, approximately 3 km in length. The converter station will switch electricity from conventional AC to DC for onwards transmission of electricity (or vice versa depending on the direction of operation). Approximately 6 km of underground cables are proposed running south and east from the converter station to a landfall south of Thorntonloch Beach. This will connect to the marine cables.

3.2 Project Overview

- 3.2.1 As discussed above, preferred sites for the landfall, converter station and substation and a preferred cable corridor for the underground cables have been identified as a result of routeing and siting studies undertaken to date. These areas will be subject to further refinement as a result of detailed technical and environmental studies and surveys to be undertaken during 2021 as well as ongoing discussions with landowners, consultees and other stakeholders.
- 3.2.2 Figure 3.2 shows the proposed locations for the substation, converter station sites and landfall compound linked by a cable route corridor (approximately 200 m wide). These elements comprise the 'scoping boundary' for the purpose of this report. Detailed work is currently underway to design the onshore cable



- Legend:
- Study Area
 - Potential Landfall Location
 - Shortlisted Site Options
 - Existing Infrastructure
 - Transmission Substation
 - Transmission Cable
 - Transmission Overhead Lines

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

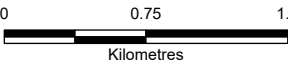


Rev	Date	Description	Drn	Chk	App
00	27/05/2021	Shortlisted Sites	DL	KB	KB

Eastern Link - Terness Project



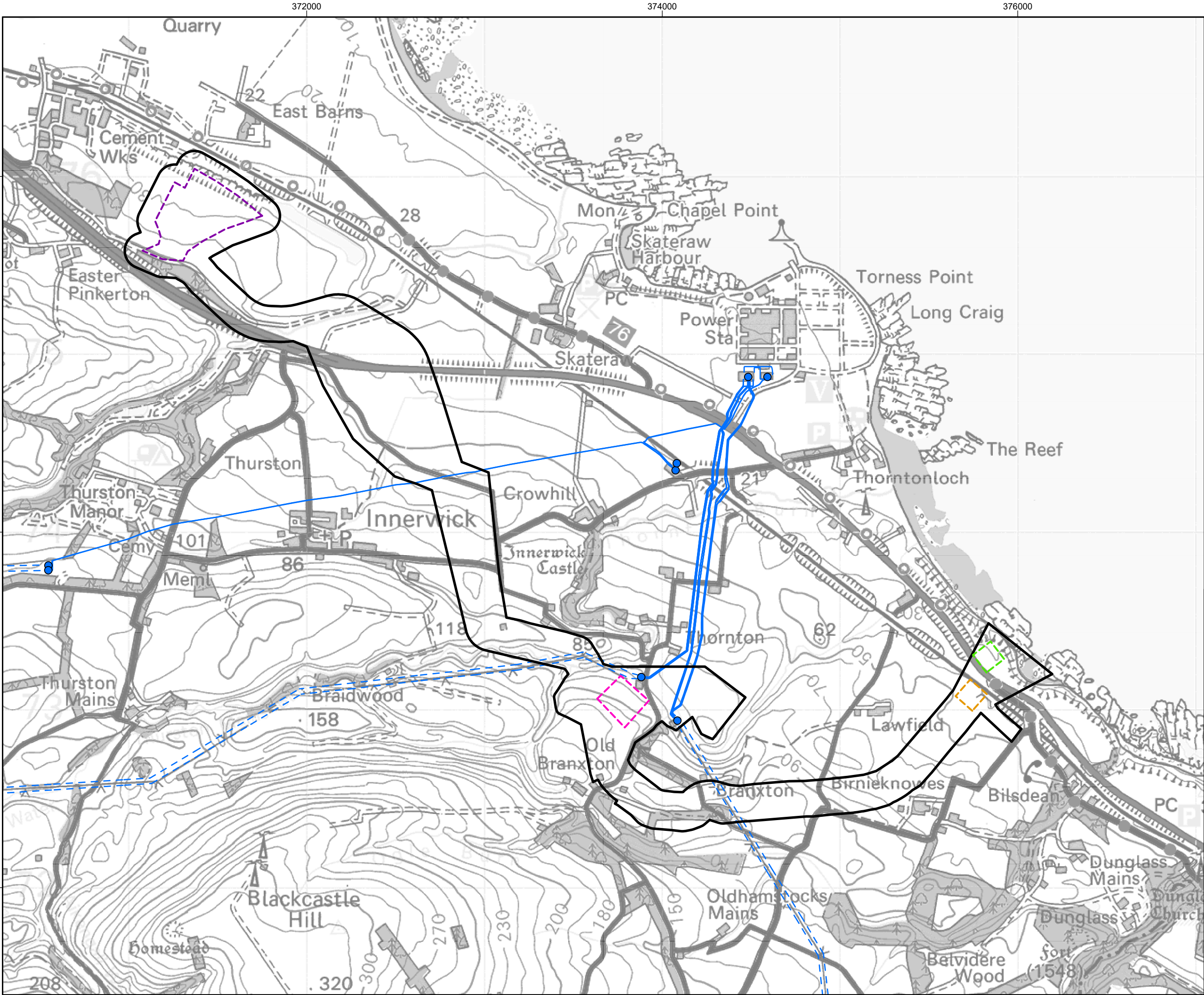
TITLE: Figure 3.1:
Shortlisted Site Options



Scale: 1:40,000 @A3



REV 00



- Legend:**
- Scoping Boundary
 - Converter Station
 - Substation
 - Landfall Compound
 - Alternative Landfall Compound
 - Existing Infrastructure
 - Transmission Substation
 - Transmission Cable
 - Transmission Overhead Lines

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

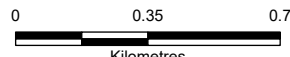


03	22/06/2021	Revised Boundary	DL	KB	KB
02	18/06/2021	Revised Boundary	DL	KB	KB
01	21/05/2021	Revised Boundary	DL	KB	KB
Rev	Date	Description	Drn	Chk	App

Eastern Link 1 Northern Point of Connection



TITLE: Figure 3.2:
Scoping Boundary



Scale: 1:20,000 @A3



REV 03

route corridor. It is expected that the planning application boundary around the onshore cables will be refined to approximately 100m wide, which will include the working width required for the construction of the Proposed Development.

- 3.2.3 For the consideration of potential impacts at this scoping stage, a study area has been selected that is relevant to each topic and may be wider than the scoping boundary. For instance, appraisal of visual effects may include an area up to several kilometres from the Proposed Development.
- 3.2.4 Further details on the key elements of the Proposed Development are provided below.

Substation

- 3.2.5 The proposed substation site is located within a field to the south of the existing sealing end compound at Thornton Bridge and to the west of the existing sealing end compound at Branxton. The site is located within a dip in the landscape. Earthworks will be required.
- 3.2.6 The proposed substation will be a Gas Insulated Switchgear (GIS) substation. This means that the site will be smaller than a comparable Air Insulated Switchgear (AIS) site and the majority of the equipment will be housed within buildings. The site will be approximately 170 m by 185 m. The substation will connect into the existing adjacent 400kV overhead lines which currently connect to the two sealing end compounds at Branxton and Thornton Bridge. A temporary construction compound will be required adjacent to the site. Existing overhead lines and underground cables will require some amendments to connect them into the new substation.

Converter station

- 3.2.7 The converter station will comprise a key part of the HVDC transmission system. Prior to electricity being exported from the transmission system in Scotland (or vice versa), there will be a requirement to convert its AC form into DC.
- 3.2.8 The proposed converter station site is characterised by the adjacent industrial areas: Dunbar Cement Works and Dunbar ERF to the immediate west, the existing Viridor landfill site to the east and the railway line to the immediate north of the site. The site would likely use the existing cement works access via the roundabout on the A1087, located approximately 150m north from the A1.
- 3.2.9 The proposed converter station will include electrical equipment located outdoors and within buildings. The site size is yet to be defined but is expected

to be a maximum of 300 m x 200 m, with a maximum building height of 30 m. A temporary construction compound will be required adjacent to the site.

3.2.10 The converter station will comprise several elements to facilitate the conversion from AC to DC or DC to AC including:

- AC Switchyard: To connect the converter station to the existing AC transmission system. This will include a range of electrical equipment including harmonic filtration and reactive compensation equipment. The main function of this equipment will be to integrate the DC system and AC systems;
- Converter Transformers: Change the AC voltage into an appropriate level for conversion within the valve hall. These units would normally be sited outdoors;
- Valve Halls (tall buildings): Contain power electronics equipment that converts from AC to DC (or vice versa). The devices cannot be accommodated outdoors and need to be maintained in a controlled environment. Due to the layout of the devices and operating voltage, the DC buildings are usually the tallest within the converter station (max 30m height (worst case) will be assumed for the EIA). The semiconductor devices generate significant heat and require associated cooling plant; and
- DC Switchyard: DC switchyard connects the DC cables to the valve hall equipment and can be indoor or outdoor.

3.2.11 The converter station will be surrounded by standard palisade security fence, with permanent screening landscape works provided outside this palisade fence if appropriate (an allowance for such works will be included in the development footprint and assessed accordingly). Figure 3.3 provides an example of the appearance of an existing converter station (Hunterston, North Ayrshire). It is noted that the converter station at Hunterston comprises a different type of HVDC technology requiring a larger site than that required for the Proposed Development.



Figure 3.3: Example of existing converter station at Hunterston, North Ayrshire

Underground HVAC cables

- 3.2.12 The substation and converter station will be connected via underground AC cables, approximately 3 km in length. The AC cables will be installed within a number of parallel trenches with approximately 900 mm minimum cover in agricultural land. The working width of the AC cable corridor will be approximately 50 m.

Underground HVDC cables

- 3.2.13 The converter station will switch electricity from conventional AC to DC for onwards transmission of electricity (or vice versa depending on the direction of operation). Approximately 6 km of underground cables are proposed running east from the converter station to a landfall south of Thorntonloch Beach. These cables will connect to the onwards marine cables.
- 3.2.14 The DC cables will be installed within a number of parallel trenches with approximately 900 mm minimum cover in agricultural land. The working width of the DC cable corridor will be approximately 40 m.
- 3.2.15 The exact configuration of the cables will be subject to detailed design analysis in consultation with the cable manufacturers. This will include consideration of

a combined working width for the HVDC and HVAC cables where possible to minimise construction disturbance.

Cable landfall

- 3.2.16 The cable landfall is the connection point between the onshore and marine components of the Project. The preferred landfall is located to the south of Thorntonloch Beach. In order to minimise disruption, horizontal directional drilling (HDD) will be utilised to pass under the beach, the A1 and the railway. A construction working area of approximately 100 m x 100 m will be required to join the marine and onshore cables. A preferred location for the construction working area (landfall compound) has been identified inland of the landfall location within a field to the west of the A1/railway. The landfall compound would be accessed via a short access road from the minor road to the south-east. As an alternative, and depending on ground conditions, a location to the east of the A1/railway will also be considered as part of the EIA. The landfall compound will accommodate joint bays, equipment for a HDD and other temporary construction equipment required to land the marine cables.
- 3.2.17 Both the Proposed Development and the Marine Cable Route components of the Project will both include consideration of the area between Mean High Water Spring (MHWS) and Mean Low Water Spring (MLWS).

Works to overhead lines

- 3.2.18 Existing overhead lines and underground cables will require some amendments to connect them into the new substation. The requirement for consent for works relating to overhead lines under Section 37 of the Electricity Act 1989 and the availability of exemptions will be considered once design of the Proposed Development is further progressed.

3.3 Construction Phase

Substation and converter station

- 3.3.1 The substation will provide the point of connection for the Berwick Bank OWF and as such will be constructed in advance of the remaining elements of the Proposed Development.
- 3.3.2 The construction of the substation and associated works will be undertaken following the sequence of activities outlined below:

- Pre-construction activities (e.g. site access and formation of contractor compound and materials store);
- Erection of secure compound for construction works;
- Construction of drainage measures (where required);
- Earthworks to establish substation foundation level;
- Formation of substation base and plant foundation bases;
- Construction of substation buildings and associated infrastructure;
- Electrical plant and cable installation works;
- Perimeter reinstatement, landscape works (where required), and removal of temporary infrastructure.

3.3.3 The construction of the converter station and associated works will follow a similar sequence of activities to the substation.

Cable Installation

3.3.4 Installation of the cables will involve the excavation of a series of parallel trenches within which a number of cables will be placed. The cables are likely to be surrounded by specially selected stabilised backfill material and protected by recycled polymer cover tiles with warning tape above them. The excavated material will be used to re-fill the excavation, with the excess material spread in proximity to the excavation where appropriate or removed from site. Some backfill material may need to be imported.

3.3.5 The cable installation will occur within a working corridor up to 50 m wide for the AC cables and up to 40 m wide for the DC cables. Where possible the working width will be combined for the HVDC and HVAC cables. The working corridor will incorporate the cable trenches, temporary access track and drainage and areas for storing spoil. Figure 3.4 provides an example of the appearance of a typical working corridor.





Figure 3.4: Typical Working Corridor

- 3.3.6 The cable installation method selected will be linked to the nature of the surrounding land and the presence of any constraints. It is likely that open cut trenching will be used to install the majority of the cables in relatively unconstrained areas and HDD would be used as an alternative methodology to cross significant environmental and physical features such as watercourses, local roads and ancient woodland.

Landfall

- 3.3.7 The land cables will be connected with the marine cables in a transition jointing pit (TJP) buried in the ground. The landfall location will be a temporary construction compound where the TJP is located and will require topsoil stripping to construct the TJP.
- 3.3.8 Ducts will be installed below the railway, A1 and cliffs using HDD. The bore will drill seaward, installing the ducts for cables. The cables will be pulled inland from the marine vessel which will be located offshore as close to land as possible.

- 3.3.9 Once the cables are installed the ground will be reinstated and there will be no above ground infrastructure left in this location.

Access

- 3.3.10 A temporary haul road will be constructed within the cable working width to allow access for cable installation. In addition, a number of temporary and permanent access tracks or side accesses may also be required. The proposed access routes will be identified in the EIAR, with any potentially significant environmental effects associated with the use of existing, or new, access routes assessed accordingly.

Construction Environmental Management Plan

- 3.3.11 A draft Construction Environmental Management Plan (CEMP) will be prepared to accompany the planning applications. This will present the general approach and application of environmental management and mitigation for the construction of the Proposed Development. The draft CEMP will be finalised and implemented by SP Energy Networks' appointed Construction Contractor and will ensure that adverse effects from the construction phase on the environment and local communities, are minimised.

Waste Management

- 3.3.12 Wastes will be generated, and will require management, at a number of stages, including:
- Clearance of vegetation across the area proposed for construction of the converter station and substation and installation of the cables;
 - Stripping of topsoil and overburden at converter station, substation and along cable installation corridor and storage for reuse;
 - Excavation of materials for construction of converter station and substation foundations and for the cable installation corridor;
 - Construction of ancillary works, including access tracks and temporary laydown areas;
 - Occupation of temporary construction premises; and
 - Landscaping works around the converter station and substation.
- 3.3.13 In line with national waste management policy, the EIAR will outline the good working practices proposed to encourage the reduction, reuse and recycling of wastes, where possible, and to manage all wastes to ensure no harm to human health or the environment and to prevent any nuisance.

- 3.3.14 Any materials that cannot be reused will be disposed of according to relevant waste management legislation which will serve to minimise many possible environmental effects.

Energy and Resource Use

- 3.3.15 The Project will transport renewable and low carbon energy from Scotland to England and will in turn support the UK and Scottish Government Net Zero targets and the transition to a low carbon economy.
- 3.3.16 It is recognised that energy will be used during the construction phase, including the fuel for construction plant and the energy required for the transportation of personnel. The EIAR will outline measures to reduce the consumption of energy and associated CO2 emissions such as selecting energy efficient equipment, and fuels. The EIAR will also refer to any appropriate measures to contribute to the circular economy.

3.4 Operation and Maintenance

- 3.4.1 When completed, the converter station and substation will be unmanned and will be visited intermittently for the monitoring of equipment. Equipment maintenance works will be required during the lifetime of the converter station and substation and this is usually carried out during planned annual operational outages in the operation of the electricity network.
- 3.4.2 The underground cables will be routinely monitored to ensure safety clearances are maintained.

3.5 Decommissioning

Converter station and substation

- 3.5.1 The lifespan of a converter station/substation is approximately 40 years (with the potential for maintenance to extend the operational life). When the useful life has expired the materials would be removed and taken for recycling. It is expected that foundations would be removed to approximately 1 m deep and subsoil and topsoil reinstated. Similar methods and access would be required as outlined for installation.
- 3.5.2 The detailed decommissioning methodology cannot be finalised until immediately prior to decommissioning but would be in line with relevant policy at that time. For assessment purposes, the EIA will assume that the converter

station and substation will be removed approximately 40 years after the commencement of operation.

Underground cables

- 3.5.3 Underground cables have a life expectancy of approximately 40-50 years. It is however feasible that the cables would last beyond this, and SP Energy Networks would seek to utilise a maximum life expectancy. When the operational life of the underground cables comes to an end, it is anticipated they would remain buried in the ground to avoid disruption associated with their removal. For assessment purposes, the EIA will assume that the cables would remain in situ at the end of their life.

3.6 Programme

- 3.6.1 The construction durations for the substation and converter station are expected to be approximately 2 and 3 years respectively. The underground cables will be installed on a rolling programme and are expected to be completed within 12 months of construction start.
- 3.6.2 A draft construction programme will be outlined in the EIAR.

4 APPROACH TO ENVIRONMENTAL IMPACT ASSESSMENT

4.1 Introduction

- 4.1.1 As discussed in Chapter 1 (Introduction) two planning applications will be submitted to East Lothian Council for the Proposed Development under the Town and Country Planning (Scotland) Act 1997. Each application will be supported by an EIA Report (EIAR).
- 4.1.2 Each EIAR will meet the requirements of Schedule 4 of the EIA regulations. The EIARs will also take account of the relevant guidance set out in the Scottish Government Planning Advice Note (1/2013)¹, which emphasises the importance of achieving a proportionate EIA scope, focussed on the likely significant effects. In line with Schedule 4 of the EIA Regulations, the EIARs will include introductory chapters to provide:
- a description of the Proposed Development comprising information on the location of the project elements; their physical characteristics, and the area of land required during construction and operational phases; the main characteristics of the operational phase of the development; and the type and quantity of expected residues and emissions produced during the construction and operation phases; and
 - a description of reasonable alternatives studied in terms of the site and cable route selection, and technology selection and the main reasons for the chosen options, highlighting how the proposed development delivers 'mitigation by design'.

4.2 Overview of EIA Process

- 4.2.1 The objectives of the EIA process will be:
- To gather data regarding the baseline environment (socio-economic, biological, and physical);
 - To ensure through engagement and consultation with statutory and non-statutory organisations that concerns about effects on the environment from the Proposed Development are identified and fully considered;

¹ The Scottish Government, Planning Advice Note: Environmental Impact Assessment 1/2013, Updated 2017.

- To work together with the engineering and design teams to develop an environmentally sensitive project design; and
 - To assess potential environmental impacts during the construction, operational and decommissioning phases of the Proposed Development and suggest mitigation measures to be implemented where required.
- 4.2.2 The assessment of impacts will be achieved by establishing a robust understanding of the environmental baseline and then predicting the potential impact of key development activities on that baseline. Predictions of impact will be based on a combination of professional judgement, expert knowledge and modelling where appropriate. The definition of what constitutes a significant impact for each environmental aspect will be determined by clear and sensible, pre-defined assessment criteria, as discussed further below.
- 4.2.3 The EIA process will be carried out in the following stages:
- Preparation of a Scoping Report (this document);
 - Pre-application consultation;
 - Baseline data collection;
 - Assessment of likely significant environmental effects;
 - Identification of mitigation and enhancement measures; and
 - Preparation of two EIARs.
- 4.2.4 The EIA for the Proposed Development will comprise desk studies and baseline surveys, assessment of impacts, development of mitigation measures, and identification of residual impacts. The EIA will satisfy the requirements of Schedule 4 of the EIA Regulations and will include a description of the development comprising information on the site selection process, a description of the site, design and size of the development, a description of the aspects of the environment likely to be significantly affected by the development, the likely significant effects of the development on the environment and mitigation measures required to minimise potentially significant effects.

4.3 Establishing Baseline Conditions

- 4.3.1 The environmental assessment has commenced (as part of the scoping phase) with the initial identification and review of information relating to known, or the likely presence of, environmental receptors and resources within a defined Study Area in order to determine their relative value, importance and/or sensitivity towards change.

- 4.3.2 Site surveys will be undertaken to verify and consolidate information gathered during the desk-based review, and to evaluate the relationships between specific environmental interests and their wider environmental value.
- 4.3.3 Study area extents for the EIA will vary in accordance with the environmental aspect/ topic being considered. For some topics, a study area will be defined as being relatively localised to the Proposed Development, while for others it will extend outward. The definition of each study area will be informed by a review of the relationship between the Proposed Development and the receiving environment, and reference to thresholds stipulated in topic-specific environmental assessment or best practice guidance.
- 4.3.4 Figure 3.2 shows the indicative locations for the substation and converter station sites and cable route corridor. These elements comprise the scoping boundary for the purpose of this report. Initial baseline data presented in this report has been reported based on the scoping boundary; a study area has been selected that is relevant to each topic and may be wider than the scoping boundary.

4.4 Assessment of Likely Significant Environmental Effects

- 4.4.1 Each of the two EIARs will provide assessment chapters for the relevant factors specified in Regulation 4(3) of the EIA Regulations where they are likely to be significantly affected, taking account of the description of the Proposed Development and the mitigation by design. Each assessment chapter will set out:
- a detailed methodology used to establish the relevant aspects of the current state of the environment (the baseline), and the criteria used to identify and assess the likely significant effects;
 - a description of the current environment (baseline conditions) and any relevant 'future baseline' scenarios that are used as a basis for the impact assessment;
 - a description of the likely significant effects;
 - a description of the measures proposed to avoid, prevent, reduce, or, if possible, offset any likely significant effects (mitigation measures); and
 - a description of residual effects remaining following the implementation of proposed mitigation measures.
- 4.4.2 The description of the likely significant effects will cover direct effects and indirect (including secondary) effects. The description of effects will identify the effect duration (short-term, medium- term and long-term), whether effects are

permanent or temporary, and if effects can be categorised as adverse or beneficial.

Defining Significant Effects

- 4.4.3 The EIA Regulations state that the EIAR must include ‘a description of any likely significant effects of the proposed development on the environment’.
- 4.4.4 There is no statutory definition of what constitutes a ‘significant’ effect within the EIA Regulations and the EIA process typically focusses on assessing the level of impacts that give rise to predicted effects and determining how to avoid or reduce them. The determination of the significance of the effects is crucial to informing the decision-making process. The process typically involves consideration of two aspects of a potential effect, namely the sensitivity or value of the receptor or resource, and the magnitude of the impact that is occurring. The sensitivity of the receptor is a function of the value of the affected resource, and its capacity to accommodate change, and reflects its ability to recover if it is affected. The magnitude of impact is a function of the:
- Scale of change – the degree of change relative to the baseline level;
 - Spatial Extent – the area over which an impact occurs; and
 - Duration and Frequency – the time for which the impact occurs and how often the impact occurs.
- 4.4.5 The general approach adopted for classifying effects is outlined in Table 4.1.

Table 4.1: Impact Matrix

Receptor Sensitivity	Magnitude of Change				
		High	Medium	Low	Negligible
	High	Major	Major	Moderate	Negligible/ Minor
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Negligible	Negligible
	Negligible	Negligible/ Minor	Negligible	Negligible	Negligible

4.4.6 In general, the terms assigned to categorise the significance of effects, where they are predicted to occur, can be described as follows:

- Major: beneficial or adverse – where the development would cause a considerable improvement in or deterioration of the existing environment;
- Moderate: beneficial or adverse – where the development would cause a noticeable improvement or deterioration of the existing environment;
- Minor: beneficial or adverse – where the development would cause a barely perceptible improvement in or deterioration of the existing environment; and
- Negligible: beneficial or adverse – where the development would cause no discernible improvement in or deterioration of the existing environment.

4.4.7 In general the categories in Table 4.2 described as ‘Major’ or ‘Moderate’ would be considered significant in EIA terms.

4.4.8 Significance levels will be further described on a chapter by chapter basis in accordance with the relevant professional guidance for the topic under consideration. Where no recognised standards or criteria exist, professional judgement and experience will be used to develop an appropriate approach to undertake a robust and transparent assessment.

Mitigation

- 4.4.9 Mitigation measures typically fall into one of two categories as follows:
- Primary or 'embedded' mitigation measures or 'mitigation by design' developed through the iterative design process that have become integrated mainstream components of the design of the Proposed Development; and
 - Secondary or 'project specific' mitigation measures which have been identified as a result of the assessment, and seek to further avoid or reduce identified potentially adverse environmental effects.
- 4.4.10 The Proposed Development has been developed through an iterative process which has sought to avoid and/or reduce potential environmental effects through siting and routeing of the key project elements. This represents the first opportunity to mitigate potential effects. In addition, best practice strategies for mitigation are widely practiced and accepted within EIA and will be followed when considering the methods of dealing with the environmental impacts of the Proposed Development. Where clear obligations on the installation, operation and maintenance, and/or decommissioning of the project are set out within regulation or statutory authority guidance documents, it is assumed that these will be adhered to as part of the project design. The following measures have already been embedded into the design of the Proposed Development:
- Standard/ best practice construction practices for avoiding and minimising environmental effects;
 - Use of horizontal directional drill at the landfall to pass under the beach, the A1 and the railway;
 - Use of horizontal directional drill at any areas of Ancient Woodland;
- 4.4.11 Appropriate project specific mitigation will be identified to eliminate, minimise or manage potentially adverse environmental effects.
- 4.4.12 In addition to reducing any adverse impacts, consideration will be given to providing opportunities for environmental enhancement. The assessment of the significance of the impacts will subsequently be carried out on the residual impacts. Where residual impacts that remain are deemed to be significant, further mitigation may be required.
- 4.4.13 The strategy will follow the approach set out in Table 4.2.

Table 4.2: Mitigation strategy

Avoid or Prevent	Where viable, the Proposed Development will be redesigned to avoid impacts. Avoidance will also be considered during the assessment of alternative sites/routes.
Reduce	Reduction will be considered when all options for the avoidance of impacts have been exhausted or deemed to be impractical. For example, alternative alignments will be considered to reduce visual impact.
Offset	Where the potential for avoiding and reducing impacts has been exhausted, consideration will be given to providing compensation for residual impacts to make the proposal more environmentally acceptable.

Monitoring

4.4.14 Each chapter of the EIAR will also identify whether monitoring of the effects of the Proposed Development is required. Typically monitoring may be required to:

- Validate predictions made in the EIAR;
- Deal with uncertainties within EIAR; and
- Identify unexpected outcomes or impacts.

Cumulative Effects

4.4.15 Cumulative effects can be defined under the two categories identified in the IEMA 2011 Special Report on 'The State of Environmental Impact Assessment in the UK' (IEMA, 2011). These are inter-project effects and intra-project effects. These two types of cumulative effects are explained below.

- **Inter-Project Effects:** The combined effects of the Proposed Development with other relevant projects which may, on an individual basis be insignificant but, together (i.e. cumulatively), have a significant effect; and
- **Intra-Project Effects:** The combined effects arising as a result of the Proposed Development, for example upon a single receptor or resource e.g. a local resident is affected by dust, noise and a loss of visual amenity during the construction of a project, with the result being a greater nuisance than each individual effect alone.

- 4.4.16 For inter-related cumulative effects, the assessment will describe the additional effects associated with the Proposed Development, when considered 'in combination with other existing development and/or approved development' as stated in the EIA Regulations. For the purpose of the cumulative assessment, 'other existing development and/or approved development' will be taken to mean:
- existing schemes that are under construction and their respective operational phases;
 - those schemes that are approved but not yet started construction; and
 - those schemes that are considered highly likely to be considered for approval by the Local Planning Authority before or at the same time as the application for the Proposed Development and for which sufficient information is readily available to make an informed assessment.
- 4.4.17 Two planning applications will be submitted to East Lothian Council for the Proposed Development. Each application will be accompanied by its own EIAR relating to the specific components of the Proposed Development, assessed taking account of cumulative effects of the remaining components as well as other unrelated developments.
- 4.4.18 A staged approach to the cumulative assessment of inter-project effects is proposed as follows:
- **Stage 1:** Other elements of the Proposed Development: the Substation EIAR will consider the effects of the converter station, onshore cables and landfall. The Converter Station/Cables/Landfall EIAR will consider the effects of the substation development.
 - **Stage 2:** The Wider Scheme: consideration of other elements of The Eastern Link 1 Project and the Proposed Development; given that the Southern Point of Connection is located in County Durham, England cumulative effects are not expected;
 - **Stage 3:** Any other relevant developments (other consented developments and projects where consent is being sought and for which sufficient information is readily available). This will include relevant elements of the proposed Neart na Gaoithe (NnG) Offshore Wind Farm (OWF) and Berwick Bank OWF, both of which have onshore elements within East Lothian.
- 4.4.19 The cumulative assessment will also include assessment of intra-related effects produced by the Proposed Development.

- 4.4.20 A more detailed overview of the guidance and methodology adopted for each technical study is provided within the respective technical sections of this Scoping Report (Sections 5-17).



5 ECOLOGY AND ORNITHOLOGY

5.1 Introduction

- 5.1.1 This chapter sets out the proposed scope and approach to assessing potential direct and indirect impacts of the Proposed Development on ecological and ornithological receptors during construction, operation and decommissioning phases. Within this chapter, the proposed methodology for surveys will be presented and potential effects that may arise as a result of the Proposed Development will be outlined.
- 5.1.2 The methodology presented in this chapter builds upon the general assessment methodology summarised in Chapter 4 (Approach to Environmental Impact Assessment) of this Scoping Report. It has been developed to take account of any likely significant impacts on ecology and ornithology arising during the construction and operation phases of the Proposed Development, as well as decommissioning.
- 5.1.3 Data used in the assessment will be taken from a desk-based assessment, and detailed ecological and ornithological surveys undertaken in the area of the Proposed Development. The surveys and reports will be provided as technical appendices to the Environmental Impact Assessment Reports (EIARs).
- 5.1.4 Consideration has been given to the habitats and species which characterise the proposed converter station site, substation site and underground cable route and the potential for connectivity with sites subject to a nature conservation designation such as special areas of conservation (SAC), special protection areas (SPAs) and sites of special scientific interest (SSSI).

5.2 Legislation and Policy

- 5.2.1 Ecological and ornithological impact assessment is governed by international and national legislation. In Scotland, the key legislation applicable is as follows:
- Birds Directive in relation to Natura 2000 sites;
 - Habitats Directive in relation to Natura 2000 sites;
 - The Conservation (Natural Habitats, & c.) Regulations 1994 (as amended);
 - The Wildlife and Countryside Act 1981 (as amended);

- The Nature Conservation (Scotland) Act 2004;
- Wildlife and Natural Environment (Scotland) Act 2011; and
- Protection of Badgers Act 1992.

5.2.2 Planning policy relevant to the Proposed Development is set out in Chapter 2 (Planning Context) of this Scoping Report.

5.3 Preliminary Baseline Conditions

5.3.1 A location plan of the scoping boundary within which the Proposed Development planning application boundary will be defined is presented in Figure 3.2. The Study Area for the purpose of reporting preliminary baseline conditions for ecology and ornithology comprises the scoping boundary with ecological receptors within 2 km and 10 km buffers referenced where applicable. The Study Area extends to the low mean water mark.

5.3.2 Initial high-level baseline data collection has been undertaken to understand the context of potential ecological and ornithological considerations for the Proposed Development.

Ecology and Ornithology

5.3.3 A review of the Wardell Armstrong Strategic Environmental Assessment Report (Wardell Armstrong, 2013)¹ and Wardell Armstrong Site Selection Report (Wardell Armstrong, 2014)² was undertaken to gain an insight in to the ecological and ornithological receptors in relation to the previous Eastern Link onshore surveys and background data searches.

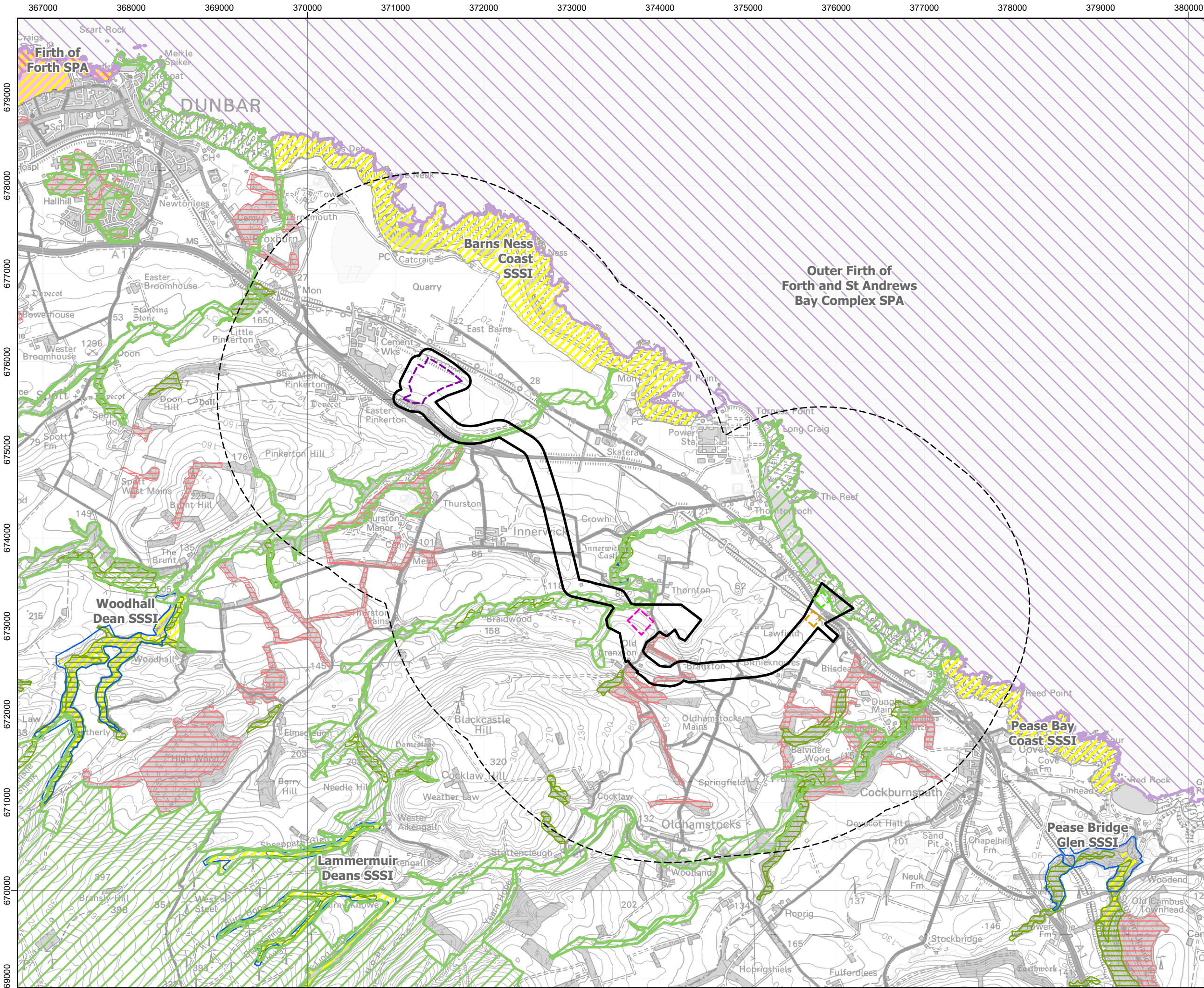
5.3.4 Information on designated sites was collated and mapped by RSK to show their proximity in relation to the scoping boundary. This includes SACs, SPAs and SSSIs as well as ancient woodlands and local wildlife sites. Designated sites in relation to the Study Area are shown on Figure 5.2.

5.3.5 The following statutory designated sites lie within 2 km of the Study Area (see Figure 5.1):

¹ Wardell Armstrong (2013), 'Eastern HDVC Link – Onshore Options – Strategic Environmental Assessment', SP Energy Networks.

² Wardell Armstrong (2014), 'Eastern HDVC Link – Onshore Options – Site Selection Report', SP Energy Networks.





- Legend:**
- Scoping Boundary
 - 2km Buffer
 - Converter Station
 - Substation
 - Landfall Compound
 - Alternative Landfall Compound
 - Wildlife Reserve
 - Ancient Woodland (of semi-natural origin)
 - Long-Established Ancient Woodland (of plantation origin)
 - Special Protection Area
 - RAMSAR
 - Sites of Special Scientific Interest
 - Country Park
 - Local Biodiversity Sites

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

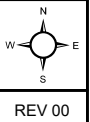
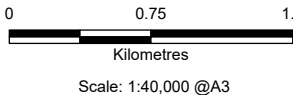


00	26/05/2021	Ecological Designations	DL	KB	KB
Rev	Date	Description	Drn	Chk	App

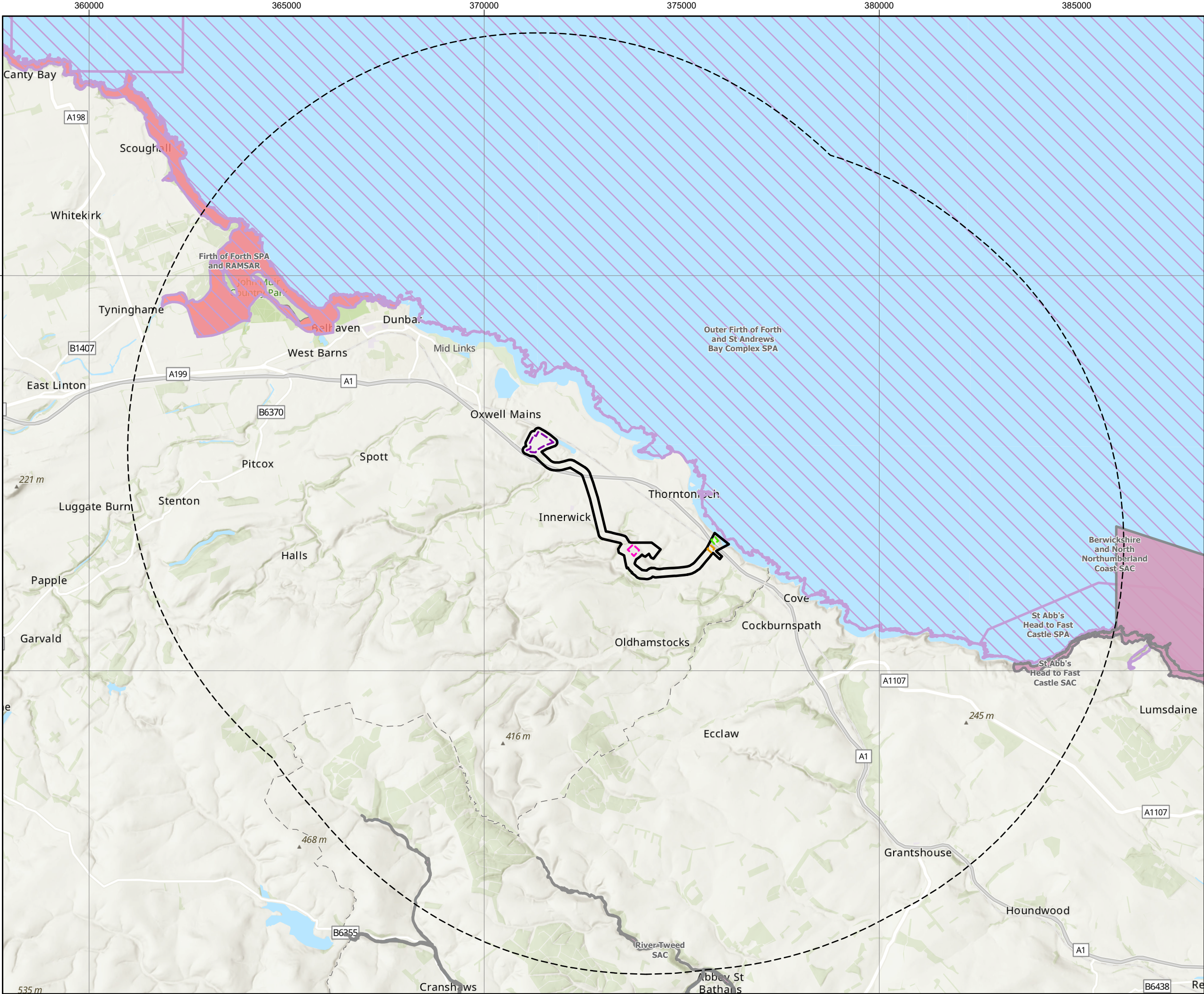
Eastern Link 1 Northern Point of Connection



TITLE: Figure 5.1:
Ecological Designations



REV 00



- Legend:**
- Scoping Boundary
 - 10km Buffer
 - Converter Station
 - Substation
 - Landfall Compound
 - Alternative Landfall Compound
 - Special Protection Area
 - Special Areas of Conservation (SAC)
 - RAMSAR

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

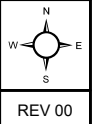
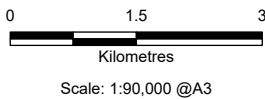


00	23/02/2021	Ecological Designations	DL	KB	KB
Rev	Date	Description	Drn	Chk	App

Eastern Link 1 Northern Point of Connection



TITLE: Figure 5.2:
International Ecological Designations



- Barns Ness Coast SSSI which lies along the coastline south of Dunbar to Torness Nuclear Power Station. The site is designated for its coastal habitats (Scottish Natural Heritage, 2020)³.
- Pease Bay Coast SSSI which lies to the south east of the Study Area, its stretches from Bilsdean Creek as far as Pease Bay. The site is designated for its botanical interest as well as its geological interest (Scottish Natural Heritage, 2020)⁴.
- Woodhall Dean SSSI lies to the west of the Study Area, beyond the preferred convertor station site. This site is designated for its broad-leaved, mixed and yew woodland as well as for upland oak woodland (Scottish Natural Heritage, 2020)⁵.
- Lammermuir Deans SSSI lies to the south of the preferred convertor station site, almost 2 km out with the Study Area. This site is designated for its biological interest (upland mixed ash woodland, subalpine calcareous grassland and valley fen) as well as for geomorphology (Scottish Natural Heritage, 2020)⁶.
- Outer Firth of Forth and St Andrews Bay complex SPA which lies offshore of the Study Area. This site is designated as a SPA due to its importance to 21 species of marine birds (Scottish Natural Heritage, 2020)⁷.

5.3.6 The following non-statutory designated sites lie within the Study Area or immediately adjacent:

- Dryburn Valley local biodiversity site lies in the north of the Study Area. This site is a river valley with woodland and grassland.
- Dunglass Burn local biodiversity site also lies within the Study Area and Thornton Glen Scottish Wildlife Trust Reserve (also referred as Thurston

³ Scottish Natural Heritage (2020), 'Barns Ness Coast SSSI', Available at: <https://sitelink.nature.scot/site/153>.

⁴ Scottish Natural Heritage (2020), 'Pease Bay Coast SSSI', Available at: <https://sitelink.nature.scot/site/1276>.

⁵ Scottish Natural Heritage (2020), 'Woodhall Dean SSSI', Available at: <https://sitelink.nature.scot/site/1646>

⁶ Scottish Natural Heritage (2020), 'Lammermuir Deans SSSI', Available at: <https://sitelink.nature.scot/site/904>

⁷ Scottish Natural Heritage (2020), 'Outer Firth of Forth St Andrews Bay Complex SPA', Available at: <https://sitelink.nature.scot/site/10478>

Burn Valley 2 local biodiversity site) lies immediately adjacent to the Study Area. These are both river valleys with woodland and grassland.

- Bilsdean Coast local biodiversity site which is a coastal site running along the section of coast within the Study Area at the landfall site.
- Several areas of ancient woodland lie within and adjacent to the Study Area.

5.3.7 In addition, the following internationally designated sites lie within 10 km of the Study Area (see Figure 5.2):

- St Abbs Head to Fast Castle SPA lies to the south east of the study area. This site is designated for its importance to seabirds, as it regularly supports in excess of 20,000 individual birds. The boundary of the SPA overlaps with the St Abbs Head to Fast Castle SSSI which is also partly designated for its breeding seabird colony (Scottish Natural Heritage, 2020)⁸.
- St Abbs Head to Fast Castle SAC lies onshore from the St Abbs Head to Fast Castle SPA and is designated for its vegetated sea cliffs of the Atlantic and Baltic coasts (Scottish Natural Heritage, 2020)⁹
- Firth of Forth SPA, designated for by regularly supporting populations of European importance of several Annex 1 bird species as well as for regularly supporting in excess of 20,000 individual waterfowl. This site is also a Ramsar site and SSSI in relation to the bird populations it supports (Scottish Natural Heritage, 2020)¹⁰.
- The Berwickshire and North Northumberland Coast SAC lies just on the 10 km buffer beyond St Abbs Head to Fast Castle SPA and SAC. This site is designated for the following Annex I habitats: mudflats and sandflats not covered by seawater at low tide, large shallow inlets and bays, reefs and submerged or partially submerged sea caves, as well

⁸ Scottish Natural Heritage (2020), 'St Abbs Head to Fast Castle SPA'. Available at <https://sitelink.nature.scot/site/8579>

⁹ Scottish Natural Heritage (2020), 'St Abbs Head to Fast Castle SAC'. Available at <https://sitelink.nature.scot/site/8382>

¹⁰ Scottish Natural Heritage (2020), 'Citation for Special Protection Area (SPA) Firth of Forth'. Available at: <https://sitelink.nature.scot/site/8499>.

as for grey seal (*Halichoerus grypus*) - an Annex II species (JNCC, 2020)¹¹.

- 5.3.8 Habitats within the Study Area include grassland fields, arable farmland, river valleys, woodland, scrub and coastal habitats. There are several watercourses within the Study Area and immediately adjacent including the Thurston Burn, Ogle Burn, Thurston Mains Burn and Braidwood Burn.
- 5.3.9 Ornithological surveys at the proposed landfall location have been undertaken by RSK Biocensus between August 2020 and March 2021 inclusive. These surveys were agreed with Nature Scot prior to them commencing.
- 5.3.10 The surveys have recorded the following species: black-headed gull (*Chroicocephalus ridibundus*), black-throated diver (*Gavia arctica*), common eider (*Somateria mollissima*), common gull (*Larus canus*), common kestrel (*Falco tinnunvulus*), common redshank (*Tringa totanus*), common scoter (*Melanitta nigra*), dunlin (*Calidris alpina*), eurasian curlew (*Numenius arquata*), eurasian oystercatcher (*Haematopus ostralegus*), gannet (*Morus bassanus*), great black backed gull (*Larus marinus*), great cormorant (*Phalacrocorax carbo*), grey heron (*Ardea cinerea*), goosander (*Mergus merganser*), herring gull (*Larus argentatus*), lesser black-backed gull (*Larus fuscus*), pink-footed goose (*Anser brachyrhynchus*), raven (*Corvus corax*), ringed plover (*Charadrius hiaticula*), ruddy turnstone (*Arenaria interpres*), sanderling (*Calidris alba*), velvet scoter (*Melanitta fusca*) and whooper swan (*Cygnus cygnus*).
- 5.3.11 During the September bird survey, two common bottlenose dolphins (*Tursiops truncatus*) were recorded offshore.
- 5.3.12 Surveys for breeding birds, badger (*Meles meles*) and great crested newt (*Triturus cristatus*) are underway as well as a phase 1 habitat survey.

5.4 Proposed Assessment Methodology

- 5.4.1 A desk-based assessment will be undertaken, supported by detailed surveys. The most up to date, publicly available data will be used wherever possible.
- 5.4.2 The assessment will describe the potential direct and indirect impacts of the Proposed Development upon ornithological and ecological receptors.

¹¹ JNCC, 2020. The Berwickshire and North Northumberland Coast SAC Designated Area of Special Conservation. Available at <https://sac.jncc.gov.uk/site/UK0017072>

Ecology

- 5.4.3 A detailed background data search will be undertaken which will include contacting the local records centre for records of protected species within 1 km of the Proposed Development as well as a search for internationally designated sites within 10 km of the Proposed Development, statutory designated sites within 2 km of the Proposed Development and non-statutory designated sites within 1 km of the Proposed Development (although much of this data has already been collected).
- 5.4.4 To build on the existing known baseline, a preliminary ecological appraisal (PEA) will be undertaken to determine the level of ecological survey required to inform the assessment. The PEA will include the results of the background data search as well as the field survey using the UK Habitats classification system (UKHab) methodology (including assessment of the suitability of habitats for protected species). UKHab is designed for use in the DEFRA Biodiversity Metric 2.0 calculator and can thus readily be used to calculate biodiversity net gain (BNG).
- 5.4.5 The PEA results will provide an ecological description of the works areas (comprising the boundary of the Proposed Development and encompassing all temporary and permanent works) and information about species that may occur there. It will allow the evaluation of the ecological importance of the site, and if insufficient to do so alone then it will indicate what further surveys are needed, and what their scope should be.
- 5.4.6 National vegetation classification (NVC) surveys would only be carried out if potentially valuable habitats cannot be avoided, however, using the UKHab system may mean that the need for NVC can be scoped out in consultation with the statutory consultees. This is because the additional habitat information obtained through the UKHab methodology allows a better assessment of nature conservation value to be made.
- 5.4.7 Based on existing information and local knowledge, it is proposed that surveys for the following species are also undertaken:
- badger (detailed surveys within 30 m of all works areas (to search for evidence such as setts, latrines and footprints followed by monitoring of setts if required);
 - bat roosting potential (ground level tree assessment of any trees within 30 m of the works areas followed by detailed surveys if required i.e. tree climbing surveys and/or dusk and dawn surveys). Surveys will be undertaken in line with current Bat Conservation Trust guidelines (Collins, 2016);

- bat activity surveys of the proposed converter station (if required) and substation locations (it is assumed that sensitive habitats for bats, such as woodlands, can be avoided through careful routing of the cables);
- great crested newt (*Triturus cristatus*) (habitat suitability index surveys followed by eDNA surveys and presence/absence surveys as required);
- otters (*Lutra lutra*) (search of evidence 250 m upstream and downstream of any water crossings);
- water voles (*Arvicola amphibius*) (search of evidence 100 m upstream and downstream of any water crossings, two surveys will be undertaken to account for seasonal variation if required); and
- intertidal survey during a falling spring tide at the landfall to include collection of core samples for particle size and macrofauna analysis.

Ornithology

- 5.4.8 Winter vantage point surveys of the landfall area were undertaken once a month between August 2020 and March 2021 (inclusive). Counts were taken over a tide cycle that included a high tide count and a low tide count. All surveys were conducted during daylight hours and followed guidelines for the Wetland Bird Survey (WeBS) Core Counts (high tide surveys) and Low Tide Counts (low tide surveys).
- 5.4.9 In addition, winter walkover surveys of the works areas were undertaken in January and February 2021. These involved initially a driven transect followed by walking from the proposed landfall site along the preferred route to the converter station and substation, recording all bird activity but concentrating on key species and habitats that may support these species. Such species included geese that may use the surrounding fields.
- 5.4.10 To supplement the field survey, WeBS data will be sourced and used to provide background information for the surrounding count sector/sectors. The field data can be compared to the WeBS data to establish any longer trends for bird numbers.
- 5.4.11 A breeding bird survey is underway of key habitat areas identified during an initial walkover of the entire works area; this survey is being undertaken based on an accepted methodology (BTO, RSPB and JNCC). A minimum of six survey visits will be carried out between April and July 2021.

General

- 5.4.12 All detailed ecology and ornithological surveys will follow industry guidance and survey protocols.

- 5.4.13 On completion of field surveys, an Ecology Chapter and separate Ornithological Chapter for the EIARs will be produced. Impacts will be assessed in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018) and other relevant guidance.
- 5.4.14 In addition to the proposed surveys, information provided by relevant statutory bodies and interested parties during the consultation process for the Proposed Development will be reviewed and included in the ecological assessment where appropriate. This will include consultation responses from Nature Scot.
- 5.4.15 The first stage of an EcIA is 'determining value' of ecological features or 'receptors'. CIEEM places the emphasis on identifying different aspects of ecological value including designations, biodiversity value, potential value, secondary or supporting value, social value, economic value, legal protection and multi-functional features. These values are applied to the receptors within a defined geographical context and examples can be seen in Table 5.1.

Table 5.1: Resource/Receptor Evaluation Criteria

Receptor Value	Example Criteria
International	<p>An internationally designated site i.e. special area of conservation (SAC) and/or Ramsar site or proposed site (or pSAC).</p> <p>Large areas of priority habitat listed under Annex I of the Habitats Directive, and smaller areas of such a habitat that are essential to maintain the viability of that ecological resource.</p> <p>A regularly occurring, nationally significant population of any internationally important species, listed under Annex II or Annex IV of the Habitats Directive.</p>
National	<p>A nationally designated site e.g. site of special scientific interest (SSSI), or area meeting criteria for national level designations e.g. national nature reserve.</p> <p>Significant extents of a priority habitat identified in the UK Biodiversity Action Plan (UK BAP) / Scottish Biodiversity List (SBL), or smaller areas which are essential to maintain the viability of that ecological resource.</p> <p>A regularly occurring, regionally significant population of any nationally important species listed as a UK BAP / SBL priority species and species listed under Schedule 1 or Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.</p>

Receptor Value	Example Criteria
Regional	<p>Viable areas of key semi-natural habitat identified in the UK BAP.</p> <p>A regularly occurring, locally significant population of any nationally important species listed as a UK BAP / SBL priority species and species listed under Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.</p> <p>Sites which exceed the local authority-level designations but fall short of SSSI selection guidelines, including extensive areas of semi-natural woodland.</p>
County	<p>County Council/Unitary Authority designated sites and other sites which the designating authority has determined meet the published ecological selection criteria for designation, including local nature reserves selected on defined ecological criteria and Wildlife Trust sites.</p> <p>Viable areas of habitat identified in a county BAP.</p> <p>A regularly occurring, locally significant number of a species identified as important on a county basis.</p> <p>Semi-natural woodland greater than 0.25 ha which is considered to be in 'good condition'.</p>
Local	<p>Nature conservation sites selected on local authority criteria.</p> <p>Other species of conservation concern, including species listed under the local biodiversity action plan (LBAP). Areas of habitat or species considered to appreciably enrich the ecological resource within the local context e.g. species-rich flushes or hedgerows. Areas of semi-natural ancient woodland smaller than 0.25 ha.</p> <p>All other species and habitats that are widespread and common and which are not present in locally, regionally or nationally important numbers or habitats which are considered to be of poor ecological value.</p>
Site	Features of value to the immediate area only.

5.4.16 The next stage of an EcIA is to predict and characterise the likely change and impact on the ecological receptors identified. It is necessary to consider all of the following parameters;

- whether the change is positive or negative;
- the magnitude or severity of the change;
- the extent of the area subject to a predicted impact;
- the duration the impact is expected to last prior to recover or replacement of the resource or feature;

- whether the impacts are reversible, with recovery through natural or spontaneous regeneration, or through the implementation of mitigation measures or irreversible, when no recovery is possible within a reasonable timescale or there is no intention to reverse the impact; and
 - the timing and frequency of the impact, i.e. conflicting with critical seasons or increasing impact through repetition.
- 5.4.17 The CIEEM Guidelines also stress consideration of the likelihood that ‘a change/activity will occur and also the degree of confidence in the assessment of the impact on ecological structure and function’. Likelihood is then specified using the following terms;
- certain (95% probability or higher);
 - probable (50-94% probability);
 - unlikely (5-49% probability); or
 - extremely unlikely (less than 5% probability).
- 5.4.18 The assessment of potential impacts will be undertaken with the inclusion of embedded mitigation for the Project. Residual impacts include any additional mitigation measures required. An assessment will be made of the significance of residual effects, i.e. the significance of the effects that are predicted to remain after the implementation of all committed mitigation measures.
- 5.4.19 Significance will be assessed solely on an ecological basis. There are two key aspects to this. Firstly, what constitutes a significant ecological impact is determined in relation to the concept of ‘integrity’. Integrity is defined as ‘the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified’. Secondly, it is always stated in relation to a geographical context. Thus, an impact is described as significant at the level at which the integrity of the ecological receptor is affected. An impact may still be significant at some geographical level below that at which the receptor was deemed to be valuable, e.g. loss of common plant species may not affect the integrity of an SSSI valued at national level, but it may still be a significant impact at the local or site level.

Biodiversity Net Gain

- 5.4.20 The approach to ensuring that the Project can deliver environmental net gain, both in terms of biodiversity and other aspects of natural capital, would be strongly based on the mitigation hierarchy. An early understanding of the likely constraints and opportunities is essential in order to ‘design out’ potential environmental impacts (i.e. through avoidance) and optimise the benefits.

- 5.4.21 The most common impact of the Proposed Development will be the potential loss of trees and hedgerows, together with temporary loss of grasslands. Mitigation measures will seek to avoid loss by localised re-routing and other measures; there will also be opportunities not only for replacement but also enhancement.
- 5.4.22 Use of both DEFRA's 2.0 biodiversity metric and their Natural Capital approach are proposed, as this would maximise the biodiversity and ecosystem services benefits of the Project. With regard to BNG, this would involve mapping all habitats present within the works areas in a Geographic Information System (GIS), measuring accurately the area of different habitats that would be affected by the Proposed Development, and thus calculating how many biodiversity units would need to be provided by the scheme to offset the impacts and achieve 10% net gain where possible through the retention and enhancement of existing habitats, such as native planting and increasing species diversity.
- 5.4.23 Natural England has stated that the Biodiversity Metric 2.0 can now be used; we seek to confirm with NatureScot if this is also acceptable in Scotland.

5.5 Potential Impacts

Construction

- 5.5.1 The Proposed Development has the potential to introduce ecological and ornithological effects during construction as follows:
- impacts on several designated sites given the close proximity of several sites to the works areas;
 - the potential to displace birds which are qualifying species of the Outer Firth of Forth and St Andrews Bay complex SPA;
 - impacts of ancient woodland given the close proximity to the works areas although this is likely to be minimal;
 - permanent loss of habitat and species within the working areas due to ground and excavation works for the new substation and converter station, this may include effects on important habitats. Permanent and temporary loss of habitat for laying the underground cables;
 - temporary and potentially permanent displacement of species from within the working areas, potentially including badger, bats, birds, great crested newt, otter, reptiles and water vole;
 - disturbance to nesting birds including ground-nesting species;
 - fragmentation of habitats or severance of ecological corridors during construction;

- degradation of habitats that cannot easily be recreated, especially woodland or wetland areas;
- disturbance of species within and adjacent to the working areas due to construction noise, vibration and site personnel;
- disturbance of species due to access and travel on and off the site during construction;
- environmental incidents and accidents (e.g. spillages, noise, fire and emissions);
- disturbance/displacement of species within and adjacent to the working areas by an increase in artificial lighting (night-time lighting during construction is expected to be limited to specific short-term activities such as use of horizontal directional drilling (HDD) at particular crossing points);
- impacts on adjacent habitats (and the species that use them), for example through noise and visual disturbance; and
- rainwater runoff from hard-standing or during construction, such as track-way panels or temporary stone access routes.

5.5.1 Longer-term impacts, though more likely to be avoided or reduced through mitigation, may include the following in increasing order of permanence:

- modification of habitats and introduction of undesirable species (such as injurious weeds or invasive alien species) as a result of traffic movements, reinstatement works and landscaping; and
- long-term recovery of important habitats which cannot easily be recreated, although this is considered unlikely as it should be possible to avoid important habitats.

5.5.2 Where such impacts occur additional mitigation measures (beyond embedded mitigation) may be adopted to help eliminate or offset impacts, such as timing of works, micro-siting of the cable route and nesting bird checks.

Operation

5.5.3 As a result of the Proposed Development, potential operational environmental effects relating to ecology and ornithology are expected to be minimal given that land will be reinstated and only a relatively small area will be lost for the converter station and substation.

5.5.4 There may be local disturbance to species due to noise and lighting from both the converter and substation, including breeding birds, however it is expected that animals will readily adapt to new levels of noise and lighting over time. Furthermore, mitigation will include a careful lighting design to ensure minimal incidental illumination of unnecessary areas.

- 5.5.5 There may be an opportunity to enhance the habitat following construction in such a way as to benefit biodiversity such as, planting at substation and converter station, erecting bat or bird boxes in nearby trees etc.

Decommissioning

- 5.5.6 At the decommissioning phase, it is anticipated that the onshore cables would remain buried in the ground to avoid disruption associated with their removal. It is anticipated that all above ground infrastructure associated with the converter station and substation would be removed (foundations removed to approximately 1 m deep) and the land fully reinstated.
- 5.5.7 Potential impacts on ecological and ornithological receptors resulting from decommissioning activities would be expected to be similar to those during the construction phase (although less extensive due to the retention of the buried cables). The reinstatement of land used for the substation and converter station will offer potential to enhance the area again for biodiversity.

Cumulative

- 5.5.1 As detailed in Chapter 4 (EIA Methodology), a staged approach to cumulative assessment will be undertaken. The staged approach will consider other elements of the Proposed Development, the wider Eastern Link 1 Project, and any other relevant developments (other consented developments and projects where consent is being sought and for which sufficient information is readily available).
- 5.5.2 It is anticipated that the onshore works associated with Berwick Bank Offshore Wind Farm (OWF) will require consideration. Should any other large-scale projects be identified during consultation or following a review of published information, these will also be included in the cumulative impact assessment.

Habitats Regulation Assessment

- 5.5.3 As part of the ecological assessment process, there may be a requirement for assessment of the Proposed Development under the Conservation of Habitats and Species Regulations (as amended) 1994 and (depending on the details of the project design) for appropriate assessment. This is due to the presence of internationally designated sites within 10 km of the works areas including the adjacent Firth of Forth and St Andrews Bay complex SPA. A Habitat Regulation Assessment (HRA) screening will be prepared and submitted for the Proposed Development.

5.6 Summary of Issues to be Scoped In and Out

Scoped In

5.6.1 In summary, the following parameters are to be scoped into the EIA:

Construction Phase and Decommissioning Phase

- potential temporary and permanent impacts on designated sites;
- potential temporary and permanent impacts on habitats; and
- potential temporary and permanent impacts on protected species, including birds.

Operation Phase

- potential impacts on species due to new levels of noise and lighting from the convertor station and substation.

Scoped Out

5.6.2 It is proposed to scope out the following elements:

- impacts on habitats during the operational phase.

6 ARCHAEOLOGY AND CULTURAL HERITAGE

6.1 Introduction

- 6.1.1 The archaeology and cultural heritage (also referred to as the historic environment) of an area comprises archaeological sites, historic buildings, gardens and designed landscapes, historic battlefields and other sites, features or places in the landscape that have the capacity to provide information about past human activity, or which have cultural relevance due to associations with folklore or historic events. Sites of cultural heritage interest may also derive some, or all of that interest, from their 'setting' within the wider landscape.
- 6.1.2 Historic landscape is not treated as a heritage asset for the purposes of this assessment except where a defined area of landscape has been designated for its heritage interest (including Conservation Areas and areas included in the Inventory of Gardens and Designed Landscapes). It is recognised that all landscapes have an historic dimension, and this will be considered as part of the assessment of Landscape Character (covered in Chapter 7: Landscape and Visual Amenity).
- 6.1.3 It is important to note that, although any effects on the significance of heritage assets due to change in their setting are likely to be visual in nature, the assessment of these visual effects is distinct from the assessment of visual change in the LVAA. The assessment of effects on setting may be informed by visualisations prepared as part of the LVAA but the conclusions reached regarding visual change in the setting of a heritage asset are distinct.
- 6.1.4 The Archaeology and Cultural Heritage chapter of the Scoping Report (this chapter) is intended to identify potential effects of the Proposed Development upon the physical fabric and settings of heritage assets within the scoping boundary, and potential effects on the settings of assets within the wider landscape.
- 6.1.5 The Archaeology and Cultural Heritage section of the Environmental Impact Assessment Report (EIAR) will characterise the historic environment within the application boundary and in the wider study area. It will use the results of consultation, desk-based research, walkover surveys and setting visits to define a study area and to assemble a baseline of heritage assets within it, and then

to assess the potential effects of the Proposed Development on that baseline. Where potential effects are identified, mitigation measures will be suggested.

6.2 Legislation and Policy

Statutory protection

- 6.2.1 The following table summarises the relevant legislation relating to the historic environment and development projects (Table 6.1).

Table 6.1 Historic environment, statutory legislation

Legislation	Jurisdiction	Key Issues
Ancient Monuments and Archaeological Areas Act (1979)	Historic Environment Scotland (HES)/ Scottish Government	Provides statutory protection of Scheduled Monuments. It is a criminal offence to carry out any works on or near a Scheduled Monument without Scheduled Monument Consent.
The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997	HES/ Scottish Government	Provides statutory protection of Listed Buildings and Conservation Areas.
The Historic Environment Scotland Act 2014	HES/ Scottish Government	Defines the role of HES, and the processes for the designation of heritage assets, consents and rights of appeal.

Non-statutory protection and guidance

- 6.2.2 The assessment will be carried out with reference to the following policy and guidance:
- Planning Advice Note (PAN) 2/2011: Planning and Archaeology;
 - Scottish Planning Policy (SPP) 2014;
 - Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists (CIfA 2014);

- Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (ClfA 2014);
- Our Place in Time: The Historic Environment Strategy for Scotland (2015);
- Managing Change in the Historic Environment: Setting (HES) 2016);
- Historic Environment Policy Scotland (HES, 2019);
- Historic Environment Scotland Circular (HES, 2019); and
- Designation Policy and Selection Guidance (HES 2019).

Regional Planning Context

- 6.2.3 The Strategic Development Plan (SDP) (SES Plan) for Edinburgh and South East Scotland covers the period to 2032 and sets out broad strategic planning vision, strategy and policy for the region¹. The core planning vision of the SES Plan states:

“By 2032, the Edinburgh City Region is a healthier, more prosperous and sustainable place which continues to be internationally recognised as an outstanding area in which to live, work and do business.”

- 6.2.4 The SDP addresses archaeology and cultural heritage in Policy 1B, stating that Local Development Plans will:

“Ensure that there are no significant adverse impacts on the integrity of international and national built or cultural heritage sites in particular World Heritage Sites, Scheduled Ancient Monuments, Listed Buildings, Royal Parks and Sites listed in the Inventory of Gardens and Designed Landscapes”.

Local Planning Context

- 6.2.5 East Lothian Council's Local Development Plan (LDP) sets out how the SDP's development requirements can be delivered. The LDP contains nine policies focused on the historic environment. Table 6.2 below identifies and describes those most relevant to the Proposed Development.
- 6.2.6 The LDP is supported by supplementary planning guidance (SPG), including on cultural heritage and the built environment (2018).

¹ The Strategic Development Planning Authority for Edinburgh and South East Scotland (2013) Strategic Development Plan [Online] Available at:
<https://www.sesplan.gov.uk/assets/files/docs/290813/SESplan%20Strategic%20Development%20Plan%20Approved%2027%20June%202013.pdf>



Table 6.2 Local Development Plan policies applicable to the Historic Environment

Policy No.	Subject	Key policy wording
CH1	Listed buildings	<p>The demolition of a listed building will not be permitted unless the building is no longer of special interest, is incapable of repair or there are overriding environmental or economic reasons, and it must be satisfactorily demonstrated that every effort has been made to continue the present use or to find a suitable new use.</p> <p>New development that harms the setting of a listed building will not be permitted.</p>
CH2	Conservation areas	<p>All development proposals within or affecting a Conservation Area or its setting must be located and designed to preserve or enhance the special architectural or historic character or appearance of the Conservation Area.</p>
CH4	Scheduled monuments and archaeological sites	<p>Where a proposed development might affect any Scheduled Monument or archaeological site (of known or suspected archaeological interest), the developer must undertake and make available to the planning authority a professional archaeological assessment and, if necessary, a field evaluation.</p> <p>Development that adversely impacts on a scheduled monument, or its setting, will not be permitted.</p> <p>Development that would harm a site of regional or local archaeological interest, or its setting, will only be permitted in exceptional circumstances, where the Council accepts that archaeological advice that the significance of the remains is not sufficient to justify their physical preservation in situ when weighed against other material considerations (including the benefits of the proposed development). In such situations, the developer must make proper provision for the</p>

Policy No.	Subject	Key policy wording
		excavation, recording and analysis of the archaeological remains in advance of the commencement of development, the results of which must be reported and any subsequent post-excavation work undertaken should also be reported and, if warranted, published. Appropriate conditions may be applied to any planning permission to achieve this. Where it is feasible within a proposed development to accommodate, preserve or enhance a Scheduled Monument or archaeological remains, interpretation and integration of these features and where appropriate, public access, will be expected.
CH5	Battlefields	Development within a site listed in the Inventory of Historic Battlefields will not be permitted where it would have a significant adverse effect on the key features of the battlefield, including its key landscape characteristics and special qualities, unless it can be demonstrated that the overall integrity and character of the battlefield area will not be compromised.
CH6	Gardens and designed landscapes	Development that would significantly harm the elements justifying designation of sites of national importance listed in the Inventory of Gardens and Designed Landscapes, or sites of local or regional importance included in historic gardens and designed landscape records, will not be permitted.

6.3 Preliminary Baseline Conditions

- 6.3.1 As identified within the LDP, East Lothian is rich in archaeology and cultural heritage. The land in which the Proposed Development is located (as shown in the scoping boundary), extends from the mean lower water tide mark at Thorntonloch through a variety of different environments to an inland converter station. These include: an intertidal zone; a coastal zone, an area of major transport infrastructure leading between the Central Belt of Scotland and the

north east of England (including the A1 dual carriageway and East Coast Mainline railway); an area of extensive former quarry that has been subsequently reinstated, and (for the majority of the area within the scoping boundary) arable fields.

- 6.3.2 As different environments were occupied, settled and exploited by humans in different ways in the past, so the known existing and potential heritage assets located within each environment is likely to differ. As an illustration, the rural arable interior is noteworthy for the density of scheduled prehistoric agricultural settlement sites identified from aerial photography. The area of major transport infrastructure overlaps with the two battles of Dunbar inventory battlefields, highlighting the importance of the area in both transportation and conflict. In contrast to these two, the coastal zone is noteworthy for discovery of a Mesolithic occupation site at East Barns associated with exploiting marine resources (e.g. pebble beaches for flint tool manufacture).
- 6.3.3 The existing known designated and non-designated heritage assets, and the potential for the discovery of previously unidentified heritage assets, will be ascertained following the method outlined below.

6.4 Proposed Assessment Methodology

Study Areas

- 6.4.1 Two study areas will be adopted for the assessment:
- Study Area A will comprise an area extending to at least 1 km from the Proposed Development. Its purpose is to identify potential physical effects on the known archaeological and cultural heritage resource, and to identify the archaeological potential of the Proposed Development site through the identification of any heritage assets within, or local trends immediately adjacent to, the Proposed Development footprint.
 - Study Area B will comprise an area extending at least 5 km from the proposed permanent above ground elements of the Proposed Development, i.e. the substation, converter station and any new overhead line towers, to identify potential significant impacts on the setting of designated heritage assets. Within 1 km, impacts on the setting of all designated assets, scheduled monuments (SMs), historic battlefields, listed buildings, conservation areas, and inventory gardens and designed landscapes (GDLs) will be assessed following the method outlined below. SMs, monuments proposed for scheduling, Category A listed buildings, historic battlefields, conservation areas and GDLs only will be assessed up

to the maximum 5 km, as these types of asset can be important in terms of location, elevation, landscape dominance and prominence and intervisibility, and can be influenced by changes to their contextual setting from development of the type proposed.

Desk Based Assessment

- 6.4.2 A desk-based assessment (DBA) of the archaeological and cultural heritage resources potentially impacted upon by the land-based infrastructural activities will be prepared.
- 6.4.3 Baseline data will be gathered from the following sources, following from the route and site selection stages:
- Designation data downloaded from the Historic Environment Scotland website;
 - The National Record of the Historic Environment (NRHE), including the Canmore database and associated photographs, prints/drawings and manuscripts held by HES;
 - Historic Landscape Assessment data, viewed through the HLAMap website;
 - The East Lothian Council Historic Environment Record (HER);
 - The National Collection of Aerial Photography (NCAP);
 - Geological data available online from the British Geological Survey and from site investigation reports provided to SP Energy Networks;
 - Conservation area data and any other archaeological constraints listed in the LDP;
 - Historic maps held by the National Library of Scotland;
 - Ordnance Survey Name Books;
 - Bibliographic sources and the Statistical Account of Scotland; and
 - Information from the archaeology and cultural heritage assessments being prepared for the marine cable route, to inform the intertidal zone baseline.
- 6.4.4 The information gathered from the data sources will be compiled into a gazetteer and their locations shown on appropriate scale mapping. The data will be synthesised with a view to identifying potential archaeological and cultural heritage features and proposing interpretations regarding their sensitivity.



Walkover Survey

- 6.4.5 An archaeological walkover survey will be undertaken of the Proposed Development from the proposed landfall site to the converter station and to the proposed substation. It will assess the present condition of the Proposed Development site and assist in the assessment of impact, condition and survival of the known and potential archaeological resource.
- 6.4.6 It is anticipated that the survey will provide information on areas of known archaeological features highlighted by the desk based assessment, as well as identifying potential new heritage assets on or close to the Proposed Development. A written pro-forma sheet for each land unit will be compiled and deposited with the site archive. The location and extent of heritage assets will be recorded by hand-held Trimble XT GPS or the ESRI Collector App (typically with $\pm 1\text{m}$ accuracy) and a photographic record.
- 6.4.7 The pro-forma sheets will record extant archaeological features, such as earthworks or standing buildings, any negative features, soil discolorations or crop-marks, present land-use, current boundary formation (such as hedge, ditch, bank, etc), evidence for previous land-use, local topography and aspect, exposed geology, soils, watercourses, exposure, health and safety considerations, surface finds, and any other relevant information.
- 6.4.8 Consideration of impacts arising from the Proposed Development on the setting of heritage assets within Study Area B will also be undertaken (see 6.4.10 below).

Environmental Impact Assessment

- 6.4.9 An Archaeology & Cultural Heritage Chapter for the EIAR will be prepared. Impacts on the known and potential archaeology and cultural heritage of the area will be assessed.
- 6.4.10 Potential impacts on the settings of heritage assets will be identified from an initial desk-based appraisal of data from HES and the HER and consideration of current maps and aerial images available on the internet. Where this initial appraisal identifies the potential for a significant effect, the asset will be visited to define baseline conditions and identify key viewpoints. Visualisations will be prepared to illustrate changes to key views, where potentially significant effects are identified.
- 6.4.11 Where potentially significant effects are identified, mitigation measures will be proposed. The preferred mitigation option is always to avoid or reduce impacts through design, or through precautionary measures such as fencing off heritage

assets during construction works. Impacts which cannot be eliminated in these ways will lead to residual effects.

- 6.4.12 Adverse effects may be mitigated by an appropriate level of survey, excavation, recording, analysis and publication of the results, in accordance with a written scheme of investigation (SPP paragraph 150 and PAN2/2011, sections 25-27). Archaeological investigation can have a beneficial effect of increasing knowledge and understanding of an asset, thereby enhancing its archaeological and historical interest and offsetting adverse effects.

6.5 Potential Impacts

- 6.5.1 Effects on the historic environment can arise through direct physical impacts, impacts on setting or indirect impacts:
- direct physical impacts describe those development activities that directly cause damage to the fabric of a heritage asset. Typically, these activities are related to construction works and will only occur within the application site;
 - an impact on the setting of a heritage asset occurs when the presence of a development changes the surroundings of a heritage asset in such a way that it affects (positively or negatively) the cultural significance of that asset. Visual impacts are most commonly encountered but other environmental factors such as noise, light or air quality can be relevant in some cases. Impacts may be encountered at all stages in the life cycle of a development from construction to decommissioning but they are only likely to lead to significant effects during the prolonged operational life of the development; and
 - indirect impacts describe secondary processes, triggered by the development, that lead to the degradation or preservation of heritage assets. For example, changes to hydrology may affect archaeological preservation; or changes to the setting of a building may affect the viability of its current use and thus lead to dereliction.
- 21.5.2 There is the potential for indirect effects on the settings of above ground heritage assets such as listed buildings and Scheduled Monuments during the construction activities. However, given the temporary nature of the construction activities, these are not considered to be significant and as such further assessment of indirect effects on above ground heritage assets during the construction phase is not considered to be required within the EIA.

Cumulative

- 6.5.2 As detailed in Chapter 4 (EIA Methodology), a staged approach to cumulative assessment will be undertaken. The staged approach will consider other elements of the Proposed Development, the wider Eastern Link 1 Project, and any other relevant developments (other consented developments and projects where consent is being sought and for which sufficient information is readily available).
- 6.5.3 It is anticipated that the onshore works associated with Berwick Bank Offshore Wind Farm (OWF) will require consideration. Should any other large-scale projects be identified during consultation or following a review of published information, these will also be included in the cumulative impact assessment.

6.6 Summary of Issues to be Scoped In and Out

Scoped In

- 6.6.1 In summary, the following parameters are proposed to be scoped into the EIA:
- Construction Phase and Decommissioning Phase
- Direct permanent physical impacts on known or previously unidentified heritage assets.
- Operation Phase
- Impacts on the setting of designated heritage assets within the two study areas.

Scoped Out

- 6.6.2 It is proposed to scope out the following elements:
- Temporary impacts on the setting of heritage assets arising during the construction stage, which will be short-term and reversible.
 - Operational impacts on the setting of non-designated heritage assets within the two study areas.

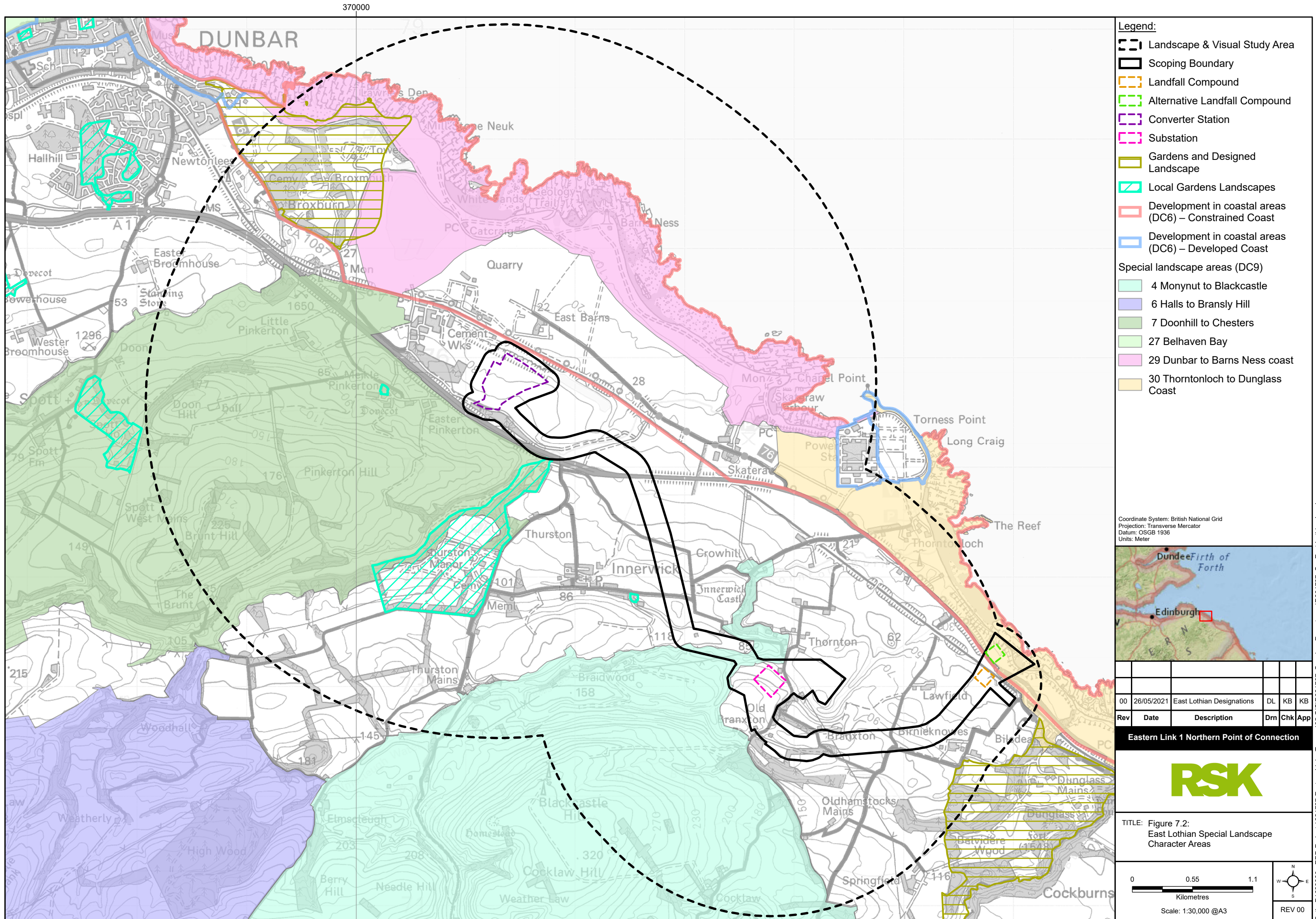
7 LANDSCAPE AND VISUAL AMENITY

7.1 Introduction

- 7.1.1 This chapter sets out the proposed scope and approach to assessing potential direct and indirect impacts of the Proposed Development on landscape and visual amenity receptors during construction, operation and decommissioning phases. Within this chapter, preliminary baseline data will be presented and potential effects that may arise as a result of the Proposed Development will be outlined.
- 7.1.2 The methodology presented in this chapter builds upon the general assessment methodology summarised in Chapter 4 (Approach to Environmental Impact Assessment) of this Scoping Report.
- 7.1.3 This chapter is supported by the following figures and appendices:
- Figure 3.2: Scoping Boundary;
 - Figure 7.1: Landscape & Visual Amenity Study Area and Potential Viewpoint Locations; and
 - Figure 7.2: East Lothian Special Landscape Character Areas.
- 7.1.4 Landscape and visual effects are closely linked which means there is some overlap of assessment methodology, although the two topics are assessed separately. Landscape assessment deals with the assessment of effects on the landscape as a resource in its own right, whilst assessment of visual effects considers the effects on specific views and on the general visual amenity experienced by people (visual receptors).

Work Undertaken to Date

- 7.1.5 Initial field survey and assessment work has already been undertaken as part of the siting and routeing study for the Proposed Development. As part of the options appraisal phase, consideration was given to the nature and sensitivity of the landscape within a 6,800 ha onshore study area, based on the findings of earlier onshore studies undertaken by Wardell Armstrong in 2013 and 2014.
- 7.1.6 The EIA will build on this information through further field and desk survey. This is in order to provide a full appreciation of the landscape within the study area for the preferred site for the converter and substations and the preferred



connecting cable route. The further studies will consider constituent landscape elements and features, landscape character and the way this varies spatially, its history, condition, the way it is experienced and the value attached to it.

7.2 Legislation and Policy

- 7.2.1 Planning policy relevant to the Proposed Development is set out in Chapter 2 (Planning Context) of this Scoping Report.
- 7.2.2 The paragraphs below provide some brief context specifically with respect to landscape and visual amenity.

National Planning Context

- 7.2.3 The National Planning Framework (3rd edition) (NPF3) provides the overarching framework in Scotland from which regional spatial strategies and local development plans must incorporate in their approach to development¹. The NPF3 is based on the following core planning vision:
- *'We live in a Scotland with a growing, low carbon economy with progressively narrowing disparities in well-being and opportunity. It is growth that can be achieved whilst reducing emissions and which respects the quality of environment, place and life which makes our country so special. It is growth which increases solidarity – reducing inequalities between our regions. We live in sustainable, well-designed places and homes which meet our needs. We enjoy excellent transport and digital connections, internally and with the rest of the world.'*
- 7.2.4 A draft NPF4 is expected to be consulted upon and laid before the Scottish Parliament in Autumn 2021.

Regional Planning Context

- 7.2.5 The Strategic Development Plan (SDP) for Edinburgh and South East Scotland covers the period to 2032 and sets out broad strategic planning vision, strategy and policy for the region². The SDP details that Local Development Plans (LDP) will direct further strategic development.

¹ The Scottish Government (2014) Scotland's Third National Planning Framework [Online] Available at: <https://www.gov.scot/publications/national-planning-framework-3/>

² The Strategic Development Planning Authority for Edinburgh and South East Scotland (2013) Strategic Development Plan [Online] Available at:

7.2.6 The stated aims of the SDP include:

- *‘Conserve and enhance the natural and built environment;*
- *Promote green networks including through increasing woodland planting to increase competitiveness, enhance biodiversity and create more attractive, healthy places to live.*
- *Promote the provision of improved infrastructure to enhance connectivity within the area, between the area and other parts of the UK and elsewhere to support economic growth and meet the needs of communities.*
- *Contribute to the response to climate change through mitigation and adaptation and promote high quality design / development.’*

Local Planning Context

7.2.7 East Lothian Council LDP 2018 sets out how the SDP’s development requirements can be delivered. The LDP provides a land use framework and contains policies that stimulate and manage sustainable development within the area.

7.2.8 A stated aim and objective of the LDP is to,

‘Protect and enhance the area’s high quality environment and its special identity [SOA: 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10]:

- *To ensure that new development respects the character, appearance and amenity of the area, including its settlements and their settings;*
- *To ensure a strategic approach to managing landscape change when accommodating new development, including delivering green network measures with new development, and by avoiding inappropriate development in locations where this is important to protect the character, setting and identity of the local area;*
- *To ensure that the area’s significant international, national and local cultural and natural heritage assets, including green network assets, are protected and conserved, and where appropriate enhanced, including biodiversity, flora and fauna as well as soil, water and air quality;*
- *To direct development, particularly vulnerable uses, away from areas of flood risk to appropriate locations, and to design new development so it will be*

<https://www.sesplan.gov.uk/assets/files/docs/290813/SESplan%20Strategic%20Development%20Plan%20Approved%2027%20June%202013.pdf>

resilient to the effects of climate change and helps to reduce or avoid flood risk;

- *To ensure that the design of new development reflects the sense of place and identity of the local area, and is properly integrated with its surroundings in terms of movement as well as form, appearance and use of materials, while contributing to wider sustainability and place making objectives;*

7.3 Preliminary Baseline Conditions

7.3.1 Assessments of the baseline landscape and visual conditions will be undertaken in parallel and will be informed by a combination of desk and field-based techniques. Preliminary identification, description and evaluation of the existing landscape character and visual amenity of the study area will involve a desk-based review and consideration of the following information sources:

- Ordnance Survey mapping and aerial photography relating to existing landform, vegetation, settlement patterns, promoted viewpoints and drainage regimes;
- Plans containing information relating to landscape designations and landscape related policies at the local and national level;
- Schematic plans relating to the Proposed Development;
- The Historic Environment Scotland database;
- Scottish Landscape Character Types (LCT) as defined by NatureScot; and
- Special Landscape Areas (SLA) as defined by East Lothian.

7.3.2 Further field surveys will be undertaken during the EIA process to confirm and ground truth the desk-based findings.

7.3.3 The proposed scope of the Landscape and Visual Impact Assessment (LVIA) is informed by initial fieldwork and a preliminary appraisal of effects.

The Site

Substation

7.3.4 The site for the substation covers an area of approximately 4. ha across two small agricultural fields directly to the south of the existing sealing end compound at Thornton Bridge. The fields are enclosed by dry stone walls on all sides, with a small stretch of hedgerow along the eastern boundary of the site separating the site from an unnamed local road. The site is located on a sloping

landform from around 95 m AOD at the south of the site to 75 m AOD at the north of the site.

- 7.3.5 Linked to the substation works would be the minor diversions of existing 400kV overhead lines (OHLs) and the replacement of existing towers.

Converter Station

- 7.3.6 The site for the converter station is a 16.5 ha site adjacent to the Dunbar Energy Recovery Facility (ERF) and Dunbar Cement Works, the large built form of which are located to the west of the site. The site was previously an opencast quarry that has been backfilled and is now naturally regenerating with rough grassland and scrub vegetation. To the immediate north of the site is an access route (National Cycle Network (NCN) no. 76 and Core Path 42) which separates the site from the quarrying works to the north which are linked to the Dunbar Cement Works. To the immediate east of the site is a landfill site, linked to the ERF. To the south of the site is a woodland belt which was planted to help screen the existing industrial facilities from receptors to the south. The woodland belt is adjacent to the A1 highway. The site is located on a sloping landform from around 53 m AOD at the south of the site, adjacent to the A1, to around 22 m AOD at the north of the site.

Cable Route

- 7.3.7 The proposed cable route runs broadly south-east to north-westwards for 6.87 km from the proposed site for the landfall compound across an agricultural landscape of predominantly arable fields with occasional woodland belts associated with narrow valley streams such as Thornton Burn (which the cable route crosses) and until reaching the eastern extents of the existing landfill site. The cable route also crosses Dry Burn..

The Study Area

- 7.3.8 The study area is dominated by agricultural land on a transitional landscape between a lowland coastal area and the edge of an upland landscape dissected by narrow valley streams.
- 7.3.9 Due to the size of the study area, the study area includes a small area of the North Sea. Likely effects on the seascape would be scoped out of the LVIA as the Proposed Development would not impact the seascape within the study area.
- 7.3.10 The eastern extent of the landform within the study area is occupied by the narrow strip of beach at Thorntonloch, the narrow beach quickly transitions into sand dunes around 20 m AOD. Over a distance of 1 km the landform crosses

large agricultural fields and gently rises to a height of around 50 m AOD, at this point the landform transitions to the eastern edge of the Lammermuir Hills and rises steeply to 100 m AOD, further inland the study area occupies a rolling landscape with several high areas of ground including Cocklaw Hill (319 m AOD) and the rising ground to Bransly Hill (398 m AOD) These areas of high ground are incised by narrow stream valleys which are often host to mature, including ancient, woodland belts.

- 7.3.11 Land use within the study area is dominated by agriculture, however there are also a small number of caravan parks including the large Thurston Manor Leisure Park approximately 1.3 km south of the proposed site for the converter station. Within the very south-west of the study area are sites of commercial forestry and the northern edge of Aikengall wind farm. Torness Nuclear Power Station is located on the coastline within the east of the study area.

Settlements

- 7.3.12 The town of Dunbar and villages of Oldhamstocks and Cockburnspath are all located outside the study area; therefore the largest settlement on which potential impacts will be assessed is the village of Innerwick.
- 7.3.13 Innerwick is within the centre of the study area approximately 5.5 km south of the southern extents of Dunbar and the majority of the village is located within Innerwick Conservation Area. The village is located approximately 1.7 km north-west of the proposed substation site and 1.7 km south-east of the proposed converter station site, on the transitional landscape between the uplands and the coast. The village is visible from a wide area to the north and east of the village due to its location on rising ground. From the village panoramic views of the lower lying ground and coastline are possible, except for where adjacent built form or trees immediately screen a view. The existing Torness Nuclear Power Station and cement works are all visible in views from the village.

Transport Routes

- 7.3.14 The East Coast Mainline and the A1 run through the east of the study area broadly parallel to the coastline and impacts on their users would be considered within the LVIA.
- 7.3.15 Local roads impacted by the Proposed Development are likely to be limited to those that are directly adjacent to the proposed sites.

Tourism and Recreation

- 7.3.16 There are a small number of caravan sites within the study area which will be considered within the LVIA.

- 7.3.17 The largest site within the study area is Thurston Manor Leisure Park, located between 2-4 km inland and to the west of the village of Innerwick. The caravan site is located on lower lying ground around Dry Burn and is enclosed by natural woodland along the burn in addition to further woodland planting which has specifically been planted to help enclose and screen the site.
- 7.3.18 Within the study area there are a number of core paths and access routes. Of particular relevance are the coastal paths (some of which are collectively known as the 'East Lothian Coastal Trail') and the core paths which connect Innerwick to Oldhamstocks to Cockburnspath, via Cocklaw Hill. The coastal path between Dunbar and Cockburnspath has been named the 'John Muir Link' and links The John Muir Way to the Southern Upland Way. In addition, NCN 76 runs adjacent to the coastline from north to south through the east of the study area.
- 7.3.19 To the north and east of the proposed location for the converter station are Dunbar Camping and Caravanning Club Site, the neighbouring Dunbar Golf Club course, and Whitesands Beach; all of which attract visitors to the area.

Landscape Character

- 7.3.20 The Landscape Character of the study area was classified in the NatureScot July 2019 mapping of landscape character types within Scotland. The landscape is classified in terms of broad character types and areas referred to as Landscape Character Types (LCT).
- 7.3.21 The proposed site for the substation, a short section of the cable works and the majority of the study area are located within one LCT – '*LCT 269 Upland Fringes – Lothians*'. The landfall site, the converter station site and the majority of the connecting cable route are located within '*LCT 277 Coastal Margins – Lothians*'. Further information on these two LCT is provided below.
- 7.3.22 A very small area within the south-west of the study area is located in '*LCT 266 Plateau Moorland – Lothians*'. This LCT is 3.9 km from the cable route at its closest point to the Proposed Development and would not experience either direct or indirect impacts, and would be scoped out of the EIA.

Landscape Designations

- 7.3.23 There are no designated landscapes of international or national importance within the study area.
- 7.3.24 Within the study area there are four separate areas classified as Special Landscape Areas (SLA), as defined in the East Lothian Local Development Plan (ELLDP) 2018 Supplementary Planning Guidance (SPG).

- 7.3.25 Neither the substation nor converter station sites are located within an SLA. A small section of the cable route corridor, 150 m at its narrowest point, connecting the substation and converter station sites cuts through the very north-eastern end of SLA 4 Monynut to Blackcastle where it follows the path of Thornton Burn.
- 7.3.26 The converter station site is located directly to the north of SLA 7 Doon Hill to Chesters, the north-eastern boundary of which is the A1 approximately 250 m south of the site boundary.
- 7.3.27 The SLA within the study area are presented on Figure 7.2 and detailed below:
- SLA 4 Monynut to Blackcastle;
 - SLA 6 Halls to Bransly Hill;
 - SLA 7 Doonhill to Chesters; and
 - SLA 30 Thorntonloch to Dunglass Coast.
- 7.3.28 ELC have prepared a detailed Statement of Importance³ for each SLA with identified 'Special Qualities and Features' and 'Guidelines for Development.' The LVIA will consider whether the Proposed Development impacts any of the identified 'Special Qualities' of the SLA.

Cultural Heritage Designations

- 7.3.29 The converter station site is located within the boundary of the registered battlefield site for the Second Battle of Dunbar.
- 7.3.30 Dunglass Inventory Garden and Designed Landscape is located along the boundary of East Lothian and the Scottish Borders within the south-east of the study area approximately 1.7 km south-east of the proposed site for the substation.
- 7.3.31 There is one conservation area within the study area, located around the village of Innerwick.
- 7.3.32 The LVIA will not assess the potential effects on cultural heritage assets as this is a specialist technical discipline which would be described in the Archaeology and Cultural Heritage chapter of the EIAR. The LVIA will consider the contribution that cultural heritage assets make to landscape character. The effect on views from GDL and Conservation Areas will be assessed in the

³ https://www.eastlothian.gov.uk/downloads/file/27912/special_landscape_areas_spg

context of changes to visual amenity as opposed to changes to the significance of the cultural heritage asset.

Visual Amenity

- 7.3.33 The study area for the visual assessment will be the same as that described for the landscape assessment, and the visual baseline (existing views and visual amenity) is informed by the landscape baseline. The visual baseline forms the basis for the identification and description of the likely visual effects. It establishes the areas from where the development may be visible, the different groups of people who may experience views of the Proposed Development, the locations or viewpoints where they would be affected and the nature of the views at those locations.
- 7.3.34 For the EIA, a zone of theoretical visibility (ZTV) model will be undertaken using digital surface model (DSM) data from Ordnance Survey, ArcMap 10.7 software and the associated Spatial Analyst extension. This software factors in earth curvature and atmospheric refraction. At this stage (scoping) a basic viewshed exercise has been undertaken along with preliminary field work to establish the likely visual envelope of the Proposed Development.
- 7.3.35 Views within the study area are heavily influenced by the transitional nature of the landscape from the inland hill slopes to the low lying and more level landscape of the coastal fringe. From much of the study area there are sweeping panoramic views of the coastline, and from the landform away from the immediate coastline there are views inland towards the rising ground, with Cocklaw Hill particularly prominent in the view. One exception is from the coastline where views are sometimes limited to the seascape and coastline, with views inland often screened by sand dunes in the foreground. In addition, the undulating nature of the transitional landform results in small pockets of landscape where middle-to-long distance views are not possible.
- 7.3.36 Woodland within the study area exists mainly in conjunction with the narrow stream valleys. There are mature woodland belts to the north and west of the proposed substation site which filter views both out from, and in to, this location. There are existing woodland belts in between the eastbound carriageway of the A1 and the cement works and ERF, which have been deliberately planted to screen the industrial works associated with this area.
- 7.3.37 The location of the substation site is within a low point in the undulating topography. The closest visual amenity receptors to the substation site are all residential receptors, all of which are either enclosed by mature vegetation or

have a high level of intervening vegetation separating the receptor and the proposed site.

7.3.38 The residential receptors closest to the substation site include properties at:

- Thornton Law ~300 m north of the site;
- Black Castle Cottage ~500 m south of the site
- Thorntonloch Holdings ~600 m north of the site;
- Branxton Farm Cottage ~650 m south-east of the site; and
- The Coach House ~1 km north of the site.

7.3.39 The location of the converter station site is on a north-east facing slope, with a mature woodland belt screening the site from the west and south. The raised landform of the previous landfill works forms a mound which screens the site to the east. There are only a small number of receptors likely to have their visual amenity impacted by a development at the proposed site for the converter station; these include users of the NCN 76 and Core Path 42 to the immediate north of the site, walkers along Whitesands beach and occasional residential receptors (including the settlement of Innerwick). When perceptible the converter station would be viewed within the context of the existing industrial infrastructure adjacent to the proposed site

7.3.40 The residential receptors closest to the converter station site include properties at:

- Easter Meikle Pinkerton ~560 m south-west of the site;
- North Lodge Cottage ~800 m south-east of the site;
- Barns Ness Light House (holiday accommodation) ~1.5 km north of the site;
- Little Pinkerton ~1.7 km west of the site; and
- Innerwick ~1.8 km south-south-east of the site

7.4 Proposed Assessment Methodology

Guidance and Best Practice

7.4.1 The methods of assessment to be used are based on the broad principles established, and approaches recommended in, the following best practice guidance:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3)⁴;
- An Approach to Landscape Character Assessment⁵;
- An Approach to Landscape Sensitivity Assessment – to inform spatial planning and land management⁶;
- EIA Handbook: Guidance for competent authorities, consultees and others involved in the Environmental Impact Assessment process in Scotland,⁷; and
- Landscape Institute Technical Guidance Note 06/19 Visual Representation of Development Proposals⁸.

Scope

- 7.4.2 It is proposed that the study area for the LVIA extends to 3 km from the site boundary for the converter station, 2 km from the site boundary for the substation and 500 m from the route corridor boundary for the cable route. It is recognised that the replacement towers, which will accompany the substation development, would be visible over a wider area than 2 km, however these are replacement towers within existing 400 kV OHLs and when visible they would be viewed within the context of the existing OHLs of which they are forming part.
- 7.4.3 For the purpose of scoping, the study area for landscape character and visual amenity based on the scoping boundary is presented on Figure 7.1. The study area is entirely within East Lothian.
- 7.4.4 It is proposed that the assessment will take account of the effects of the Proposed Development at the following points in time:
- Construction – the point at which the construction works would be visible;
 - Operation Year 1 – the point at which the Proposed Development would first be visible in its entirety and before mitigation planting had an opportunity to mature; and

⁴ Guidelines for Landscape and Visual Impact Assessment, Third Edition, The Landscape Institute and Institute of Environmental Management and Assessment (2013)

⁵ An Approach to Landscape Character Assessment (2014), Natural England

⁶ An Approach to Landscape Sensitivity Assessment – to inform spatial planning and land management (2019), Natural England

⁷ EIA Handbook: Guidance for competent authorities, consultees and others involved in the Environmental Impact Assessment process in Scotland (2018), Historic Environment and Scottish Natural Heritage

⁸ Landscape Institute Technical Guidance Note 06/19 Visual Representation of Development Proposals (2019), Landscape Institute

- Operation Year 15 – once proposed mitigation planting has had the opportunity to mature.

Overview of Assessment Methodology

- 7.4.5 The key aspects of the Proposed Development will be considered against the baseline conditions to allow the potential landscape and visual effects to be predicted. Consideration will be given to effects on:
- Landscape receptors, including the constituent elements of the landscape, its aesthetic or perceptual qualities and the character around the development; and
 - Visual receptors or the people who could be affected by changes in views and visual amenity at different locations.
- 7.4.6 The term '*landscape effects*', as defined in GLVIA3 (para 2.21), means effects on '*the landscape as a resource in its own right*'. It includes direct effects upon the fabric of the landscape (such as the addition, removal or alteration of structures, woodlands, trees or hedgerows), which may alter the character and perceived quality of the area, or more general effects on landscape character and designated areas of landscape arising from the introduction of new man-made features. In landscapes designated or valued for their scenic or landscape quality, such changes can affect its perceived value or the purpose of the designation.
- 7.4.7 An assessment of visual effects deals with the effects of change and development on the composition of views available to people and their visual amenity⁹. The concern is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements. In accordance with GLVIA3, the assessment will focus on public views experienced by those groups of people who are likely to be most sensitive to the effects of the Proposed Development. This includes local communities where views contribute to the landscape setting enjoyed by residents in the area; tourists and visitors to the area; people using recreational routes, features and attractions; and road users.
- 7.4.8 The effects will be identified by establishing and describing the changes resulting from the different components of the development and the predicted effects on individual landscape or visual receptors. This will take account of both

⁹ GLVIA3 defines visual amenity as 'Meaning the overall pleasantness of the views people enjoy of their surroundings as they live, work, recreate, visit or travel through an area'.

the nature and sensitivity of the receptor and the nature and magnitude of the change likely to occur.

7.4.9 The LVIA will include the following key steps:

- Establish baseline conditions against which the effects of the Proposed Development will be assessed;
- Determine the nature of the receptor likely to be affected i.e. its sensitivity. Sensitivity combines judgements about a receptor's susceptibility to change arising from a specific proposal with judgements about the receptor's relative value;
- Predict the nature or magnitude of the effect likely to occur. To consider a magnitude of effect the assessor combines judgements about the likely size and scale of the change, and the degree of integration or otherwise with the existing character and context; the geographical extent of the area over which it is likely to occur and/or be perceptible; whether it is direct or indirect; reversible or irreversible; short, medium or long term in nature; and whether the effect is positive, negative or neutral; and
- Assess whether a significant effect on the landscape or visual amenity is likely to arise by considering the predicted magnitude of change together with the sensitivity of the receptor, taking into account any identified mitigation measures; and assess whether or not there are any residual significant effects. Residual effects are long-term effects identified once proposed mitigation measures have been implemented.

7.4.10 Each judgement will be determined by a combination of quantitative and qualitative assessment using professional judgement accompanied by a clearly explained rationale.

7.4.11 Short-term effects are typically those which would arise during the construction phase of the Proposed Development.

7.4.12 Medium and long-term effects are typically those which would arise between years 1 and 15 of operation.

7.4.13 Long-term residual effects of the Proposed Development are typically those which would remain after a minimum 15 years, once any mitigation planting and existing vegetation has had an opportunity to establish and mature.

Viewpoints and Photography

7.4.14 To inform the assessment of potential landscape and visual effects arising from the Proposed Development, a series of publicly accessible viewpoint locations

will be selected to demonstrate the visual context of the site and study area and to represent the experience of a range of visual receptors within the study area. Each viewpoint will be visited and a photographic record taken.

- 7.4.15 As explained in GLVIA3 (para 6.19), viewpoints are selected to be either representative of the view experienced by different groups of people, to be specific to a particular location, or to be illustrative of or demonstrate a particular effect. The selection will take account of a number of factors, including:
- The accessibility to the public;
 - The potential type, relative number and sensitivity of the viewers who may be affected;
 - The viewing direction and distance (short, medium and long distance);
 - Whether the view is static or part of a sequential view along a route;
 - The view types (glimpsed, framed or panoramic); and
 - The potential for cumulative views of the Proposed Development in conjunction with other similar developments.
- 7.4.16 The selected viewpoints are not intended to be representative of all visual receptors in the study area. The viewpoints are representative of those visual receptor groups that are more likely to be affected by the Proposed Development – namely residential areas, valued landscapes or sites and important and/or popular recreational areas.
- 7.4.17 No access to private land will be sought and the assessment will therefore be based on a best assumption from publicly accessible locations.
- 7.4.18 It is not proposed to include night-time photography from any of the viewpoint locations.
- 7.4.19 The viewpoints will be agreed in conjunction with East Lothian Council and other consultees as required. The type of visualisation such as annotated photography or photowire frames would also be agreed in advance with the local authority. All viewpoint photographs will be taken in accordance with the Landscape Institute's (LI) Technical Guidance Note 06/19 'Visual Representation of Development Proposals'.
- 7.4.20 Proposed locations for viewpoints (VP) to be included in the EIA with respect to the converter station site are listed below:
- VP1 – NCN 76 and Core Path 42 150m north of the site (E371738, N675996);

- VP2 – local road/residential properties 750m south-west of the site (E370474, N67560);
- VP3 – local road/residential properties 850m south-east of the site (E371809, N675043);
- VP4 – Core Path 196/ East Lothian Coastal Path and Barnes Ness Light House 1.5km north-north-east of the site (E372365, N677161);
- VP5 – junction of A1 and A1087 1.5km north-west of the site (E369862, N676487);
- VP6 – Little Pinkerton residential properties 1.8km west of the site (E369504, N676211);
- VP7 – Core Path 18 1.7km south-east of the site (E372403, N674406);
- VP8 – Innerwick 1.8km south-east of the site (E372009, N674095);
- VP9 – Broxburn local road (also representative of local nature reserve, caravan park, golf course) 2km north-west of the site (E370112, N677618);
- VP10 – Skateraw, NCN 76 and residential properties 1.9km east-south-east of the site (E373398, N675148);
- VP11 – junction of the A1 and a local road at Thorntonloch 3.5 km east-south-east-east of the site (E374671, N674385); and
- VP12 – Lammermuir Hills Core Path 16 3.8km south of the site (E371571, N671878).

7.4.21 Proposed locations for viewpoints (VP) to be included in the EIA with respect to the substation site are listed below

- VP1 – local road on eastern boundary of the site (E373958, N673017);
- VP2 – local road/residential properties at Thornton Law approximately 400 m north of the site (E374037, N673453);
- VP3 – local road 750 m north-west of the site (E373217, N673632);
- VP4 – local road 1 km south of the site (E373909, N672017);
- VP5 – properties at the Coach House approximately 1 km north of the site (E373670, N674113);
- VP6 – junction of the A1 and a local road at Thorntonloch approximately 1.5 km north-east of the site (E374671, 674385);

- VP7 – Core Path 211 on beach at Thorntonloch 1.8 km north-east of the site (E375259, N674257), located at the southern end of the caravans, if not possible the VP would stay on a core path but move north towards Torness Nuclear Power Station;
- VP8 – National Cycle Network 76 near Bilsdean 2.2 km east-south-east of the site (E376083, N672885); and
- VP9 – local road 2.8 km west of the site (E371033, N673325), located at the western end of proposed core path 324, however if the core path is now accessible then the VP would be located along the core path to the east.

Approach to Mitigation

- 7.4.22 An integral part of the iterative design, siting and assessment process undertaken to date has been the consideration of mitigation through sensitive design development and siting. The aim has been to ensure that the development takes account of all environmental constraints and opportunities and achieves the optimum environmental fit as part of an environmentally integrated design i.e. sites have been chosen which is far as possible avoid unnecessary environmental impacts including impacts on landscape and visual amenity.
- 7.4.23 During the ongoing design process, there will be a continuing exploration of further opportunities for mitigation of likely significant landscape and visual effects through sensitive alignment and siting of the component parts of the Proposed Development during both construction and operation.
- 7.4.24 With respect to potential landscape and visual effects the aim has been to site the Proposed Development away from sensitive landscape elements wherever possible and to maximise the use of existing screening landform and vegetation.
- 7.4.25 However, the nature of the Proposed Development means that some landscape and visual amenity impacts are unavoidable. In this situation additional mitigation measures will be proposed to reduce the level of any predicted significant adverse impacts. With respect to landscape and visual amenity the key mitigation proposals would be proposed woodland planting which could replace vegetation lost during construction, and also act as a visual filter of above ground infrastructure.

Cumulative Impacts Assessment

- 7.4.26 The different types of cumulative effects (intra and inter) are explained in Chapter 4 (EIA Methodology) of this Scoping Report.

- 7.4.27 As detailed in Chapter 4, a staged approach to cumulative assessment of inter-project effects will be undertaken. The staged approach will consider other elements of the Proposed Development, the wider Eastern Link 1 Project, and any other relevant developments (other consented developments and projects where consent is being sought and for which sufficient information is readily available).
- 7.4.28 Paragraph 7.2 of GLVIA3 identifies cumulative landscape and visual effects as those that, *“...result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other development (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the reasonable future”*.
- 7.4.29 Paragraph 7.5 of GLVIA3 acknowledges that cumulative landscape assessment is complex and approaches to it are evolving, noting also that the *“challenge is to keep the task reasonable and in proportion to the nature of the project under consideration.....It is always important to remember that the emphasis in EIA is on likely significant effects rather than on comprehensive cataloguing of every conceivable effect that might occur...”*.
- 7.4.30 The assessment of cumulative landscape and visual effects will follow a similar methodology to that described above for the main assessment, in that the degree of effect is determined by combining an evaluation of the sensitivity of the landscape/visual receptor and the magnitude of change. The resulting effect will be described in the EIAR as major, moderate, minor or negligible. The difference from the main landscape and visual assessment is that the cumulative assessment considers the magnitude of change which would potentially arise from multiple developments.

Defining a Study Area

- 7.4.31 The study area for the cumulative assessment will take account of other proposed developments, which are either consented or under construction. If necessary, the zones of visual influence for each development within the cumulative assessment will be overlaid to produce a composite map showing areas from where multiple developments are likely to be seen. Where sufficient information is not available for the other developments then reasonable assumptions and judgments will be made. Theoretically, the areas where the effects of the different developments overlap are those which would potentially experience cumulative landscape and/or visual effects. The larger the extent of the overlap, the greater the degree of cumulative effect likely to be experienced. It is anticipated that the onshore works associated with Berwick Bank Offshore Wind Farm (OWF) will require consideration.

7.5 Potential Impacts

Construction

- 7.5.1 Construction of the Proposed Development would take approximately three years and construction effects are generally considered to be short-term in nature.
- 7.5.2 The most immediate effects arising from construction of the Proposed Development would be those associated with access and clearance of the site for the converter station, substation and underground cable route. Landscape pattern can be affected by the felling of individual mature trees or woodland belts as these often provide the landscape with a distinctive character or local identity. The removal of hedgerows may be required to provide access for construction and or maintenance. Where new access tracks are required, potential landscape effects may occur when a new straight access track is routed across a rural field, creating a visible man-made mark on the landscape.
- 7.5.3 Removal of trees is normally regarded as a long-term effect. Creation of new access tracks, construction compounds and storage areas, and hardstanding may affect local landscape character, although in most instances such effects would be temporary as tracks and compounds would be reinstated upon completion of the works.
- 7.5.4 The likely landscape and visual impacts arising from construction are identified as:
- Temporary adverse effects due to the introduction of construction activity to the rural landscape, which can prove inappropriate in the context of overall character;
 - Temporary effects on visual amenity due to the introduction of construction activities, particularly in more rural locations or from locations with recognised or valued views of the landscape including the coastal landscape.
 - Typical activities with the potential to affect landscape character and visual amenity include:
 - Site clearance;
 - Introduction of temporary storage facilities, site compounds and temporary parking areas;
 - Earth movement; and
 - Vehicular and large plant movement on and off-site.

- 7.5.5 Construction activities would generally not be undertaken during the night-time apart from specific short-term activities such as use of horizontal directional drilling (HDD) at particular crossing points, and as such specific night-time effects would not be considered within the LVIA.

Operation

- 7.5.6 The main effects of the Proposed Development during its operational life would be the presence of new structures within the countryside.
- 7.5.7 The likely landscape and visual impacts arising during the operation of the Proposed Development are identified as:
- Direct effect on landscape pattern through the temporary or permanent loss or alteration of landscape components such as field pattern, mature trees and landform which could lead to residual effects;
 - Direct and indirect effects on character through a change in existing land uses;
 - Direct effects on areas of Ancient Woodland within the proposed corridor for the cable route;
 - Direct and/or indirect effects on the historic or cultural landscape (including the setting of important features) through loss of important features and the introduction of a utilitarian structure;
 - Direct and/or indirect effects on the character of SLA or the identified 'Special Qualities' of SLA, in particular SLA 4 Monynut to Blackcastle, which is in close proximity to the substation site and which hosts around 150 m of the proposed cable route; and indirect effects on SLA 7 Doonhill to Chesters which is in close proximity to the converter station site;
 - Direct effect on the coastal landscape through installation of the cables;
 - Changes to visual amenity resulting from the loss of existing landscape features; and
 - Potential effects of localised landscape enhancements as part of the mitigation scheme, such as reinforcement/reinstatement of woodland belts and an increase in overall vegetation cover.
- 7.5.8 Outdoor areas of the substation and converter station will be lit when necessary such as during emergency situations or unplanned maintenance work. Lighting will be not intended to be used during normal operation. Therefore a specific night-time assessment of likely effects would not be included within the LVIA.

Decommissioning

- 7.5.9 At the decommissioning phase, it is anticipated that the onshore cables would remain buried in the ground to avoid disruption associated with their removal. It is anticipated that all above ground infrastructure associated with the converter station and substation would be removed (foundations removed to approximately 1m deep) and the land fully reinstated.
- 7.5.10 Potential impacts on landscape character and visual amenity receptors resulting from decommissioning activities would be expected to be similar to those during the construction phase (although less extensive due to the retention of the buried cables).

7.6 Summary of Issues to be Scoped In and Out

Scoped In

- 7.6.1 In summary, it is proposed the following parameters are to be scoped into the EIA:

Construction Phase and Decommissioning Phase

- Landscape character of the site within the scoping boundary;
- Landscape character of identified and relevant LCT;
- Landscape character of identified and relevant SLA;
- Visual amenity of local residents;
- Visual amenity of users of local rights of way, core paths and other access routes;
- Visual amenity of local road users; and
- Visual amenity of visitors to local recreational facilities, including caravan sites.

Operation Phase

- Landscape character of the site within the scoping boundary;
- Landscape character of identified and relevant LCT;
- Landscape character of identified and relevant SLA;
- Visual amenity of local residents;
- Visual amenity of users of local rights of way, core paths and other access routes;
- Visual amenity of local road users; and

- Visual amenity of visitors to local recreational facilities, including caravan sites.

Scoped Out

7.6.2 In summary, it is proposed the following parameters are to be scoped out of the EIA:

Construction Phase and Decommissioning Phase

- Night-time assessment including night-time photography and photomontages; and
- Impacts on the seascape.

Operation Phase

- Night-time assessment including night-time photography and photomontages; and
- Impacts on the seascape.

8 GEOLOGY, HYDROGEOLOGY & GROUND CONDITIONS

8.1 Introduction

- 8.1.1 This chapter sets out the proposed scope and approach to assessing potential direct and indirect impacts of the Proposed Development on geology, hydrogeology and ground conditions. Within this chapter, preliminary baseline data will be presented and potential effects that may arise as a result of the Proposed Development will be outlined.
- 8.1.2 The method presented in this chapter builds upon the general assessment method summarised in Chapter 4 (Approach to Environmental Impact Assessment) of this Scoping Report.

8.2 Legislation and Policy

- 8.2.1 Consideration will be given to all relevant planning guidance at all levels with respect to geological, hydrogeological and ground condition regulation. This includes, but is not limited to, the following.

National Planning Context

- The Environmental Protection Act 1990 (as amended), establishes businesses legal responsibility for a duty of care of waste, contaminated land and statutory nuisances;
- The European Water Framework Directive (2000/60/EC) and associated daughter Directives including the Groundwater Directive (2006/118/EC);
- Scottish Environment Protection Agency's (SEPA) Position Statement WAT-PS-10-01: Assigning Groundwater Assessment Criteria for Pollutant Inputs (2014);
 - SEPA's Guidance for Pollution Prevention, with particular reference to:
 - GPP 1: Understanding your environmental responsibilities – good environmental practices;
 - PPG 6: Working at construction and demolition sites.



- Nature Conservation (Scotland) Act 2004: statutory designation of landforms under SSSI;
- The European Mining Waste Directive (2006/21/EC).

8.2.2 The National Planning Framework (3rd edition) (NPF3) provides the overarching framework in Scotland from which regional spatial strategies and local development plans must incorporate in their approach to development¹. Of particular reference to this chapter of the Scoping Report, the NPF3 states that planning should safeguard mineral resources and facilitate their responsible use.

Regional Planning Context

8.2.3 The Strategic Development Plan (SES Plan) for Edinburgh and South East Scotland covers the period to 2032 and sets out broad strategic planning vision, strategy and policy for the region². The core planning vision of the SES Plan states:

8.2.4 *“By 2032, the Edinburgh City Region is a healthier, more prosperous and sustainable place which continues to be internationally recognised as an outstanding area in which to live, work and do business.”*

8.2.5 The SES Plan sets out a spatial strategy which recognises existing development commitments and promotes a sustainable pattern of growth. The SES Plan lists relevant to this Chapter of the Scoping report is that of Policy 4 regarding minerals, in particular the safeguarding of mineral resources from sterilisation.

Local Planning Context

8.2.6 East Lothian Council's (ELC) Local Development Plan (LDP) sets how the SDP's development requirements can be delivered. The LDP provides a land use framework and contains policies that stimulate and manage sustainable development within the area. This includes the protection of mineral reserves, including the granting of planning permission for permanent development overlying mineral deposits or some other use of land that would preclude mineral working in the vicinity

¹ The Scottish Government (2014) Scotland's Third National Planning Framework [Online] Available at: <https://www.gov.scot/publications/national-planning-framework-3/>

² The Strategic Development Planning Authority for Edinburgh and South East Scotland (2013) Strategic Development Plan [Online] Available at: <https://www.sesplan.gov.uk/assets/files/docs/290813/SESplan%20Strategic%20Development%20Plan%20Approved%2027%20June%202013.pdf>



8.3 Preliminary Baseline Conditions

- 8.3.1 A location plan of the scoping boundary is provided in Figure 3.2. Initial high-level baseline data collection has been undertaken to provide an overview of the scoping boundary context with respect to geology, hydrogeology and ground conditions.

Geology

Bedrock geology

- 8.3.2 The bedrock geology is dominated by sedimentary strata from the Carboniferous geological time periods.
- 8.3.3 The geology of this area is complex and forms an outlier of Carboniferous rocks surrounded entirely by older strata of Silurian age. The Carboniferous sequence within the scoping boundary consists of rock strata from the Ballagan and Lower Limestone Formations, part of the Inverclyde and Clackmannan Groups respectively. These are mainly cyclic in nature, with repeating groups of mudstones, siltstones, sandstones and limestones. Coal seams are noted in some areas, particularly along the coastal section.
- 8.3.4 Limestones are more common in the younger Clackmannan Group strata in the northern part of the scoping boundary around Torness and Dunbar.
- 8.3.5 Immediately inland of the scoping boundary, the Innerwick Fault separates the Ballagan and Lower Limestone Formations from the older Silurian rocks. This faultline runs NW-SE through the region. Minor additional faulting is present within the coastal section, mainly trending E-W or NE-SW.

Superficial geology

- 8.3.6 The superficial geology is dominated by Quaternary deposits. The majority of the scoping boundary including the landfall is dominated by glaciofluvial gravel, sand and silt. These extend inland for approximately 2.5 km, before giving way to glacial diamicton till. Some alluvial deposits are present within watercourse channels, including Dry Burn and Thornton Burn. The converter station is located on an area of infilled ground. Intrusive site works carried out in March 2007 by RPS (RPS, 2007)³ for the adjacent Dunbar Energy Recovery Facility confirmed that reworked glacial deposits and quarry waste material are present

³ RPS (2007) Interpretive Site Investigation Report, Oxwellmains, East Lothian.



across the site (re-worked deposits ranged in thickness from 11.9m bgl to 20.7m bgl).

Soils

- 8.3.7 The National Soil Map of Scotland identifies the main soil types as brown soils, mineral gleys, alluvial soils and calcareous soils. Brown soils cover much of the scoping boundary, with mineral gleys concentrated just inland from the coast between Branxton and Oxwell Mains. Calcareous soils are confined to the coastal strip between Dunbar and Torness and alluvial soils cover a narrow section along the A1 corridor just inland from Torness.

Mineral Extraction

- 8.3.8 There is a limited history of mining in the scoping boundary, confined to two areas identified as probable shallow coal mining areas near Lawfield and along the coastal section north-east of Lawfield. The area at Lawfield identifies a mine entry and a former mine plan area of coverage; this lies immediately north of the scoping boundary.
- 8.3.9 At the landfall, the proposed cable horizontal direction drill (HDD) is anticipated to need to cross below the probable shallow coal mining area along the coastal section. Geophysical surveys are planned to identify any shallow underground workings in this area, to enable suitable risk assessment to be undertaken.
- 8.3.10 Limestone mining was formerly active in the Pinkerton area between Dunbar and Torness. Active quarries are present both north and south of the scoping boundary, with the quarry at Dunbar Cement Works located within 500 m of the converter station site. The active quarries south of the scoping boundary are at least 2 km from the scoping boundary. It is anticipated that ground investigation surveys will be undertaken in the proposed converter station area to identify the nature of the infilled ground, to enable suitable risk assessment to be undertaken and to inform the converter station design process.

Hydrogeology

- 8.3.11 The bedrock underlying the scoping boundary is largely classed as a Moderate productivity aquifer in which flow is virtually all through fractures and other discontinuities; with fracture flows up to 10 l/s. The Inverclyde and Clackmannan Groups strata are generally more productive than the Reston Group, which lies further inland. Along the Innerwick fault significant fracture flow may be expected. In the areas of former mine workings there is local potential for higher yields and transmissivity.



- 8.3.12 The glaciofluvial gravels, sands and silts near the coastal section are noted to be a locally important aquifer. The alluvial deposits along the river channels are likely to be high productivity but localised aquifers with a direct connection to the rivers.
- 8.3.13 There are no identified water supply boreholes within or near the scoping boundary. Available borehole records in the immediate area record water levels at approximately 9 feet (2.7 m) and 26 feet (7.9 m) below ground in the Lawfield area. Private water supplies are considered in Chapter 9 (Hydrology and Flood Risk).
- 8.3.14 SEPA's water environment hub (2014) identifies two groundwater bodies associated with the preferred route corridor. Details are provided in Table 8.1.

Table 8.1 Summary of groundwater body status

Waterbody name & ID	Status	Identified Pressures
150568 Torness	Overall: Good Water flows and levels: Good Water quality: Good	None
150730 Torness Coastal	Overall: Good Water flows and levels: Good Water quality: Good	None

Groundwater-Dependent Terrestrial Ecosystems

- 8.3.15 Groundwater-dependent terrestrial ecosystems (GWDTE) are defined by the UK Technical Advisory Group (UKTAG) (2004)⁴ as:

"A terrestrial ecosystem of importance at Member State level that is directly dependent on the water level in or flow of water from a groundwater body (that is, in or from the saturated zone). Such an ecosystem may also be dependent on the concentrations of substances (and potentially pollutants) within that groundwater body, but there must be a direct hydraulic connection with the groundwater body."

- 8.3.16 In line with the guidance provided in UKTAG (2004), a dual ecological and hydrogeological approach is recommended for identifying GWDTE, combining

⁴ UKTAG (2004) Guidance on the identification and risk assessment of groundwater dependent terrestrial ecosystems [online]. Available at: https://www.wfduk.org/sites/default/files/Media/Characterisation%20of%20the%20water%20environment/Risk%20assessment%20of%20terrestrial%20ecosystems%20groundwater_Draft_210104.pdf



detailed studies of vegetation in order to determine the potential level of groundwater dependency and a detailed hydrogeological study in order to identify locations where groundwater reaches the surface and is therefore able to provide a source of water to terrestrial ecosystems.

- 8.3.17 Early vegetation surveys have identified a number of potential GWDTE within the scoping boundary. Further surveys are required to determine if these habitats are groundwater-dependent or not.

Ground Conditions

Topography

- 8.3.18 The scoping boundary is located mainly on the coastal plain immediately north of Blackcastle Hill to east of Pinkerton Hill. Within the scoping boundary, the ground is mainly relatively flat or gently sloping, except for areas adjacent to burns including Dry Burn, Braidwood Burn and Thornton Burn, which are incised with steep valley sides. The highest ground is within the southern section near Old Branxton, and reaches a height of 140 m above Ordnance Datum (AOD).

Unstable ground and contaminated land

- 8.3.19 The areas identified in Section 8.3.5 have potential to be unstable as a result of former mining activity. The area with most relevance to the scoping boundary is the coastal strip where shallow coal workings are probable.
- 8.3.20 No peat deposits have been identified within or near the scoping boundary.
- 8.3.21 A number of landfill sites have been identified within 2 km of the scoping boundary. Details are provided in Table 8.2.

Table 8.2 Identified landfill areas and waste type

Location	Waste Type	Status	Direction & Distance from Scoping Boundary
Oxwellmains North	Mineral	N/A	Within boundary
Skateraw	Inert	Closed 1993	1.1 km, East
Oldhamstocks	Municipal	Unknown	1.9 km, South



Designated sites

- 8.3.22 There are two areas designated for features relating to geology and hydrogeology at a national level within 2 km of the scoping boundary. The coast in the vicinity of the landfall is designated as Thorntonloch Local Geodiversity Site. Details of the designations are provided in Table 8.3.

Table 8.3 Sites designated for features of geological or hydrogeological importance. SSSI: Site of Special Scientific Interest. GCR: Geological Conservation Review site.

Name & Designation	Qualifying Features	Closest Distance From Proposed Route
Barns Ness Coast SSSI & GCR	Stratigraphy: Dinantian of Scotland Coastlands: saltmarsh, sand dune, shingle	0.8 km, north-east
Pease Bay Coast SSSI	Stratigraphy: Dinantian of Scotland Coastlands: maritime cliff	1.2 km, south-east
Thorntonloch Local Geodiversity Site	Coastal Landforms - provides a good example of distinctive rock coast landforms formed in calciferous sandstone.	Directly crossed

8.4 Proposed Assessment Methodology

- 8.4.1 A desk-based assessment will be carried out to establish the baseline geology, hydrogeology and ground conditions within a defined study area. The study area will incorporate the application site boundary plus a 1 km buffer. The desk-based review will build on the data already identified and will include, but not be limited to:
- further determination of geology and hydrogeology from published maps;
 - review of available data relating to groundwater quality and quantity;
 - information on any geologically or hydrogeologically important sites;
 - consideration of any areas of mining, landfill or potentially unstable ground;

- consideration of available site investigation reports;
 - topographical information including slope angles.
- 8.4.2 The most up to date, publicly available data will be used wherever possible. Local and regional planning documents and background studies, findings from associated consultation, and publicly available data, will be used to generate a picture of the baseline conditions across the study area.
- 8.4.3 Consultation will be undertaken with key stakeholders including ELC, SEPA and NatureScot.
- 8.4.4 A site visit will be undertaken across the site boundary to groundtruth baseline data and build upon the information gathered during consultation and a search of information in the public domain.
- 8.4.5 The assessment will describe the potential direct and indirect impacts of the Proposed Development upon geological, hydrogeological and ground condition receptors. Key receptors and environmental sensitivities are expected to include the following:
- Statutory and non-statutory sites designated for geological, geomorphological or hydrogeological features;
 - Groundwater.
- 8.4.6 Private water supplies will be considered in the Hydrology and Flood Risk chapter of the EIAR, including any with a groundwater source. Significance of effect will be determined using a matrix approach taking into account the sensitivity of receptors and the magnitude of anticipated change.
- 8.4.7 Mitigation measures to reduce the level of any anticipated adverse impacts will be described, where necessary.

8.5 Potential Impacts

Construction

- 8.5.1 The Proposed Development has the potential to introduce impacts to the geology, hydrogeology and ground conditions during construction. Anticipated effects are as follows:
- Damage to statutory and non-statutory geological and hydrogeological designations;
 - Changes to groundwater flow, levels and quality;
 - Changes to ground stability.



Operation

- 8.5.2 Operational impacts are anticipated to be considerably reduced from the construction phase. The main potential impact would be pollution events that may affect groundwater and soil quality.

Decommissioning

- 8.5.3 During decommissioning, it is anticipated that the cables would remain buried to avoid the disruption required for removal, and that all above-ground infrastructure associated with the converter station and substation would be removed to a depth of 1 m below ground. All areas would be fully reinstated. Potential impacts on geology, hydrogeology and ground conditions would be expected to be similar to those during the construction phase, but less extensive.

Cumulative

- 8.5.4 As detailed in Chapter 4 (EIA Methodology), a staged approach to cumulative assessment will be undertaken. The staged approach will consider other elements of the Proposed Development, the wider Eastern Link 1 Project, and any other relevant developments (other consented developments and projects where consent is being sought and for which sufficient information is readily available).
- 8.5.5 It is anticipated that the onshore works associated with Berwick Bank Offshore Wind Farm (OWF) will require consideration. Should any other large-scale projects be identified during consultation or following a review of published information, these will also be included in the cumulative impact assessment.

8.6 Summary of Issues to be Scoped In and Out

Scoped In

- 8.6.1 In summary, the following parameters are to be scoped into the EIA:

Construction and Decommissioning Phase

- Damage to statutory and non-statutory geological and hydrogeological designations, as a result of their distance from the scoping boundary;
- Changes to groundwater flow, levels and quality;
- Changes to ground stability.

Operation Phase



- Changes to soil and groundwater quality.

Scoped Out

8.6.2 No issues are proposed for scoping out.



9 HYDROLOGY & FLOOD RISK

9.1 Introduction

- 9.1.1 This chapter sets out the proposed scope and approach to assessing potential direct and indirect impacts of the Proposed Development on hydrology and flood risk receptors during construction, operation and decommissioning phases. Within this chapter, preliminary baseline data will be presented and potential effects that may arise as a result of the Proposed Development will be outlined.
- 9.1.2 The method presented in this chapter builds upon the general assessment method summarised in Chapter 4 (Approach to Environmental Impact Assessment) of this Scoping Report.

9.2 Legislation and Policy

- 9.2.1 Consideration will be given to all relevant planning guidance at all levels with respect to hydrology and flood risk regulation. This includes, but is not limited to, the following.

National Planning Context

- The European Water Framework Directive (2000/60/EC);
- The Environmental Protection Act 1990 (as amended);
- The Water Environment and Water Services (Scotland) Act 2003;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 as amended;
- The Pollution Prevention and Control (Scotland) Regulations 2012;
- The Water Environment (Oil Storage) (Scotland) Regulations 2006;
- Scottish Planning Policy 2014;
- Scottish Government's Planning Advice Note 51: planning, environmental protection and regulation (2006);
- Scottish Environment Protection Agency's (SEPA) Guidance for Pollution Prevention, with particular reference to:



- GPP 1: Understanding your environmental responsibilities – good environmental practices;
- GPP 5: Works and maintenance in or near water;
- GPP 13: Vehicle washing and cleaning;
- GPP 21: Pollution incident response planning;
- GPP 22: Dealing with spills.

Regional Planning Context

- 9.2.2 The Strategic Development Plan (SES Plan) for Edinburgh and South East Scotland covers the period to 2032 and sets out broad strategic planning vision, strategy and policy for the region¹. The core planning vision of the SES Plan states:
- 9.2.3 *“By 2032, the Edinburgh City Region is a healthier, more prosperous and sustainable place which continues to be internationally recognised as an outstanding area in which to live, work and do business.”*
- 9.2.4 Policy 15 relates to management of water resources and flood risk, to help with reduction of overall flood risk and prevent deterioration of the water environment.

Local Planning Context

- 9.2.5 East Lothian Council’s Local Development Plan (LDP) sets how the SESplan’s development requirements can be delivered. Policies NH9 Water Environment, NH10 Sustainable Drainage Systems and NH11 Flood Risk are all relevant to this chapter, setting out methods for protecting the water environment, requirements for drainage management and controlling flood risk.

9.3 Preliminary Baseline Conditions

- 9.3.1 A location plan of the scoping boundary is provided in Figure 3.2.

¹ The Strategic Development Planning Authority for Edinburgh and South East Scotland (2013) Strategic Development Plan [Online] Available at:
<https://www.sesplan.gov.uk/assets/files/docs/290813/SESplan%20Strategic%20Development%20Plan%20Approved%2027%20June%202013.pdf>



- 9.3.2 Initial high-level baseline data collection has been undertaken to provide an overview of the scoping boundary context with respect to hydrology and flood risk.

Hydrology

- 9.3.3 The scoping boundary lies mainly within the Thornton Burn/Thurston Mains Burn and the Dry Burn catchment areas plus catchment areas for two minor unnamed watercourses.
- 9.3.4 The northern section, including the proposed converter station, lie within the Dry Burn catchment. The eastern end of the boundary lies across the catchments of the Bilsdean Burn and a small unnamed burn. All the main watercourses flow east into the North Sea. There are no significant lochs or lochans within the scoping boundary although settlement ponds are present in the area adjacent to the proposed converter station.
- 9.3.5 The coastal waters at the site are within the Barns Ness to Wheat Stack coastal waterbody.
- 9.3.6 SEPA's water environment hub (2014) identifies key details in relation to these waterbodies. Details are provided in Table 9.1.

Table 9.1 Summary of surface waterbody status

Waterbody name & ID	Status	Identified Pressures
3908 Thornton Burn/ Thurston Mains Burn	Overall: Good Access for fish migration: High Water flows and levels: Good Physical condition: High Freedom from invasive species: High Water quality: High	None
3902 Dry Burn/ Woodhall Burn	Overall: Moderate Access for fish migration: High Water flows and levels: High Physical condition: Moderate Freedom from invasive species: High Water quality: High	Modification to bed, banks and shores due to land use.
200038 Barns Ness	Overall: Good Physical condition: High	None



Waterbody name & ID	Status	Identified Pressures
to Wheat Stack (coastal waterbody)	Freedom from invasive species: High Water quality: Good	

- 9.3.7 There are no drinking water protected areas within 2 km of the scoping boundary.
- 9.3.8 Two private water supplies have been identified within 2 km of the scoping boundary based on a review of the East Lothian private water supply register. These private water supplies are outwith the scoping boundary.
- 9.3.9 There are two designated bathing waters protected areas within 2 km of the scoping boundary. Details are provided in Table 9.2.

Table 9.2 Summary of designated bathing waters status

Bathing water name & ID	Status	Identified Pressures	Direction & Distance from scoping boundary
UKS7616062 Whitesands	Overall: at target objective	None	1.3 km N (6.1 km NW of landfall zone)
UKS7616059 Thorntonloch	Overall: good	None	0.8 km NW of landfall zone

Flood Risk

- 9.3.10 A review of SEPA's online flood maps indicates that flood risk in the scoping boundary is limited. The coastal section is at risk from coastal flooding.
- 9.3.11 River flooding is largely confined to the immediate river channels for all the main watercourses present within the scoping boundary.
- 9.3.12 Two small areas of surface water flooding are indicated associated with small waterbodies in the area adjacent to the proposed converter station at Oxwell Mains. Both areas have a high likelihood of flooding, or a 10% chance of flooding each year, although this is confined mainly to the natural outline of the waterbodies.

Designated sites

- 9.3.13 There are no areas designated for features relating to hydrology within 2 km of the scoping boundary.



9.4 Proposed Assessment Methodology

- 9.4.1 A desk-based assessment will be carried out to establish the baseline hydrology and flood risk within a defined study area. The study area will incorporate the site boundary plus a 1 km buffer, including areas downstream at a greater distance if relevant. The desk-based review will build on the data already identified and will include, but not be limited to:
- further determination of site hydrology and flood risk using maps published by SEPA and NatureScot;
 - review of existing sources of data relating to the water environment, including SEPA water quality data, abstraction and discharge consents, and identification of other water users;
 - identifying and gathering information on protected areas and watercourses;
 - identification of private water supplies and associated pipework; and
 - consideration of available and relevant site investigation reports.
- 9.4.2 The most up to date, publicly available data will be used wherever possible. Local and regional planning documents and background studies, findings from associated consultation and publicly available data, will be used to generate a picture of the baseline conditions across the defined study area.
- 9.4.3 Consultation will be undertaken with key stakeholders including East Lothian Council (ELC), SEPA, NatureScot and Scottish Water.
- 9.4.4 A site visit will be undertaken across the site boundary to groundtruth baseline data and build upon the information gathered during consultation and a search of information in the public domain.
- 9.4.5 The assessment will describe the potential direct and indirect impacts of the Proposed Development upon hydrological and flood risk receptors. Key receptors and environmental sensitivities are expected to include the following:
- Surface water receptors, including watercourses, waterbodies and wetland areas;
 - Private water supplies;
 - Flood risk to the development and arising from the development.
- 9.4.6 Significance of effect will be determined using a matrix approach taking into account the sensitivity of receptors and the magnitude of anticipated change.



- 9.4.7 Mitigation measures to reduce the level of any anticipated adverse impacts will be described, where necessary.

9.5 Potential Impacts

Construction and Decommissioning

- 9.5.1 The Proposed Development has the potential to introduce impacts to hydrology and flood risk during construction. Anticipated effects are as follows:
- Contamination of surface watercourses or waterbodies;
 - Changes to surface water runoff;
 - Change in flow and/or contamination of private water supplies;
 - Increase in flood risk to areas downstream.

Operation

- 9.5.2 Operational impacts are anticipated to be considerably reduced from the construction phase. The main potential impact would be pollution events that may affect surface water quality or private water supplies.

Decommissioning

- 9.5.3 During decommissioning, it is anticipated that the cables would remain buried to avoid the disruption required for removal, and that all above-ground infrastructure associated with the converter station and substation would be removed to a depth of 1 m below ground. All areas would be fully reinstated. Potential impacts on hydrology and flood risk would be expected to be similar to those during the construction phase, but less extensive.

Cumulative

- 9.5.4 As detailed in Chapter 4 (EIA Methodology), a staged approach to cumulative assessment will be undertaken. The staged approach will consider other elements of the Proposed Development, the wider Eastern Link 1 Project, and any other relevant developments (other consented developments and projects where consent is being sought and for which sufficient information is readily available).
- 9.5.5 It is anticipated that the onshore works associated with Berwick Bank Offshore Wind Farm (OWF) will require consideration. Should any other large-scale projects be identified during consultation or following a review of published information, these will also be included in the cumulative impact assessment.



9.6 Summary of Issues to be Scoped In and Out

Scoped In

9.6.1 In summary, the following parameters are to be scoped into the EIA:

Construction Phase and Decommissioning Phase

- Contamination of surface watercourses or waterbodies;
- Changes to surface water runoff;
- Change in flow and/or contamination of private water supplies;
- Increase in flood risk to areas downstream.

Operation Phase

- Contamination of surface watercourses or waterbodies;
- Contamination of private water supplies.

Scoped Out

No issues are proposed for scoping out.

10 NOISE AND VIBRATION

10.1 Introduction

- 10.1.1 This chapter of the Scoping Report considers potential impacts in respect of noise and vibration associated with the construction, operation and decommissioning of the Proposed Development.

10.2 Legislation and Policy

National Planning Context

- 10.2.1 Scottish Planning Policy (SPP) (revised December 2020) is the statement of the Scottish Government's policy on how nationally important land use should be addressed across the country.
- 10.2.2 The SPP states that:
- "Planning policies and decisions should support sustainable development. For the purposes of this policy, to assess whether a policy or proposal supports sustainable development, the following principles should be taken into account: ... avoiding over-development, protecting the amenity of new and existing development and considering the implications of development for water, air and soil quality"*
- 10.2.3 Planning Advice Note (PAN) 1/2011¹ provides guidance on how the planning system helps to prevent and limit the adverse effects of noise. Information and advice on noise impact assessment methods is provided in the associated Technical Advice Note. It includes details of the legislation, technical standards and codes of practice for specific noise issues.

Regional Planning Context

- 10.2.4 The Strategic Development Plan (SDP) for Edinburgh and South East Scotland covers the period to 2032 and sets out broad strategic planning vision, strategy and policy for the region.
- 10.2.5 The SDP comprises of eight aims which have been developed to deliver the Vision which is as follows:

¹ The Scottish Government (2011) Planning Advice Note PAN 1/2011 Planning and Noise .



“By 2032, the Edinburgh City Region is a healthier, more prosperous and sustainable place which continues to be internationally recognised as an outstanding area in which to live, work and do business.”

- 10.2.6 None of the eight aims of the SDP are specifically linked to noise and vibration.

Local Planning Context

- 10.2.7 East Lothian Council's Local Development Plan (LDP) sets how the SDP's development requirements can be delivered. The LDP provides a land use framework and contains policies that stimulate and manage sustainable development within the area.

- 10.2.8 Policy NH13: Noise states that:

“The impact of noise will be taken into account when assessing relevant development proposals, particularly those that are close to or could become a source of noise. A noise impact assessment will be required where the proposed development may cause or exacerbate existing noise levels or be sensitive to levels of noise in the area. The assessment must specify suitable and appropriate mitigation measures that would make the proposal acceptable. Development proposals that would either result in or be subject to unacceptable levels of noise will not be supported.”

10.3 Preliminary Baseline Conditions

- 10.3.1 A desk-based study has been undertaken to provide an initial overview of the baseline environment in the vicinity of the Proposed Development. The study has considered the following data/information:

- Aerial imagery and mapping from publicly available sources; and
- Scottish strategic noise mapping and noise action plans².

- 10.3.2 The Proposed Development is located within a rural setting, and primarily comprises agricultural land use. The following are noted within the local area:

- Innerwick Village;
- Innerwick Castle;
- Isolated dwellings;
- Farms and other commercial properties;
- Thurston Manor Park;

² <https://noise.environment.gov.scot/noisemap/>



- Existing electrical infrastructure;
- Dunbar Energy Recovery Facility and landfill; and
- Dunbar Cement Works.

- 10.3.3 The proposed cable corridor will cross the A1 trunk road in two locations and the East Coast Main Line railway at a single location. Based on the strategic noise mapping, it is expected that the noise emissions associated with these transport infrastructure links will be a prominent noise source across a significant portion of the development area.
- 10.3.4 Torness Nuclear Power Station is situated approximately 1.5 km from the Proposed Development at the closest point.

10.4 Proposed Assessment Methodology

- 10.4.1 A baseline noise survey will be carried out to establish the acoustic environment at noise sensitive receptors situated in the vicinity of the proposed substation and converter station sites. The noise surveys are expected to comprise a combination of short-term attended and longer-term unattended measurements at the nearest or most exposed receptor locations. The dataset obtained from the surveys will subsequently be used to inform the operational phase noise impact assessment.
- 10.4.2 Where necessary, additional baseline noise measurements will be taken to inform the construction phase assessment. This is only likely to be required where the pre-construction ambient noise levels are expected to be at a similar magnitude to the construction assessment threshold levels. It may also be required for receptors surrounding static work sites where 24-hour working is required i.e. horizontal directional drilling sites.
- 10.4.3 For the construction and decommissioning phases of the Proposed Development, the assessment methodology set out in British Standard (BS) 5228-1:2009+A1:2014 '*Code of Practice for Noise and Vibration Control on Construction and Open Sites – noise*' will be used. The prediction method considers the noise emission level of the proposed plant items, the separation distance between the source and the receiver and the effect of the intervening topography and structures.
- 10.4.4 Where deemed necessary, construction induced vibration levels will be predicted using the empirical formula contained in British Standard (BS) 5228-2:2009+A1:2014 '*Code of Practice for Noise and Vibration Control on Construction and Open Sites – vibration*'. The vibration levels will be assessed

against the Peak Particle Velocity (PPV) threshold levels within the standard for humans and buildings.

- 10.4.5 The influence of construction phase traffic flows on the public highway will be calculated using the methodology set out in the Calculation of Road Traffic Noise (CRTN) publication. The predicted variance in road traffic noise levels will be assessed using the short-term criteria provided in the Design Manual for Roads and Bridges document ref. *'LA 111 - Noise and Vibration'*.
- 10.4.6 Operational phase noise levels will be predicted and assessed in accordance with the methodology set out in BS 4142:2014+A1:2019 *'Methods for rating and assessing industrial and commercial sound'* and the Technical Advice Note (TAN) which accompanies Planning Advice Note (PAN) 1/2011 *'Planning and Noise'*.

10.5 Potential Impacts

Construction

- 10.5.1 The Proposed Development has the potential to result in noise and vibration impacts during the construction of the onshore cable corridor and intertidal works, as a result of the following activities:
- Activities taking place on vessels located close to the coastline;
 - Use of temporary construction compound(s);
 - Erection of temporary fencing;
 - Topsoil strip/site preparation;
 - Open trench excavations & duct installations;
 - Trenchless duct installations i.e. Horizontal Directional Drilling (HDD) - expected to be required at the landfall, at the A1 trunk road and East Coast Main Line railway;
 - Cable pulling activities;
 - Topsoil reinstatement;
 - Vehicle movements on internal haul roads; and
 - Construction traffic on the public highway.
- 10.5.2 The Proposed Development has the potential to result in noise and vibration impacts during the construction of the substation and converter station, as a result of the following activities:
- Use of temporary construction compound;
 - Erection of temporary fencing;

- Topsoil strip/site preparation;
- Building and equipment substructure;
- Erection of buildings;
- Electrical equipment installations; and
- Construction traffic on the public highway.

Operation

- 10.5.3 The operation of the proposed converter station and substation has the potential to result in noise impacts at the surrounding sensitive receptors. The prominent noise emissions are typically associated with transformers and reactors.
- 10.5.4 The proposed converter station and substation would be unmanned; vehicles movements associated with the facilities during the operational phase will therefore be for maintenance purposes only and not significant in terms of noise.
- 10.5.5 The proposed equipment installations associated with the substation and converter station will be appropriately isolated so that the transmission of ground-borne vibration is not significant.

Decommissioning

- 10.5.6 At the decommissioning phase, it is anticipated that the onshore cables would remain buried in the ground to avoid disruption associated with their removal. It is anticipated that all above ground infrastructure associated with the converter station and substation would be removed and the land fully reinstated. Potential impacts resulting from decommissioning activities would be expected to be similar to those generated during the construction phase (although less extensive due to the retention of the buried cabling).

Cumulative

- 10.5.7 As detailed in Chapter 4 (EIA Methodology), a staged approach to cumulative assessment will be undertaken. The staged approach will consider other elements of the Proposed Development, the wider Eastern Link 1 Project, and any other relevant developments (other consented developments and projects where consent is being sought and for which sufficient information is readily available).
- 10.5.8 It is anticipated that the onshore works associated with Berwick Bank Offshore Wind Farm (OWF) will require consideration. Should any other large-scale projects be identified during consultation or following a review of published information, these will also be included in the cumulative impact assessment.

10.6 Summary of Issues to be Scoped In and Out

Scoped In

10.6.1 In summary, the following parameters are to be scoped into the EIA:

Construction Phase and Decommissioning Phase

- Temporary noise impacts from construction activities;
- Temporary vibration impacts from construction activities; and
- Temporary noise impacts from construction traffic on the public highway.

Operational Phase

- Noise impacts from fixed plant installations associated with the substation; and
- Noise impacts from fixed plant installations associated with the converter station.

Scoped Out

10.6.2 It is proposed to scope out the following elements:

- Ground borne vibration impacts resulting from the substation and converter station equipment installations; and
- Noise impacts resulting from traffic flow fluctuations associated with the operational phase of the development.

11 AIR QUALITY

11.1 Introduction

- 11.1.1 This chapter of the Scoping Report considers potential impacts on air quality as a result of the construction, operation and decommissioning of the Proposed Development.

11.2 Legislation and Policy

- 11.2.1 The land use planning process is a key means of improving air quality, particularly in the long term, through the strategic location and design of new developments. Any air quality concern that relates to land use and its development can, depending on the details of the Proposed Development, be a material consideration in the determination of planning applications.

National Planning Context

- 11.2.2 Scottish Planning Policy (SPP) (revised December 2020) is the statement of the Scottish Government's policy on nationally important land use planning matters and it contains a number of subject planning policies that should be considered in the planning process and describes the implications of these for development planning and development management.
- 11.2.3 The SPP also includes statutory guidance on sustainable development and planning and includes the following policy:
- "This SPP introduces a presumption in favour of sustainable development"*
- 11.2.4 With respect to air quality it states:
- "Planning policies and decisions should support sustainable development. For the purposes of this policy, to assess whether a policy or proposal supports sustainable development, the following principles should be taken into account: ... avoiding over-development, protecting the amenity of new and existing development and considering the implications of development for water, air and soil quality"*
- 11.2.5 Planning Advice Notes (PANs) provide advice on good practice and information including PAN 51 Planning, Environmental Protection and Regulation, (Scottish Government, 2006) which states that *"Any consideration of the quality of land,*

air or water and potential impacts arising from development, possibly leading to a proven impact on health, is capable of being a material consideration, insofar as it may arise from any land use" and "In Air Quality Management Areas or adjacent to them, air quality is likely to be a material consideration for large scale proposals or if they are to be occupied by sensitive groups such as the elderly or young children or are likely to have cumulative effects. This does not mean that all such applications should be refused even if they are likely to affect local air quality, but it may mean that conditions have to be applied to mitigate adverse effects".

- 11.2.6 An accompanying guidance note for local authorities, Air Quality and Land Use Planning, (Scottish Government, 2004) further describes air quality's relationship to the planning process and how land use planning can help deliver air quality objectives.

Regional Planning Context

- 11.2.7 The Strategic Development Plan (SDP) for Edinburgh and South East Scotland covers the period to 2032 and sets out broad strategic planning vision, strategy and policy for the region.
- 11.2.8 The main aim of the SDP is *"By 2032, the Edinburgh Region is a healthier, more prosperous and sustainable place which continues to be internationally recognised as an outstanding area in which to live, work and do business."* Health improvement is thus a central part of the plan and good air quality is important to maintain the health of the local population.
- 11.2.9 None of the eight aims of the SDP are linked directly air quality.

Local Planning Context

- 11.2.10 East Lothian Council's (ELC) Local Development Plan (LDP) sets how the SDP's development requirements can be delivered. The LDP provides a land use framework and contains policies that stimulate and manage sustainable development within the area.
- 11.2.11 Policy NH12: Air Quality states that:
- "Impacts on air quality will be taken into account in assessing development proposals, particularly within and close to any Air Quality Management Area (AQMA). An Air Quality Assessment may be required for developments that are within an AQMA or where the proposed development may cause or exacerbate a breach of National Air Quality Standards."*

Development proposals that would result in either a breach of National Air Quality Standards or a significant increase in concentrations of air pollution within an existing AQMA will not be supported unless appropriate mitigation measures can be put in place. Financial contributions to strategic air quality mitigation measures will be necessary in these circumstances.”

11.3 Preliminary Baseline Conditions

11.3.1 Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air. A desk-based study has been undertaken to provide an initial overview of the baseline environment using the following data/information:

- A review of potential sources of air pollution in the vicinity of the Proposed Development;
- Air Quality Management Areas (AQMA) map from Air Quality in Scotland website (Air Quality in Scotland, 2021)¹;
- Monitoring data available from ELC 200 Air Quality Annual Progress Report (ELC, 2020)²; and
- Estimated background data from the Scottish Government (Air Quality in Scotland, 2021)³ and the Department for Environment Food and Rural Affairs (Defra, 2020) Local Air Quality Management websites.

Existing Emission Sources

11.3.2 The Proposed Development is located in a rural area with a number of existing sources of emissions to air in the local area (including A1 road, minor rural roads, Torness Nuclear Power Station, Dunbar Energy Recovery Facility, LaFarge Cement Works, East Coast Mainline and agricultural sources). These are existing sources in the local area and should be accounted for in the Scottish

¹ Air Quality in Scotland (2021). Air Quality Management Areas [Accessed online: 08.02.21] Available at: <http://www.scottishairquality.scot/laqm/aqma?id=368>

² ELC (2020). 2020 Air Quality Annual Progress Report (APR) for East Lothian Council [Accessed online: 08.02.21] Available at: https://www.eastlothian.gov.uk/downloads/file/30494/air_quality_progress_report_2020

³ Air Quality in Scotland (2021). Data for Local Authority Review and Assessment purposes [Accessed online: 08.02.21] Available at: <http://www.scottishairquality.scot/data/mapping?view=data>



Government background air quality data discussed in subsequent sections below.

Local Authority Review and Assessment of Air Quality

- 11.3.3 As directed by the Environment Act 1995, local authorities are required to review and assess air quality with respect to the standards and objectives for the pollutants specified in the UK's National Air Quality Strategy (DEFRA, 2007)⁴. Local Authorities are required to undertake annual reporting of the concentrations of defined pollutants in their area.
- 11.3.4 Where objectives are not predicted to be met, local authorities must declare an AQMA. In addition, local authorities are required to produce an AQAP, which outlines measures aimed at improving air quality within the designated AQMA.
- 11.3.5 ELC have currently one AQMA declared at High Street, Musselburgh for exceedance of the annual mean nitrogen dioxide (NO₂) objective. This AQMA is located approximately 35km west of the Proposed Development site. Therefore, the Proposed Development site does not lie within or near to an AQMA.

Local Authority Air Quality Monitoring Data

- 11.3.6 A review of the ELC 2020 Air Quality Annual Progress Report found that whilst monitoring is undertaken a number of locations, there were no monitoring locations in the vicinity of the Proposed Development site.

LAQM Estimated Background Concentrations

- 11.3.7 Estimated background air quality data may be obtained from the Air Quality in Scotland website (particulate matter of size fraction approximating to <10mm diameter) to establish likely background air quality conditions within the scoping boundary. The Air Quality in Scotland website provides estimated annual average background concentrations of NO₂ and PM₁₀ (particulate matter of size fraction approximating to <10mm diameter) on a 1 km² grid basis. Scotland specific maps are not currently available for PM_{2.5} (particulate matter of size fraction approximating to <2.5mm diameter), therefore, background PM_{2.5}

⁴ Defra (in partnership with the Scottish Executive) (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland [Accessed online: 08.02.21] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf

concentrations have been obtained from the Defra UK-AIR (United Kingdom Atmospheric Information Resource) website (Defra, 2021)⁵.

- 11.3.8 Table 11.1 presents estimated annual average background NO₂, PM₁₀ and PM_{2.5} concentrations for the grid squares within the scoping boundary for 2019.

Table 11.1: Air Quality Scotland Estimated Annual Average NO₂ and PM₁₀ and Defra Estimated PM_{2.5} Concentrations at Proposed Development Site (2019)

Grid Square		Estimated 2019 Annual Average Pollutant Concentrations Derived from the Air Quality in Scotland and the Defra UK-AIR websites (µg/m ³)		
X	Y	NO ₂ *	PM ₁₀	PM _{2.5}
371500	675500	5.42	11.71	5.99
371500	676500	5.90	12.20	6.24
372500	673500	4.00	9.19	5.17
372500	674500	4.61	10.79	5.66
372500	675500	4.91	11.01	5.69
373500	673500	4.00	8.76	5.04
373500	672500	3.79	8.28	4.91
374500	673500	4.16	9.65	5.27
374500	672500	3.83	8.78	5.03
375500	673500	4.83	10.40	5.55
375500	672500	3.96	9.23	5.14
376500	673500	4.11	8.07	4.86
376500	672500	4.63	9.33	5.27
Air Quality Objective (µg/m³)		40	18	10

⁵ Defra (2021) Background Maps. [Accessed online: 08.02.21] Available at: <https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>

Notes: *Air Quality Consultants⁶ reviewed the 2018-based background mapped NO₂ concentrations for 2019 against 2019 annual mean measured background concentrations at automatic monitoring sites. They identified that the 2019 mapped data are under-predicting (except in inner-London), therefore, an adjustment factor of 1.0855 has been applied to background NO₂ concentrations for a conservative approach.

- 11.3.9 The estimated background concentrations are well below the relevant Scottish Air Quality Strategy objectives. As background concentrations are predicted to fall with time, background concentrations in future years would not be expected to exceed their respective annual mean standards. It should also be noted that the Defra website states that *'The projections in the 2018 background maps are based on assumptions which were current before the Covid-19 outbreak in the UK. In consequence these maps do not reflect short or longer term impacts on emissions in 2020 and beyond resulting from behavioural change during national or local lockdowns'*. As there has generally been a decrease in traffic resulting from the Covid-19 lockdowns, the data presented within Table 11.1 are considered to be of a conservative nature.
- 11.3.10 Based on the available information, exceedance of the relevant air quality objectives at the application site is considered unlikely.

11.4 Sensitive Receptors / Study Area

- 11.4.1 The sensitive receptors that have been identified in proximity to the scoping boundary, based on Institute of Air Quality Management (IAQM) 'Guidance on assessment of dust from demolition and construction' (Holman et al., 2014)⁷, include:
- Human receptors (residential properties and public amenity areas) within 350m of possible construction activities which could be sensitive to dust soiling (estimated <10 high sensitivity residential properties within 20m of the scoping boundary, making the overall sensitivity of the study area medium for dust soiling and low for human health (PM₁₀) effects); and
 - Ecological receptors within 50m of construction activities could be sensitive to dust deposition. The Outer Firth of Forth and St Andrews Bay Complex Special Protection Area (SPA) is approximately 20m, at the closest point, from the scoping boundary; however, given the marine

⁶ Calibrating Defra's 2018- based Background NO_x and NO₂ Maps against 2019 Measurements, Air Quality Consultants (2020) <<https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=dc9e282e-b47e-4674-8fb9-9a68a1729ad4>>[accessed 18 January 2021]

⁷ Holman et al (2014). *IAQM Guidance on Assessment of Dust from Demolition and Construction* [Accessed online: 09.02.21] Available at: <http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf>

environment and that it is a large body of water, it is not considered to be a habitat sensitive to dust soiling and is scoped out. There are several areas of ancient woodland and a number of Local Biodiversity Sites within and adjacent to the scoping boundary. These would be considered as low sensitivity receptors based on the IAQM guidance.

11.5 Potential Impacts

Construction and Decommissioning

11.5.1 During the construction and decommissioning phase, the Proposed Development has the potential to impact local air quality as follows:

- Temporary release of fugitive dust and associated amenity impacts from dust soiling at human receptors;
- Temporary release of particulate matter and potential impacts on human health;
- Temporary release of fugitive dust and associated impacts from dust soiling at ecological receptors
- Temporary emissions (NO₂, PM₁₀ and PM_{2.5}) from construction and decommissioning traffic and non-road mobile machinery (NRMM) with associated impacts on local air quality at human receptors.

Dust Soiling and Human Health Impacts on Human Receptors

11.5.2 Construction works for the Proposed Development have the potential to lead to the release of fugitive dust and particulate matter. Fugitive dust arising from construction activities is mainly of a particle size greater than the PM₁₀ fraction (that which can potentially impact upon human health), however construction activities may also contribute to local PM₁₀ concentrations. Appropriate dust control measures can be highly effective for controlling emissions from potentially dust generating activities, and adverse effects can be greatly reduced or eliminated.

11.5.3 IAQM guidance (Holman et al, 2014) notes that '*with the implementation of effective site-specific mitigation measures the environmental effect will not be significant in most cases*'. It also acknowledges that an EIA influences the design process to minimise environmental impacts and that any mitigation secured through planning permission, legal requirement or required by regulations, will ensure that a potential significant adverse effect will normally not be significant.

- 11.5.4 Embedded mitigation for the Proposed Development will include standard and best practice measures during the construction and decommissioning phase which will be detailed within a Construction Environmental Management Plan (CEMP). Section 11.6 provides details of mitigation that will form part of the embedded mitigation. With these best practice measures in place, no significant impacts are anticipated and further assessment is scoped out of the EIA.

Dust Soiling and Ecological Receptors

- 11.5.5 Dust soiling can affect vegetation by direct physical effects of smothering thus reducing ability to photosynthesis and/or through chemical changes to soils or watercourses by altering the acidity/alkalinity.
- 11.5.6 Low sensitivity ecological receptors have been identified within and adjacent to the scoping boundary. As detailed above, with standard and best practice measures during construction and decommissioning phases, it is anticipated that any dust emissions would be minimised, and no significant impacts are anticipated. Further assessment of impacts of dust soiling on ecological receptors is scoped out of the EIA.

Emissions from Construction and Decommissioning Traffic and NRMM

- 11.5.7 The operation of vehicles and equipment powered by internal combustion engines results in the emission of exhaust gases containing pollutants including NO_x, PM₁₀, PM_{2.5}, volatile organic compounds, and carbon monoxide (CO). The quantities emitted depend on factors such as engine type, service history, pattern of usage and fuel composition.
- 11.5.8 During construction and decommissioning phase, activities will lead to a temporary increase in traffic flows, including light duty vehicles (LDVs) and heavy duty vehicles (HDVs), on the local road network.
- 11.5.9 The IAQM guidance (*'Guidance on land-use planning and development control: Planning for air quality 2017 v1.2'*, (Moorcroft and Barrowcliffe, et al, 2017)⁸), includes criteria for screening the requirement of an air quality assessment which includes the following:
- A change in LDV flows of >500 Annual Average Daily (24 hour) Traffic (AADT) outside of an AQMA; and

⁸ Moorcroft and Barrowcliffe, et al (2017). *Land-use Planning & Development Control: Planning for Air Quality, v1.2*. [Accessed online: 09.01.21] Available at: <https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

- A change in HDV flows of >100 AADT outside of an AQMA.

- 11.5.10 Whilst detailed traffic data is not available at this stage, it is considered unlikely the Proposed Development would trigger the criteria. Therefore, no significant impacts on local air quality are anticipated from construction phase traffic. As detailed in Chapter 12 a traffic, transport and access assessment will be undertaken as part of the EIA. Construction traffic routes will be discussed and agreed with East Lothian Council to avoid high sensitivity receptors, where feasible.
- 11.5.11 The operation of site equipment and machinery will result in emissions to atmosphere of exhaust gases, but with suitable controls and site management such emissions are unlikely to be significant (as per the Local Air Quality Management (LAQM) Technical Guidance, LAQM.TG(16) (DEFRA, 2016)⁹). Measures to reduce emissions from vehicles and plant have also been recommended in Section 11.6 below.
- 11.5.12 The effect of the traffic and non-road mobile machinery (NRMM) during the construction and decommissioning phases is considered to be not significant and further assessment is scoped out of the EIA.

Operation

- 11.5.13 Once the Proposed Development is operational, the number of vehicle trips associated with the operation and maintenance of the development expected to be well below the IAQM (Moorcroft and Barrowcliffe, et al, 2017) screening criteria, and therefore no significant emissions to air are anticipated.

Cumulative

- 11.5.14 There are no anticipated significant impacts on local air quality, with embedded construction phase mitigation, from the Proposed Development. Any committed developments are anticipated to also have standard construction and best practice measures in place and therefore no cumulative impacts are expected on air quality.

⁹ Defra (2016). Part IV of the Environment Act 1995: Local Air Quality Management: Technical Guidance LAQM.TG(16), London: Crown.

11.6 Mitigation

- 11.6.1 This section details mitigation measures that will be implemented as part of the Proposed Development. These measures are considered to be standard and best practice construction practices and will form part of the embedded mitigation and be detailed within the CEMP for the Proposed Development.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of people accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

Dust Management

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. This will form part of the CEMP.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site or the action taken to resolve the situation in the log book.

Monitoring

- Carry out regular site inspections to monitor compliance with any dust management plan, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors as far as possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicles/Machinery

- Ensure all NRMM meet the required emission standards.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up as soon as reasonably practicable after the event using wet clean methods.

Waste Management

- Avoid bonfires or burning of waste materials.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
- Use Hessian, mulchers or trackifiers where it is not possible to re-vegetate to cover with topsoil, as soon as practicable
- Only remove the cover in small areas during work and not all at once.

Measures Specific to Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent the escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record any inspections of haul routes and subsequent action in site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

- Access gates to be located at least 10m from receptors where possible.

11.7 Summary of Issues Scoped In and Out

- 11.7.1 Assessment of air quality impacts during construction, operation and decommissioning is proposed to be scoped out from further assessment on the grounds that there is unlikely to be a significant effect on sensitive receptors or the sustained achievement of the air quality limit values. The management of dust and emissions during the construction phase will be addressed through the CEMP.

12 ACCESS, TRAFFIC AND TRANSPORT

12.1 Introduction

- 12.1.1 This chapter sets out the proposed scope and approach to assessing potential direct and indirect impacts of the Proposed Development on access, traffic and transport during construction, operation and decommissioning phases. Within this chapter, preliminary baseline data will be presented and potential effects that may arise resulting from the Proposed Development will be outlined.
- 12.1.2 The methodology presented in this chapter builds upon the general assessment methodology summarised in Chapter 4 (Approach to Environmental Impact Assessment) of this Scoping Report.

12.2 Legislation and Policy

- 12.2.1 Planning policies relevant to the Proposed Development are set out in Chapter 2 'Planning Context' of this Scoping Report.

12.3 Study Area

- 12.3.1 A location plan of the scoping boundary within which the Proposed Development planning application boundary will be defined is presented in Figure 3.2.
- 12.3.2 The location of the Proposed Development in proximity to the A1 (Edinburgh – London) Trunk Road (T) will minimise the impact of construction traffic on the local road network and sensitive receptors by enabling vehicles to utilise the trunk road network for much of their journey.
- 12.3.3 As detailed in Chapter 3 (Project Description), the proposed location of the landfall and locations of the substation and converter station are as follows:
- **Cable Landfall** southeast of Thorntonloch Beach;
 - **Converter Station** located on a site lying to the east of the Dunbar Cement Works and Dunbar Energy Recovery Facility (ERF) and north of the A1(T); and
 - **Substation** adjacent to the existing sealing end compounds at Branxton.

12.3.4 It is therefore anticipated that the access, traffic and transport study area will include the road network illustrated in Figure 12.1, and will extend no further than the following:

- A1(T) between Pinkerton and Bilsdean; and
- Local road network south of the A1(T) between Thornton and Bilsdean and local access to the north of the A1(T) at Oxwell Mains.

12.4 Preliminary Baseline Conditions

12.4.1 The main road in the study area is the A1(T) which is the main trunk road between Edinburgh and London and runs southeast to northwest across the study area and provides a key link to other major roads within East Lothian.

12.4.2 Much of the wider public road network within the study area comprises minor and unclassified roads, linking residential properties and small settlements. The location of the converter station lies in an existing area of commercial/ industrial development land use with no public through access.

12.4.3 The East Coast Mainline railway runs through the study area, alternating between running to the north and south of the A1(T).

12.5 Proposed Assessment Methodology

12.5.1 A proportionate traffic, transport and access assessment will be undertaken as part of the EIA for the Proposed Development. The assessment will be carried out in accordance with the relevant policy and guidance documents¹.

12.5.2 The study area for the assessment, as highlighted above, will focus on the routes to be used for access by construction vehicles and potentially abnormal loads (converter station).

12.5.3 It is anticipated that any effects predicted to result during the operation of the Proposed Development will be limited as both the converter station and substation will be unmanned and will require access for occasional maintenance

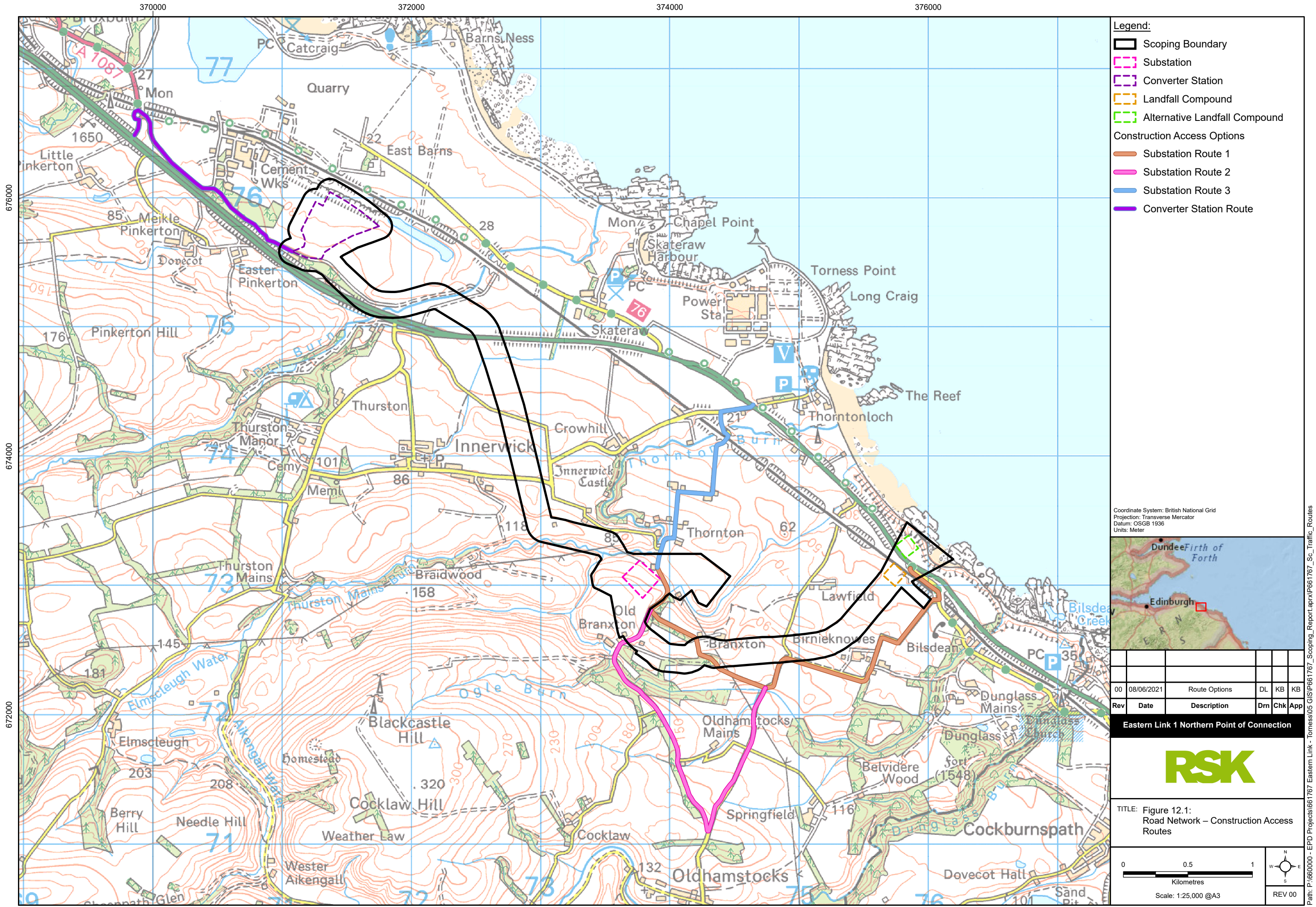
¹ Institute of Environmental Assessment (IEA, now IEMA), 1993 – Guidelines for the Environmental Assessment of Road Traffic

Department for Transport, 2019 – Design Manual for Roads and Bridges (DMRB), Sustainability & Environment Appraisal, LA104 – Environmental assessment and monitoring Revision 1;

Scottish Government (Transport Scotland), 2012 – Transport Assessment Guidance;

Scottish Government, 2014 – National Planning Framework;

East Lothian Council, 2018 – East Lothian Local Development Plan 2018



- Legend:**
- Scoping Boundary
 - Substation
 - Converter Station
 - Landfall Compound
 - Alternative Landfall Compound
- Construction Access Options**
- Substation Route 1
 - Substation Route 2
 - Substation Route 3
 - Converter Station Route

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

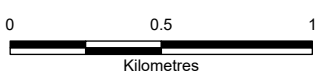


Rev	Date	Description	Drn	Chk	App
00	08/06/2021	Route Options	DL	KB	KB

Eastern Link 1 Northern Point of Connection



TITLE: Figure 12.1:
Road Network – Construction Access
Routes



North arrow pointing North (N), South (S), East (E), West (W).

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only, and certainly lower than the effects expected during the construction phase, and therefore are proposed to be scoped out of the access, traffic and transport assessment.

- 12.5.4 A desk-based review of the impacts arising from the construction of the Proposed Development will be undertaken, including the following:
- Collection and analysis of available road traffic accident data over the study area;
 - Determination of a construction phase programme and quantification of construction phase trips based on the quantity of material required for the Proposed Development and the duration of the construction phase;
 - Determination of a traffic baseline, taking account of measured existing traffic flow and other developments that have been identified for inclusion within the cumulative assessment; and
 - Quantification of material increases in traffic resulting from the construction phase of the Proposed Development.
- 12.5.5 A visual inspection of the study area will be completed to ensure a full understanding of the local area and to identify all sensitive receptors, especially regarding abnormal loads. 24-hour automatic traffic counts (ATCs) data will be obtained from the Department for Transport (DfT), Transport Scotland (TS) or East Lothian Council (ELC).
- 12.5.6 Due to the fluid nature of COVID-19 pandemic and travel restrictions and the effect on traffic flows on the road networks it is the intention to use as much publicly available data as noted above. Other potential sources of data available are other recent and suitable development Environmental Statements such as the NnG OWF. Any proposed data source / collection methodology will be discussed and agreed with the relevant Roads Authority.
- 12.5.7 The most recently available five-year injury accident data will be obtained for the local and strategic road network in the study area from the DfT, ELC and TS to identify any existing issues which may require to be addressed as part of the study.
- 12.5.8 Data gathered and processed for the access, traffic and transport assessment will be prepared in a suitable to inform the noise and air quality impacts which are considered separately in Chapters 10 and 11, respectively of this Scoping Report.

12.6 Assessment of Effects

- 12.6.1 In accordance with the Institute of Environmental Management and Assessment (IEMA) Guidelines, the method used for assessing environmental effects of the increased traffic will be based on a comparison in percentage terms between predicted traffic flows on potentially affected roads with and without the Proposed Development traffic. The IEMA Guidelines express two 'rules' which should be followed when determining the scale and extent of the assessment, these are:
- Rule 1: include highway links where traffic flows would increase by more than 30% (or the number of heavy goods vehicles would increase by more than 30%); and
 - Rule 2: include any other specifically sensitive areas where traffic flows have increased by 10% or more.
- 12.6.2 Rules 1 and 2 will be used as a screening tool to determine if a full assessment on routes within the study area is required due to the level of increase in traffic flows. In the case of construction traffic, where it is anticipated that traffic volumes do not increase by more than 30% (or 10% in sensitive locations) then a detailed assessment of the effects is not deemed necessary.
- 12.6.3 During construction, activities will generate traffic resulting in potential impacts to some sensitive receptors.
- 12.6.4 The converter station site lies in an area currently utilised for industrial/commercial land use with an access route that does provide access for general through traffic. There are no sensitive receptors such as residential properties in the immediate vicinity. In terms of the substation site, there are several residential receptors located close to the potential construction access routes. Access routes for the cable route will potentially use roads in and around sensitive receptors of Innerwick.
- 12.6.5 Significance of effect will be determined using a matrix approach combining a function of the sensitivity of receptors and the magnitude of change. The assessment matrix incorporates information about the importance / sensitivity of the receptor, the magnitude of impact, the duration / persistence of the impact and the likelihood of the impact occurring. The criteria that will be used to categorise sensitivity of the receptor and magnitude impact characteristics will be set out in the Traffic and Transport Chapter of the EIAR.
- 12.6.6 Mitigation measures to reduce the level of any anticipated significant adverse impacts will be described, where necessary.

12.7 Potential Impacts

Construction

12.7.1 Where the IEMA thresholds are likely to be exceeded, consideration of the environmental effects of construction traffic would typically be undertaken in relation to the following transport effects:

- Severance;
- Driver delay;
- Pedestrian delay and amenity;
- Accidents and safety; and
- Hazardous loads.

12.7.2 In addition to this, the overall carrying capacity of the road in question will be considered in undertaking the assessment. A quantitative assessment of impact would be undertaken, based on the predicted rise in traffic flows against a measured baseline, considering the temporary nature of the works. The likely 'worst case' scenario will be described for the periods of peak traffic generation, with the daily numbers of vehicle movements predicted.

12.7.3 The assessment will identify the potential traffic and associated environmental effects on sensitive receptors and mitigation will be proposed where necessary. Traffic flows will increase on routes used for access to the site and stretches of the local road network may need to be closed to facilitate the delivery of abnormal loads. Potential construction access options are presented in Figure 12.1. The construction phasing and vehicle access would be managed to ensure that flows would be controlled during periods of more significant disruption, with mitigation taking the form of a Construction Traffic Management Plan (CTMP).

Operation

12.7.4 The converter station and substation would be unmanned and will generate a minimal number of trips, with these likely to be restricted to employees accessing the sites for maintenance the majority of these would be undertaken using cars and vans rather than larger vehicles. It is therefore proposed to scope out the assessment of the Proposed Development's operational impacts as part of the EIA.

Decommissioning

- 12.7.5 At the decommissioning phase, it is anticipated that the onshore cables would remain buried in the ground to avoid disruption associated with their removal. It is anticipated that all above ground infrastructure associated with the converter station and substation would be removed (foundations removed to approximately 1m deep) and the land fully reinstated. The levels of traffic associated with decommissioning are anticipated to be lower than those required during the construction phase, therefore will have a reduced impact compared to that assessed for construction phase. It is therefore proposed to scope out the assessment of the Proposed Development's decommissioning impacts as part of the EIA.

Cumulative

- 12.7.6 The anticipated cumulative effects of the potential for overlapping construction programmes for the Proposed Development in addition to other development proposals will be considered. The mechanism for mitigation of any cumulative effects is the implementation of a CTMP. It should be noted that a cumulative assessment in relation to transport and traffic is reliant on the prospect of more than one development being under construction (or operation, where this is applicable) at the same time as the Proposed Development.

12.8 Summary of Issues to be Scoped In and Out

Scoped In

- 12.8.1 In summary, the following parameters are to be scoped into the EIA:

Construction Phase – potential temporary impacts on:

- Severance;
- Driver delay;
- Pedestrian delay and amenity;
- Accidents and safety; and
- Hazardous loads.

Scoped Out

- 12.8.2 It is proposed to scope out of the EIA:

Operational and Decommissioning Phase – potential impacts on:

- Severance;
- Driver delay;
- Pedestrian delay and amenity;
- Accidents and safety; and
- Hazardous loads.



13 LAND USE AND AGRICULTURE

13.1 Introduction

- 13.1.1 This chapter sets out the proposed scope and approach to assessing potential impacts of the Proposed Development on land use and agriculture (including soils).
- 13.1.2 The methodology presented in this chapter builds upon the general assessment methodology summarised in Chapter 4 (Approach to Environmental Impact Assessment) of this Scoping Report. It has been developed to take account of any likely significant impacts on land use and agriculture arising during the construction, operation and decommissioning phases of the Proposed Development.

13.2 Legislation and Policy

- 13.2.1 Chapter 2 (Planning Context) outlines the main policy documents relevant to the Proposed Development. The framework for assessment is derived from a combination of EU and national agricultural and land use policies and measures. The key elements of these can be summarised as:
- a competitive and sustainable agricultural industry;
 - the protection of the best and most versatile agricultural land; and
 - diversification.
- 13.2.2 Core policy documents include:
- National Planning Framework for Scotland (NPF3, and when available, the NPF4 update)
 - East Lothian Local Development Plan (LDP) 2018.
- 13.2.3 A number of other guidance documents relevant to agriculture and soils are available and will be referenced in the EIA, including:
- Good Practice Guide for Handling Soils (MAFF, 2000)
 - British Standard Specification for Topsoil and Requirements for Use (BS3882:2007)
 - Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra 2009)
 - Scottish Soil Framework (Scottish Government 2009)

- Promoting the Sustainable Reuse of Greenfield Soils in Construction (SEPA 2010).

13.3 Preliminary Baseline Conditions

Land use

- 13.3.1 The area where the Proposed Development is to be located is predominantly rural with a range of agricultural uses including grazing/ pasture. The proposed converter station site is located within an area of a former opencast quarry that has been subsequently backfilled with quarry waste material, with an existing landfill site located to the east. Existing electrical infrastructure includes two sealing end compounds located at Branxton and Thornton Bridge. There are no settlements within the scoping boundary, however there are two small clusters of residential properties situated approximately 400m south of the substation site .

Agriculture and soils

- 13.3.2 Information on the relevant regional soil types and characteristics are summarised on the website Scotland's Soils¹. This includes a National Soil Map of Scotland which identifies that Brown soils cover the majority of the scoping boundary, with mineral gleys concentrated along the coastal section.
- 13.3.3 The Land Capability Classification for Agriculture (LCCA) system² identifies that soils within the scoping boundary comprise the following two classes:
- Class 2 - Land capable of producing a wide range of crops; and
 - Class 3.1 - Land capable of producing consistently high yields of a narrow range of crops and/ or moderate yields of a wider range. Short grass leys are common.
- 13.3.4 The proposed substation site is located on Grade 3.1 land. The majority of the cable corridor is located on Grade 2 land, with smaller areas of Grade 3.1 land from landfall to the proposed substation site. Soils at the proposed converter station site will have been disturbed through previous opencast quarrying at the site.
- 13.3.5 Due to the location and extent of the Grade 2 and Grade 3.1 land some impacts on this aspect are likely to be unavoidable when constructing the Proposed

¹ <https://soils.environment.gov.scot/>

² <https://soils.environment.gov.scot/maps/capability-maps/national-scale-land-capability-for-agriculture/>



Development, in particular the substation and cable corridor. The National Soil Map also indicates that these soils mostly range from moderate to very vulnerable in terms of topsoil and subsoil compaction risk and low to moderate erosion risk, depending on slope.

13.4 Proposed Assessment Methodology

- 13.4.1 The assessment will be undertaken largely by means of a desk study, utilising information from published sources and from specific liaison and consultation, including information that will be obtained from farmers and farm tenants, via consultations between them and the project land officers. The study area for the assessment of impacts on land use and agriculture will comprise the scoping boundary.
- 13.4.2 The assessment will consider the potential for land sterilisation and permanent or temporary land take, as well as the potential for impacts on soils, agricultural practices, biosecurity and on the ability of farmers and landowners to achieve commitments made under relevant environmental schemes such as the Agri-Environment Climate Scheme. Compensation will be payable for temporary disturbance during construction and most existing open land uses, such as agriculture, can continue after underground cable installation.
- 13.4.3 The assessment will consider the sensitivity (or value) of the receptor or resource, and the magnitude of the impact that is occurring. There are a number of factors which influence the value and sensitivity ascribed to various land use and agricultural receptors. These include the quality of agricultural land, soil type and land under environmental stewardship schemes. The magnitude of any effect reflects the physical extent and duration of the identified impacts. The significance of the effects will be identified by considering the sensitivity to and magnitude of any impacts.
- 13.4.4 Where necessary, mitigation requirements will be presented for each identified potential impact. The severity of the potential impact will be ranked before and following implementation of the proposed mitigation actions, demonstrating the effectiveness of the mitigation.

13.5 Potential Impacts

- 13.5.1 There are various potential effects that may arise from construction, operation and decommissioning of the Proposed Development.

Construction

13.5.2 Key construction phase activities are expected to include:

- Fencing off of the converter station and substation working areas, the cable working width and other works areas;
- Where appropriate, installing pre-construction field drainage;
- Temporary dewatering of the cable trenches and other areas of foundation excavations;
- Construction of access points and haul routes involving heavy vehicle and construction plant tracking;
- Topsoil stripping, trenching, foundation excavation and stockpiling;
- Horizontal Directional Drilling (HDD);
- Transportation of plant and materials to and from site; and
- Reinstatement.

13.5.3 As a result of the construction methods listed above, potential impacts on land use and agriculture resulting from the construction phase of the Proposed Development may include:

- Damage to soil structure through physical soil disturbance, compaction through use of heavy machinery and removal of existing vegetation;
- Soil erosion from newly exposed areas of soil as a consequence of wind and water;
- Increased soil run-off particularly in wet weather;
- Temporary disruption and alteration of land-drainage systems;
- Deterioration in soil classification of agricultural land;
- Temporary loss of agricultural land leading to reduced livestock movements or crop harvesting efficiency (season dependant);
- Potential for transmission of agricultural pests and notifiable diseases;
- Temporary effect on agricultural accesses, reducing short term agricultural productivity and/or increasing farmer's overhead costs;
- Temporary disruption to agricultural operations and a potential reduction in agricultural land that can be viably farmed; and
- Reduction in grant allowance for land management such as Agri-Environment schemes.

Operation

13.5.4 Potential impacts on land use and agriculture resulting from the operation of the Proposed Development may include:

- Permanent loss of agricultural land at above-ground infrastructure locations and a direct impact in relation to land use and agriculture; and
- Permanent restrictions, if any, on agricultural operations and practices due to cable easement.

Decommissioning

- 13.5.5 At the decommissioning phase, it is anticipated that the onshore cables would remain buried in the ground to avoid disruption associated with their removal. It is anticipated that all above ground infrastructure associated with the converter station and substation would be removed (foundations removed to approximately 1m deep) and the land fully reinstated. Potential impacts on land use and agriculture resulting from decommissioning activities would be expected to be less extensive than during construction due to the retention of the buried cable.

Cumulative

- 13.5.6 As detailed in Chapter 4 (EIA Methodology), a staged approach to cumulative assessment will be undertaken. The staged approach will consider other elements of the Proposed Development, the wider Eastern Link 1 Project, and any other relevant developments (other consented developments and projects where consent is being sought and for which sufficient information is readily available).
- 13.5.7 It is anticipated that the onshore works associated with Berwick Bank Offshore Wind Farm (OWF) will require consideration. Should any other large-scale projects be identified during consultation or following a review of published information, these will also be included in the cumulative impact assessment.

13.6 Summary of Issues to be Scoped In and Out

Scoped In

- 13.6.1 In summary, the following parameters are to be scoped into the EIA:

Construction Phase and Decommissioning Phase

- Potential impact on soils, including impact on classification status;
- Potential impacts on land subject to agri-environmental schemes;
- Potential for transmission of agricultural pests and diseases;
- Temporary disruption to agricultural operations; and
- Temporary disruption and alteration of land-drainage systems.

Operation Phase

- Permanent land take of above-ground facilities.

Scoped Out

13.6.2 It is proposed to scope out the following elements:

- Impacts on land use and agriculture due to operational phase activities (excluding permanent land take);
- Potential economic effects that the Proposed Development will have on individual landowners and farmers; and
- Temporary land take during the construction and decommissioning phases.

13.6.3 Apart from land take, the effects during operation are expected to be very limited; any impacts would be associated only with regular maintenance activities.

13.6.4 Given that compensation will be payable for temporary disturbance during construction, and the presence of the permanent cable easement and for any permanent land-take for the above-ground installations, it is proposed to scope out the financial consequences and economic effects of the Proposed Development on agricultural operations.

14 RECREATION, TOURISM AND SOCIO-ECONOMICS

14.1 Introduction

14.1.1 This chapter sets out the proposed scope and approach to assessing potential direct and indirect impacts of the Proposed Development on recreation, tourism and socio-economic receptors during construction, operation and decommissioning phases. Within this chapter, preliminary baseline data will be presented and potential effects that may arise as a result of the Proposed Development will be outlined.

14.1.2 The socio-economic issues that will be considered as part of the assessment include:

- Recreation: potential impacts on areas used for recreational activities such as changes in current use, access and/or amenity. These areas include Rights of Way, cycle routes, long distance walking routes, nature reserves and coastal leisure activities.
- Tourism: potential impacts on tourism businesses (excluding an economic assessment of this), such as changes in access and/or amenity, that could affect the local tourism offer and the associated visitor response.
- Community Amenity: potential amenity effects on community settlements.
- Employment: an overview of the direct and indirect employment generation on a local and regional scale.
- Supply chain: a qualitative overview of potential expenditure within the local supply chain.

14.1.3 The methodology presented in this chapter builds upon the general assessment methodology summarised in Chapter 4 (Approach to Environmental Impact Assessment) of this Scoping Report.

14.2 Legislation and Policy

14.2.1 Socio-economic impact assessment is not governed and regulated by specific legislation, however, within national, regional and local legislation and policy; recreation, tourism and socio-economic factors are considered.



National Planning Context

- 14.2.2 The National Planning Framework (3rd edition) (NPF3) provides the overarching framework in Scotland from which regional spatial strategies and local development plans must incorporate in their approach to development¹. The NPF3 is based on the following core planning vision:
- 14.2.3 *“We live in a Scotland with a growing, low carbon economy with progressively narrowing disparities in well-being and opportunity. It is growth that can be achieved whilst reducing emissions and which respects the quality of environment, place and life which makes our country so special. It is growth which increases solidarity – reducing inequalities between our regions. We live in sustainable, well-designed places and homes which meet our needs. We enjoy excellent transport and digital connections, internally and with the rest of the world.”*
- 14.2.4 Of particular reference to this chapter of the Scoping Report, the NPF3 states that all plans should be based upon and reflect the presumption in favour of sustainable and low carbon development. There are also several specific socio-economic and tourism objectives relevant to the Proposed Development including building a strong, sustainable and competitive economy whilst protecting and enhancing natural and cultural assets making Scotland a natural and resilient place.

Regional Planning Context

- 14.2.5 The Strategic Development Plan (SDP) for Edinburgh and South East Scotland (SES Plan) covers the period to 2032 and sets out broad strategic planning vision, strategy and policy for the region². The core planning vision of the SES Plan states:
- 14.2.6 *“By 2032, the Edinburgh City Region is a healthier, more prosperous and sustainable place which continues to be internationally recognised as an outstanding area in which to live, work and do business.”*
- 14.2.7 The SES Plan sets out a spatial strategy which recognises existing development commitments and promotes a sustainable pattern of growth. The SES Plan lists

¹ The Scottish Government (2014) Scotland's Third National Planning Framework [Online] Available at: <https://www.gov.scot/publications/national-planning-framework-3/>

² The Strategic Development Planning Authority for Edinburgh and South East Scotland (2013) Strategic Development Plan [Online] Available at: <https://www.sesplan.gov.uk/assets/files/docs/290813/SESplan%20Strategic%20Development%20Plan%20Approved%2027%20June%202013.pdf>



eight aims and two are of particular reference to this chapter of the Scoping Report:

- *‘Promote green networks including through increasing woodland planting to increase competitiveness, enhance biodiversity and create more attractive, healthy places to live.’; and*
- *‘Enable growth in the economy by developing key economic sectors, acting as the national hub for development and supporting local and rural development.’*

Local Planning Context

- 14.2.8 East Lothian Council’s Local Development Plan (LDP) sets how the SDP’s development requirements can be delivered. The LDP provides a land use framework and contains policies that stimulate and manage sustainable development within the area. Relevant policies include; Active Travel Routes and Core Paths (T4) which states that the Council will protect its existing core path and active travel networks and ensure that new development does not undermine them, including the convenience, safety and enjoyment of their use; and The Green Network (DC10). Supplementary Planning Guidance includes the Green Network Strategy with a long term aim of expanding the existing green assets to build a connected environment for people and nature, helping East Lothian become more prosperous and sustainable, and reducing the impact of inequalities between people in East Lothian.

14.3 Study Area

- 14.3.1 A location plan of the scoping boundary is presented in Figure 3.2. The Study Area to be adopted for the assessment of impacts on recreation and tourism will reflect that considered for the landscape and visual assessment as presented in Figure 7.1 (3 km from the site boundary for the converter station, 2 km from the site boundary for the substation and 500 m from the route corridor boundary for the cable route).
- 14.3.2 The socio-economic (community amenity, employment and supply chain) Study Area to be adopted for the assessment will be considered at a ‘site specific’ level based on Census Output Areas (within the scoping boundary), at a local level (the administrative boundary of East Lothian) and at a national level (Scotland).
- 14.3.3 Both the Proposed Development and the Marine Cable Route components of = Project include consideration of the area between Mean High Water Spring (MHWS) and Mean Low Water Spring (MLWS) and therefore there is an overlap

in the two study areas. Where an activity is primarily associated with the marine environment below MHWS (i.e. commercial fisheries), it will be considered as part of the marine assessment. Land based amenities and recreation at the landfall and coastal area that are primarily associated with the onshore environment and onshore receptors – i.e. caravan parks, seaside tourism, beach use by walkers, swimmers and surfers, will be considered within the onshore study area as part of the Proposed Development assessment.

14.4 Preliminary Baseline Conditions

14.4.1 Initial high-level baseline data collection has been undertaken to understand the context of potential recreation, tourism and community considerations for the Proposed Development. Baseline data has been collated from the following sources:

- MAGIC Mapping (Department for Environment, Food and Rural Affairs (DEFRA) (2016);
- Business Register and Employment Survey (ONS, 2016); and
- Tourism in Scotland Statistics (Visit Scotland, 2019).

Recreation and Tourism

14.4.2 The Study Area for recreation and tourism is described in Section 14.3.1 of this report and presented in Figure 7.1.

14.4.3 The Study Area includes approximately 11.5 km of coastline with several beaches covering the coastal area including Whitesands Bay Beach, Skateraw Harbour and Thorntonloch Beach (from north to south down the coastline).

14.4.4 Whitesands Bay Beach is situated approximately 3km south of Dunbar and is part of the John Muir Way. It is popular with hikers, swimmers and fossil collectors. Due to the orientation of the beach, it is popular with surfers all year round, especially during summer months. Whitesands Bay Beach has various facilities including a car park and toilet facilities.

14.4.5 Skateraw Harbour is a small sandy beach with Torness Nuclear Power Station to the east. Popular with sea fisherman, Skateraw Harbour has toilet facilities and a car park making the beach accessible to visitors, especially during summer months.

14.4.6 Thorntonloch Beach is used for informal recreational use throughout much of the year. It is popular with fishermen and is used for bathing and windsurfing, particularly in summer. Various facilities including car parks, picnic areas and

viewpoints are sparsely located along the coastline and are used by recreational users such as dog walkers, hikers and bird watchers.

- 14.4.7 The coastal area is a tourist destination, with caravan parks and hotels such as Thorntonloch Caravan Park, Barns Ness Lighthouse and Dunbar Camping and Caravanning Club Site situated along the coastline. Dunbar Golf Club is situated immediately south of Dunbar and is a prestigious UK Championship links golf course that attracts UK and international visitors. Broxmouth Hill Fort, Doon Hill and Innerwick Castle are historical landmarks and tourist attractions found near Broxburn, Spott and Innerwick respectively. Thurston Manor Leisure Park is found further inland, approximately 2.5 km west of Innerwick.
- 14.4.8 Found within the Study Area are several nature reserves including Whitesand Nature Reserve, Skateraw Dean, and Thornton Glen Wildlife Reserve.
- 14.4.9 Thornton Glen Wildlife Reserve is located to the east of Innerwick. The wildlife reserve is located within a steep, narrow gorge lined with a broadleaved woodland (Scottish Wildlife Trust)³.
- 14.4.10 The John Muir Link crosses the Study Area, near the coast, and connects the long-distance trails of The John Muir Way (in Dunbar) to the Southern Uplands Way (in Cockburnspath). In addition to this, National Cycle Route No. 76 crosses the Study Area, following the route of the A1, travelling through to Dunbar.
- 14.4.11 Various rights of way including Core Paths and Suggested Links and span the Study Area and are generally of short length, connecting groups of properties and the local road network, creating access for more rural communities such as Innerwick and Oldhamstocks.
- 14.4.12 In addition to the beach areas, wildlife reserves and coastal walks, other attractions within the Study Area include Torness Nuclear Power Station Visitor Centre.

Population and Communities

- 14.4.13 The Proposed Development is located in a rural area with low population densities, avoiding any major centres of population. The largest population centre nearby is the village of Innerwick, located approximately 300 to 400 m west of the scoping boundary.

³ <https://scottishwildlifetrust.org.uk/reserve/thornton-glen/>



- 14.4.14 An overview of the baseline community profile (including population, employment and income, and deprivation) is provided in Chapter 15 (Health).

14.5 Proposed Assessment Methodology

- 14.5.1 A desk-based assessment will be undertaken, supported by a site visit to verify and build upon the information gathered during consultation and a search of information in the public domain. The most up to date, publicly available data will be used wherever possible. Local and regional planning documents and background studies, findings from associated consultation, and use of publicly available data, will be used to generate a picture of the baseline conditions across the defined study area.
- 14.5.2 The assessment will describe the potential direct and indirect impacts of the Proposed Development upon recreation, tourism and socio-economic receptors, as described in Section 14.1.4.
- 14.5.3 Key receptors and environmental sensitivities, are expected to include, but are not limited to:
- Existing communities and residents in proximity to the Proposed Development;
 - Users of core paths, cycle ways and other recreational amenities crossed by, or in close proximity to the Proposed Development;
 - Employment market;
 - Local economy (supply chain); and
 - Visitors to nearby tourist attractions (in terms of access and amenity).
- 14.5.4 Conclusions from other assessments undertaken as part of the wider EIA will be used to inform the assessment of amenity, including the landscape and visual, noise and vibration and traffic assessments.
- 14.5.5 Significance of effect will be determined using a matrix approach combining a function of the sensitivity of receptors and the magnitude of change. The assessment matrix incorporates information about the importance/ sensitivity of the receptor, the magnitude of impact, the duration/ persistence of the impact and the likelihood of the impact occurring. Mitigation measures to reduce the level of any anticipated significant adverse impacts will be described, where necessary.

14.6 Potential Impacts

Construction and Decommissioning

14.6.1 The Proposed Development has the potential to introduce recreation, tourism and socio-economic effects during construction as follows:

- Temporary diversion of Rights of Way and interference to existing access routes affecting recreational users;
- Temporary restricted access to recreational areas, e.g. foreshore/ beach and amenity areas affecting recreational users;
- Temporary amenity effects (visual, noise and vibration, air quality and traffic) for local residents and other users;
- Temporary employment generation and spending impacts through the supply chain; and
- Demand for temporary accommodation, e.g. hotels, bed and breakfast, caravan pitches and self-catering accommodation and the impact this has on the tourism industry.

Operation

14.6.2 The converter station and substation would be unmanned and would only provide employment opportunities for occasional maintenance. These are considered to be beneficial effects but would only be observed at a minor local level and would not be considered significant.

14.6.3 Potential effects on recreation, tourism and socio-economic during operation include:

- Amenity effects (visual and noise and vibration) associated with the converter station and substation for local residents and other users.

Decommissioning

14.6.4 At the decommissioning phase, it is anticipated that the onshore cables would remain buried in the ground to avoid disruption associated with their removal. It is anticipated that all above ground infrastructure associated with the converter station and substation would be removed (foundations removed to approximately 1 m deep) and the land fully reinstated. Potential impacts on recreation, tourism and socio-economic receptors resulting from decommissioning activities would be expected to be similar to those during the construction phase (although less extensive due to the retention of the buried cable).

Cumulative

- 14.6.5 As detailed in Chapter 4 (EIA Methodology), a staged approach to cumulative assessment will be undertaken. The staged approach will consider other elements of the Proposed Development, the wider Eastern Link 1 Project, and any other relevant developments (other consented developments and projects where consent is being sought and for which sufficient information is readily available).
- 14.6.6 It is anticipated that the onshore works associated with Berwick Bank Offshore Wind Farm (OWF) will require consideration. Should any other large-scale projects be identified during consultation or following a review of published information, these will also be included in the cumulative impact assessment.

14.7 Summary of Issues to be Scoped In and Out

Scoped In

- 14.7.1 In summary, the following parameters are to be scoped into the EIA:

Construction Phase and Decommissioning Phase

- Potential temporary impacts on employment and expenditure (qualitative assessment only);
- Potential temporary impacts on amenity and access;
- Potential temporary impacts on recreational users; and
- Temporary impacts on accommodation demand.

Operation Phase

- Potential impacts on amenity.

Scoped Out

- 14.7.2 It is proposed to scope out the following elements:
- Impacts on employment and expenditure during the operational phase;
 - Impacts on recreational users during the operational phase; and
 - Impacts on accommodation demand during the operational phase.

15 HUMAN HEALTH

15.1 Introduction

- 15.1.1 The amended Environmental Impact Assessment (EIA) Directive (2014/52/EU), transposed into UK regulations by The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 requires under Part 1, (4), (3)(a) the consideration of the likely significant direct or indirect effects of projects on 'population and human health'.
- 15.1.2 Health in Impact Assessment (HIA) is a tool for assessing the likely effects of proposed projects, both positive and negative, on the health and wellbeing of the population. With no statutory guidance for assessing health impacts, the approach to HIA remains flexible and scalable to meet individual project requirements, which will be determined by the nature of the proposal, timescales involved and resources available.
- 15.1.3 Due to the nature of the Proposed Development, it is not proposed to undertake a detailed HIA as part of the EIA and therefore it is not proposed to include standalone chapter relating specifically to human health within the EIARs. Instead the following section of the Scoping Report has been prepared using existing desk-based knowledge and accessible evidence base to signpost where human health will be considered as part of the EIA process. To inform this a high-level baseline community profile has been prepared to identify potential receptors.

Guidance/ Signposting

- 15.1.4 There is no prescriptive or statutory method for scoping 'population and human health'. Whilst preparing the baseline community profile and signposting to where human health will be assessed in the EIA, guidance has been drawn from the following sources:
- Scottish Health and Inequalities Impact Assessment Network (SHIAN);
 - Health Impact Assessment Guidance for Practitioners (August 2016);
 - West Lothian Council Planning Guidance: Health Impact Assessment (2017); and
 - Healthy Urban Development Unit: The London Healthy Urban Development Unit (HUDU, 2019).

- 15.1.5 Guidance offered by SHIAN gives direction when undertaking Health Assessments and indicates the principles that should underpin HIAs along with the issues to consider when determining the appropriate scope of the assessment.

15.2 Legislation and Policy

National Planning Context

- 15.2.1 The NPF3 is a long term planning strategy for Scotland and it sets out the Government Economic Strategy in relation to development across the country in the five years from its adoption. It also acts as a guide for Local Authorities in preparing Local Development Plans and aims to support the growth in Scotland across a variety of measures in a sustainable way.
- 15.2.2 As set out in the overview section of the NPF3 document, the planning vision for Scotland is that: *"We live in a Scotland with a growing, low carbon economy with progressively narrowing disparities in well-being and opportunity"*. This demonstrates that wellbeing is a key part of the planning vision for Scotland. Whilst none of the policies of the NPF3 directly focus on health and well being, there is a theme throughout a large number of policies that reference a need for development that is sustainable and this includes a balance in enhancing or preventing harm to the health of the people of Scotland. Some of these points are demonstrated below:
- 15.2.3 NPPF para 1.2 [our vision is...] *Our living environments foster better health and we have reduced spatial inequalities in well-being.*
- 15.2.4 NPPF para 2.6 Our strategy aims to ensure that all parts of Scotland make best use of their assets to build a sustainable future. Planning will help to create high quality, diverse and sustainable places that promote well-being and attract investment.
- 15.2.5 NPPF para 4.12 *...In the coming years, we want to see a step change in environmental quality, especially in places with long-standing disadvantages arising from a legacy of past industrial activity. Vacant and derelict land is a continuing challenge. We are committed to reversing the decline of some habitats and species and regulating environmental pollution. Environmental quality is central to our health and well-being. Green infrastructure and improved access and education have a key role to play in building stronger communities...*

Regional Planning Context

- 15.2.6 The Strategic Development Plan (SDP) for Edinburgh and South East Scotland covers the period to 2032 and sets out broad strategic planning vision, strategy and policy for the region.
- 15.2.7 The main aim of the SDP is *“By 2032, the Edinburgh City Region is a healthier, more prosperous and sustainable place which continues to be internationally recognised as an outstanding area in which to live, work and do business.”* Thus, health improvement is a central part of the future prosperity of the region.
- 15.2.8 None of the eight aims of the SDP are linked directly to health. However, health and the benefits to health from sustainable development are mentioned throughout the document.

Local Planning Context

- 15.2.9 East Lothian Council's Local Development Plan (LDP) 2018 provides a framework against which development proposals can be prepared and assessed. The vision within the LDP is *“to create a prosperous, safe and sustainable East Lothian that will allows its people and communities to flourish”*. It then lists four objectives with objective number three relating to allowing the people of East Lothian to grow alongside the economy, communities and capacity of the Council.
- 15.2.10 One of the aims as part of this vision is (within the aim to promote sustainable development [SOA: 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10]); *To ensure that new development, and the locations where and the way in which it is delivered, contributes to climate change and regeneration objectives, including reducing inequalities, the need to travel, green house gas emissions as well as energy consumption and waste, and to provide for appropriate renewable energy generation opportunities.*
- 15.2.11 Health is again not listed under specific policies but it is linked to sustainable development which is considered throughout the LDP. Most policies directly ascribe to promotion of development that is sustainable.

15.3 Preliminary Baseline Conditions

- 15.3.1 With no statutory definition of 'health', a widely accepted definition is offered by the World Health Organisation (WHO) as 'a state of complete physical, social and mental wellbeing, and not merely the absence of disease or infirmity'.

- 15.3.2 The determinants of health are well reported and accepted. Health determinants can be described as lifestyle (diet, physical activity, alcohol consumption etc.), social and community influences (social isolation, culture, social support etc.), living/environmental conditions (built environment, housing, noise, air and water quality etc.), economic (unemployment, income, workplace conditions etc.), access and quality of services (medical services, public amenity, education etc.) and macro-economic (government policies, economic development, climate etc.).
- 15.3.3 Whilst this offers a broad view, no one list of health determinants can be totally exhaustive, owing to the cross-cutting nature of human health. Figure 15.1 illustrates a common model which summarises these determinants.

Figure 15.1 The 'Determinants of Health Model' - A Socio-Economic Model of Health



Health / Community Profile

- 15.3.4 The baseline data takes account of relevant local (Scottish 2011 Census data Output Areas), regional and national statistics. Output Areas are the lowest geographical level at which census estimates are provided. Output Areas are built from clusters of adjacent postcodes and are designed to have similar social characteristics (population size, dwelling type, tenure of households). The target size for Output Areas in Scotland is 50 households (ONS)¹.
- 15.3.5 The areas under consideration are:
- Output Areas (S00101823, S00102368, S00101819, S00101820, S00101821 and S00102369) (comprising Output Areas crossed by the scoping boundary and associated access routes as shown on Figure 12.1).
 - East Lothian Authority; and,
 - Scotland.
- 15.3.6 The local study area statistics that are discussed in the following sections are an average of the data provided in the Census (2011) for all six of the Output Areas combined, unless specified.

Population

- 15.3.7 Based on the 2011 Census, the total population of national, regional, and local study areas was 5,295,403, 99,717 and 709 respectively. There is an almost equal proportion of males and females within the local study area, with males 47.34% and females 52.66%. This is consistent with East Lothian (48.0%, 52.0%) and Scotland (48.5%, 51.5%).

Age

- 15.3.8 The age profile of a community or population can help to indicate any future trends, any signs of an ageing populations and sets out the requirements of future generations.
- 15.3.9 Based on the 2011 Census, the percentage of people aged 16-64 within the local study area is 63.40% which is consistent with East Lothian (63.5%) and Scotland (65.9%). The average percentage of people aged 65+ in the local study area is 19.22% which is slightly higher than East Lothian (17.8%) and Scotland (16.8%).

¹ <https://www.ons.gov.uk/methodology/geography/ukgeographies/censusgeography>



- 15.3.10 Within the East Lothian administrative boundary, there have been changes in the population demographic between 2001 and 2011 Census data. There has been a 2.11% and 3.01% reduction in the percentage of the population under 16 and over 65 respectively whilst the percentage of the population aged 16-64 has increased by 4.33%.

Ethnicity

- 15.3.11 The local study area is comprised predominantly of people who identify themselves as 'white' with 1.17% of the population identifying as Asian, Asian Scottish or Asian British or other ethnic groups. This is consistent with East Lothian's Asian, Asian Scottish or Asian British and other ethnic group population which is 1.8% however it is less than Scotland which is 4.0%.

Education, Skills and Training

- 15.3.12 Education, skills and training are important socio-economic factors with potential to influence a person's lifestyle, self-efficacy, employment, income and quality of housing and health. The percentage of people within the local study area aged 16+ with no qualifications is 26.30% which is consistent with the average for East Lothian (25.1%) and Scotland (26.8% or 1.2 million). The percentage of people within the local study area aged 16+ with a Level 4 qualification or higher is 28.36% which is consistent with the average for East Lothian (27.0%) and Scotland (26.1% or 1.1 million).

Employment and Income

- 15.3.13 The percentage of people economically active (aged 16+) within the local study area is 69.17% which is consistent with East Lothian (71.1%) and Scotland (69.0%). The percentage of unemployed people (aged 16+) within the local study area is 4.78% which is consistent with East Lothian (4.2%) and Scotland (4.8%).
- 15.3.14 In East Lothian, 'Human health and social work activities' and 'Wholesale and retail trade; repair of motor vehicles and motorcycles' were the two largest industry sectors in 2011 in terms of the number of employed people aged 16 to 74, accounting for 15.2% and 14.1% of the employed population, respectively. This is consistent with the national average for Scotland, with the same two industries both accounting for 15.0% of the employed population between the ages of 16-64.

Indices of Multiple Deprivation

- 15.3.15 The Scottish Index of Multiple Deprivation 2020 (SIMD) is a relative measure of deprivation across 6976 small areas (called data zones). If an area is identified as 'deprived', this can relate to people having a low income, but it can also mean fewer resources or opportunities. SIMD looks at the extent to which an area is deprived across seven domains: income, employment, education, health, access to services, crime and housing.
- 15.3.16 SIMD is the Scottish Government's standard approach to identify areas of multiple deprivation in Scotland. It can help improve understanding about the outcomes and circumstances of people living in the most deprived areas in Scotland. SIMD ranks data zones from most deprived (ranked 1) to least deprived (ranked 6976). People using SIMD will often focus on the data zones below a certain rank, for example, the 5%, 10%, 15% or 20% most deprived data zones in Scotland.
- 15.3.17 The data zone in which the local study area is situated in is S01008282. S01008282 has an overall ranking of 4248 out of 6976 which is ranked in the 7th least deprived ten deciles in Scotland. Breaking down the Multiple Deprivation Indices further, S01008282 performs particularly well within the Education/Skills domain and Housing domain where it is ranked 5508 and 5037 out of 6976, respectively.

Health Deprivation

- 15.3.18 The health deprivation domain is one of the seven domains that inform the overall deprivation score and is used to measure lack of good health, using indicators such as; limiting long-term illness, all cause death rate, cancer incidence and low weight single births.
- 15.3.19 In terms of health, data area S01008282 is within the 9th least deprived ten deciles in Scotland with a ranking of 4926, therefore showing the population are amongst the healthiest in Scotland.

Geographic Access to Services Deprivation

- 15.3.20 The geographic access to services domain is one of the seven domains that inform the overall deprivation score and is used to capture deprivation as a result of a household's inability to access a range of services considered necessary for day-to-day living, using indicators such as; average of public and private travel times to GP surgeries, pharmacies, leisure centres and for food shops.

- 15.3.21 Conversely to the health deprivation domain, in terms of geographic access to services, data area S01008282 was ranked amongst the 10% most deprived in Scotland, ranked 281.

Life Expectancy

- 15.3.22 The average life expectancy for males and females in East Lothian is 78.6 and 82.4 respectively. This is consistent with Scotland's average life expectancy with males at 77.1 and females 81.1 (National Records Scotland)². There is no data for the average life expectancy for populations within the local study area.

15.4 Proposed Assessment Methodology

- 15.4.1 The EIAR will cover a range of environmental topics with individual topic chapters written accordingly. The relationship to those likely to affect human health are summarised below.

Noise and Vibration (During Construction and Operation)

- 15.4.2 Elevated environmental noise has the potential to cause health impacts such as hearing impairment, hypertension, ischemic heart disease, annoyance, and sleep disturbance. A construction and operational noise and vibration assessment will be undertaken for the Proposed Development. The assessment will follow BS 5228 Part 1 (British Standards Institute, 2014) which provides the methodology for assessing noise impacts on human receptors. The noise levels derived in BS5228 have been set taking into account human health parameters. Construction noise mitigation will be by means of the application of best practice, as set out in BS 5228. This will be formalised in a Construction Environmental Management Plan (CEMP). This is likely to include agreement of working days and hours, working methods, plant and techniques, and potentially permitted noise levels which construction works should comply with.

Air Quality (During Construction)

- 15.4.3 Particulate matter mainly generated from combustion and construction activities, can adversely affect human health in varying degrees depending on its size, composition, origin and the length of exposure.

² <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/life-expectancy/life-expectancy-in-scottish-areas/2016-2018>



- 15.4.4 Dust emissions can irritate the eyes and aggravate pre-existing respiratory problems, such as asthma.
- 15.4.5 Exposure to nitrogen dioxide (NO₂) is associated with exacerbation of pre-existing respiratory conditions, such as asthma, with long term exposure and reduced lung function.
- 15.4.6 A CEMP will be prepared for the Proposed Development to manage the effects of construction activities on air quality. Best practice mitigation will be used during construction to reduce the effect of dust and emissions and are presented in Section 11.6 of Chapter 11 – Air Quality.

Access, Traffic and Transport (During Construction)

- 15.4.7 Transport plays a vital role in promoting health by providing communities with access to a range of services and amenities required to treat ill-health and to manage and promote healthy living. Maintaining links and networks to encourage and maintain relationships and connection with people is important, as a lack of social relationships can heighten susceptibility to illness. It is therefore important to maintain community connectivity, to prevent social isolation and employment commuting routes.
- 15.4.8 Transport can have a negative impact on health due to injuries and death through road traffic accidents. Traffic generated noise and air pollution may result in respiratory and cardiovascular problems, nervousness, sleeplessness and irritability.
- 15.4.9 A traffic and transport assessment will be carried out following 'Guidelines for the Environmental Assessment of Road Traffic - Institute of Environmental Assessment (IEA), 1993 (now the Institute of Environmental Management and Assessment (IEMA))'. In accordance with these Guidelines the effects which would be assessed (should a threshold impact be identified), are:
- severance;
 - driver delay;
 - pedestrian and cycle delay;
 - pedestrian and cycle amenity;
 - fear and intimidation;
 - Road safety; and,
 - Hazardous loads.
- 15.4.10 The above topics identified from the guidelines are the key parameters for potential health effects and are therefore already addressed in the EIA.

- 15.4.11 Minimal traffic movements will be generated during the operational phase of the Proposed Development.

Recreation, Tourism and Socio-economic (During Construction and Operation)

- 15.4.12 A socio-economic assessment will be undertaken for the Proposed Development and will consider effects on tourism, access, amenity and employment.
- 15.4.13 The construction phase of the Proposed Development is likely to give rise to negative (although temporary) amenity effects through increased noise and vibration, traffic and visual effects. Conversely, the construction phase of the Proposed Development will create a source of employment and local revenue through the use of the local workforce, local services and suppliers. Employment and income are regarded as key determinants of health, influencing where an individual lives, the education received, access to healthcare and even lifestyles and behaviour. Unemployment is directly linked with poorer health (and vice versa).
- 15.4.14 Increased employment opportunities can have a positive influence on health through increase social contact, and by forming social relationships.

Hydrology (During Construction)

- 15.4.15 A hydrology and flood risk assessment will be undertaken for the Proposed Development and will consider effects on private water supplies where required.
- 15.4.16 In the absence of appropriate mitigation measures there is potential for construction works to result in contamination of private water supplies (eg from sediment pollution or and chemical pollution). Ingestion of contaminated water may result in impacts on human health.

Electric and Magnetic Fields (during Operation)

- 15.4.17 Section 17 of this Scoping Report focuses on Electric and Magnetic Fields (EMFs). There will be a requirement for the Proposed Development to be fully compliant with Government policy on EMFs. A separate technical report on EMFs will be prepared and included as a stand-alone document to be submitted alongside the EIAR.

15.5 Potential Impacts

- 15.5.1 In assessing potential health impacts, the effect of a proposed project on health determinants has to be considered. This is done by defining health 'pathways'. A health pathway is a means by which a project may exert influence on a known determinant of health, which arises as consequences of planned activities or project 'features'. In relation to the Proposed Development, the following topics are considered as having potential to either negatively or positively affect human health:
- 15.5.2 During construction and decommissioning:
- Noise and Vibration;
 - Air Quality;
 - Access, Traffic and Transport;
 - Hydrology; and
 - Recreation, Tourism and Socio-economic.
- 15.5.3 During operation:
- Noise and Vibration;
 - Recreation, Tourism and Socio-economic; and
 - Electro Magnetic Fields.
- 15.5.4 Due to the nature of the Proposed Development, it is not proposed to prepare a standalone Chapter relating to human health within the EIAR. Individual topic chapters covering noise and vibration, traffic and transport, hydrology and flood risk and socio-economic will be prepared as part of the EIA which will consider human receptors. Air quality aspects will be addressed as part of a CEMP. A separate technical report on EMFs will be prepared.

15.6 Summary of Issues Scoped In and Out

- 15.6.1 From the information currently available, it is not anticipated that the Proposed Development will give rise to significant effects on human health. Individual topic chapters will be prepared as part of the EIAR and will assess potential impacts on human receptors.
- 15.6.2 It is not proposed to prepare a stand alone chapter relating to HIA within the EIAR. A separate chapter on Human Health is scoped out of the EIA,

16 ACCIDENTS AND DISASTERS

16.1 Introduction

- 16.1.1 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations) require the consideration of potentially significant risks to the environment associated with the vulnerability of a proposed development to major accidents and disasters.
- 16.1.2 This requirement is interpreted as requiring the consideration of low likelihood/high consequence events which would result in serious harm or damage to environmental receptors and which could encompass risks exacerbated by climate change. This includes accidents or disasters originating from a proposed development as well as external events (man-made or natural).
- 16.1.3 In considering the potential for significant effects from the Proposed Development as a result of accidents and disasters, it is important to note that the UK already has a structured framework of risk management legislation in place. Vulnerability to major accidents and/or disasters for infrastructure and other built environment developments is covered by a wide range of other safety and non-safety-related legislation. The mitigation in place is generally sufficient to manage vulnerabilities to major accidents and/or disasters without the need for secondary mitigation in most circumstances.

16.2 Legislation and Policy

- 16.2.1 Legislation and policy relevant to the major accidents and disasters includes the following:
- Scottish Planning Policy, June 2014
 - Health and Safety at Work Act 1974
 - Control of Major Accident Hazards Regulations 2015 (COMAH)

Relevant Guidance

- 16.2.2 There is no statutory guidance for the assessment of major accidents and disasters as an EIA topic, however the recently issued IEMA Primer (September 2020)¹ provides guidance based on current practice within the UK.
- 16.2.3 Key definitions relevant to the topic are as follows:
- A **major accident** is an event (for instance, train derailment or major road traffic accident) that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the use of resources beyond those of the client or its appointed representatives (i.e. contractors) to manage. Major accidents can be caused by disasters resulting from both man-made and natural hazards.
 - A **disaster** is a man-made/external hazard (such as an act of terrorism) or a natural hazard (such as an earthquake) with the potential to cause an event or situation that meets the definition of a major accident.
- 16.2.4 As acknowledged in the IEMA Primer, in general, major accidents and/or disasters should be considered as part of an assessment where the development has the potential to cause the loss of life, permanent injury and/ or temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration.
- 16.2.5 As a starting point, the guidance identifies that consideration be given to whether a proposed development has a vulnerability to major accidents and/or disasters and to consider whether a development alone or in conjunction with an externally driven incident could cause or result in a significant effect.
- 16.2.6 The following sections consider whether the Proposed Development has a vulnerability to major accidents and/or disasters, whether the Proposed Development could lead to a significant effect and hence whether the topic should be scoped in or out of the EIA. The following key questions have guided the consideration:
- Is the development a source of hazard itself that could result in a major accident and/or disaster occurring?
 - Does the development interact with any sources of external hazards that may make it vulnerable to or increase the likelihood of a major accident and/or disaster?

¹ IEMA (September 2020), Major Accidents and Disasters in EIA: A Primer.



- If an external major accident and/or disaster occurred, would the existence of the development increase the risk of a significant effect to an environmental receptor occurring?

16.3 Preliminary Baseline Conditions

- 16.3.1 The UK's National Risk Register of Civil Emergencies (2020)² provides an overview of the key risks that have the potential to cause significant disruption in the UK. These risks include consideration of major accidents causing widespread electrical failure. The National Emergency Plan for Downstream Gas & Electricity (2019)³ sets out arrangements between government, industry, the regulator and other parties for safe and effective management of downstream gas and electricity supply emergencies.
- 16.3.2 At a regional level, the Community Risk Register for the East of Scotland region highlights risks that have the highest likelihood and potential to have significant impact to the East of Scotland region. Potential Risks include Influenza Type Diseases, Severe Weather, Flooding, Industrial Site Incidents, Pollution and Contaminations and Transport Disruptions. The register is compiled by the East of Scotland Regional Resilience Partnership which comprises organisations that are legally required to prepare for, respond to and recover from major disruptions and emergencies in the East of Scotland region⁴. The assessments undertaken are used to produce agreed and effective multi-agency plans and procedures.
- 16.3.3 Given the nature of the Proposed Development (electrical infrastructure), potential hazards resulting from the development are likely to be limited to those associated with:
- fire or explosion risk;
 - release of polluting materials such as mineral oils.
- 16.3.4 The potential for the Proposed Development to interact with sources of external hazards are likely to be limited to those associated with:

² Cabinet Office (2020) National Risk Register

³ Department for Business, Energy and Industrial Strategy (2019) National Emergency Plan for Downstream Gas & Electricity.

⁴ East of Scotland Regional Resilience Partnership, Community Risk Register.
https://www.firescotland.gov.uk/media/861633/east_crr_v1.2.pdf



- extreme weather (including flooding) or structural damage (for instance due to high winds and direct impact damage) resulting in unplanned power outages.
- collision due to traffic related accidents involving direct collisions from vehicles or aircraft, which are deemed to be very rare events.

- 16.3.5 Severe weather resilience is a core component of the network design, and includes consideration of flooding resilience, cable/ conductor and electrical equipment design to reduce the risk of unplanned power cuts. Other accident scenarios related to extreme weather conditions exacerbated by climate change are considered to be less probable.
- 16.3.6 Transformer fire (or even minor explosion) is a known risk due to the use of mineral oils as coolers/ insulators. (If sulphur hexafluoride (SF6) is used, it is a low fire risk). Fires could be caused by electrical storm/ lightning strike; direct damage from projectiles carried by high winds; or system malfunction/ overload. Risks would be limited to within a few tens of metres of the transformer, although consequent oil leakage may have more widespread effects. However, such risks are foreseeable, and risks are controlled through good design (e.g. incorporation of shielding and containment bunds) and application of standard operating procedures.
- 16.3.7 Crisis management and continuity plans are already in place across SP Energy Networks assets. 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.
- 16.3.8 In the event of an unplanned power cut, significant effects are considered unlikely. Effects are likely to be short term and essential services e.g. medical facilities, are likely to have some form of backup generation.
- 16.3.9 The Proposed Development is located within a 3km radius of the Torness Nuclear Power Station. All relevant planning applications received within a 3km radius of the Torness Nuclear Power Station are required to be referred to the Office for Nuclear Regulation (ONR) for its observations. The ONR will consult with the emergency planning function within the local authority in order to seek assurance that the Proposed Development can be accommodated within the local authority's existing off-site emergency planning arrangements, or that the off-site emergency planning arrangements will be amended to accommodate the Proposed Development.



- 16.3.10 None of the project components such as underground cables, the substation or the convertor station, are defined as hazardous installations under the Control of Major Accident Hazards (COMAH) Regulations 2015.
- 16.3.11 Various risk management legislation will apply to the Proposed Development including the Health and Safety at Work etc. Act 1974, the Construction (Design and Management) Regulations 2015, The Electricity Safety, Quality and Continuity Regulations 2002 and various design and technical specifications which require consideration of potential hazards. As part of the detailed project design risk assessments will be undertaken including HAZID and HAZOP and will consider maintenance and operational activities.

16.4 Potential Impacts

- 16.4.1 Given the above, there are unlikely to be any significant adverse environmental or human health effects arising from major accidents and disasters as a result of the Proposed Development.

16.5 Summary of Issues Scoped In and Out

- 16.5.1 It is proposed that vulnerability of the Proposed Development to risks of major accidents and/or disasters be scoped out of the EIA on the basis that there are no likely significant effects to human health and the environment given mitigation measures in place.



17 ELECTRIC AND MAGNETIC FIELDS

17.1 Introduction

- 17.1.1 This chapter sets out the proposed approach to the assessment of electric and magnetic fields (EMF) arising as a result of the Proposed Development during the operational phase.

17.2 Electric and Magnetic Fields

- 17.2.1 People experience electric and magnetic fields and the electromagnetic forces they represent on a daily basis, as these occur naturally within the atmosphere and within the body.
- 17.2.2 Electric field strengths are measured in volts per metre (V/m) or kilovolts per metre (kV/m). The atmospheric electric field at ground level is normally about 100V/m in fine weather and may rise to many thousands of volts per metre during thunderstorms. Magnetic fields are usually measured in microteslas (uT) or nanoteslas (nT), with the Earth's natural magnetic field being approximately 50uT in the UK.
- 17.2.3 The advent of modern technology and the wider use of electricity and electrical devices have inevitably introduced changes to the naturally occurring EMF patterns. Energised high voltage power-transmission equipment, along with all other uses of electricity, is a source of EMFs. The proposed electrical transmission infrastructure will generate EMFs when in operation.
- 17.2.4 Electric fields depend on the operating voltage of the equipment producing them. The operating voltage of most equipment is a relatively constant value. Electric fields are shielded by most common building materials, trees and fences, and diminish rapidly with distance from the source. Underground cables produce only a magnetic field, as the electric field is confined within the cable by the metallic sheath of the cable.
- 17.2.5 Magnetic fields depend on the electrical currents flowing, which vary according to the electrical power requirements at any given time. Magnetic fields are not significantly shielded by most common building materials or trees but do diminish rapidly with distance from the source. The UK alternating current (AC) power system operates at a power frequency of 50Hz and produces EMFs. The



fields are described as power frequency or extremely low frequency (ELF) EMFs. HVDC infrastructure will generate static fields (0 Hz).

- 17.2.6 The assessment of effects relating to EMFs will be undertaken by specialist consultants engaged by SP Energy Networks.

17.3 Legislation and Policy

- 17.3.1 Whilst there are no statutory regulations in the UK that limit the exposure of people to power-frequency EMFs, responsibility for implementing appropriate measures for the protection of the public from EMF lies with the UK Government. In 1999, the Government adopted guidelines published in 1998 by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).
- 17.3.2 The EMF assessment will be carried out in line with relevant legislation, standards and guidance, notably:
- The International Commission on Non-Ionizing Radiation Protection Guidelines (ICNIRP) (1998);
 - EU Recommendation 1999/519/EC on the limitation of exposure of the general public to electromagnetic fields; and
 - The Stakeholder Advisory Group on EMF (SAGE) First Interim Assessment (2007).

17.4 Proposed Assessment Methodology

- 17.4.1 The proposed approach will focus on a proactive involvement in the design of the Proposed Development to avoid or minimise potential effects where possible, and to aid the identification of further generic and site specific measures as required.
- 17.4.2 Possible EMF field strengths will be calculated for a range of horizontal distances from the EMF sources (substation/converter station and underground cables). EMF strengths at locations in proximity to these EMF sources will be evaluated against the ICNIRP guidelines.
- 17.4.3 A separate technical report on EMF will be prepared and included as a stand-alone document to be submitted alongside the EIAR.



17.5 Potential Impacts

- 17.5.1 The UK Government, acting on the advice of authoritative scientific bodies, has put in place appropriate measures to protect the public from EMFs. The core measure comprises compliance with the relevant exposure limits. There will be a requirement for the Proposed Development to be fully compliant with Government policy.
- 17.5.2 Although no significant effects are anticipated, potential EMF effects and recent research evidence will be considered as part of the application.

17.6 Summary of Issues to be Scoped In and Out

Scoped In

- 17.6.1 Although no significant effects are anticipated, potential EMF effects during the operational phase of the Proposed Development will be considered as part of the application. A separate technical report on EMF will be prepared and included as a stand-alone document to be submitted alongside the EIAR.

Scoped Out

- 17.6.2 During construction and prior to energisation, the proposed converter station, substation and underground cables would not produce any discernible EMFs. Therefore, construction effects will be scoped out of the EMF assessment.



18 SUMMARY OF EIA SCOPE

18.1 Introduction

- 18.1.1 This Scoping Report has considered the potential for likely significant effects with reference to the factors set out in Regulation 4(3) and Schedule 4 of the EIA Regulations. Based on a review of the baseline environmental sensitivity and the nature /scale of the Proposed Development, there are several topics or components of topics that are considered to be not significant, and are proposed to be scoped out from further consideration within the EIA process. Table 18.1 lists each topic and the elements scoped in and out from further assessment.



Table 18.1: Proposed Scope of the EIA

Topic	Potential Effect	Construction	Operation	Decommissioning
Ecology & Ornithology				
	Effects on designated sites for nature conservation	✓	✗	✓
	Effects on habitats	✓	✗	✓
	Effects on protected species, including birds	✓	✓	✓
Archaeology & Cultural Heritage				
	Direct, physical impacts on known or previously unidentified heritage assets	✓	✗	✓
	Impacts on the setting of designated heritage assets	✗	✓	✗
	Impacts on the setting of non-designated heritage assets	✗	✗	✗
Landscape & Visual				
	Landscape character of the site within the scoping boundary	✓	✓	✓
	Landscape character of identified and relevant LCT	✓	✓	✓
	Landscape character of identified and relevant SLA	✓	✓	✓
	Visual amenity of local residents	✓	✓	✓
	Visual amenity of users of local rights of way, core paths and other access routes	✓	✓	✓

Topic	Potential Effect	Construction	Operation	Decommissioning
	Visual amenity of local road users	✓	✓	✓
	Visual amenity of visitors to local recreational facilities, including caravan sites	✓	✓	✓
	Impacts on seascapes	✗	✗	✗
	Night-time assessment including night-time photography and photomontages	✗	✗	✗
Geology, Hydrogeology & Ground Conditions				
	Effects on statutory and non-statutory geological and hydrogeological designations	✓	✗	✓
	Effects on groundwater flow, levels and quality	✓	✗	✓
	Effects on soil and groundwater quality	✗	✓	✗
	Changes to ground stability	✓	✗	✓
Hydrology & Flood Risk				
	Effects on contamination of surface watercourses or waterbodies	✓	✓	✓
	Effects on surface water runoff	✓	✗	✓
	Effects on flow and/or contamination of private water supplies	✓	✓	✓
	Effects on flood risk to areas downstream	✓	✗	✓
Noise & Vibration				



Topic	Potential Effect	Construction	Operation	Decommissioning
	Temporary noise impacts from construction activities	✓	✗	✓
	Temporary vibration impacts from construction activities	✓	✗	✓
	Noise impacts from traffic flow fluctuations on public highway	✓	✗	✓
	Noise impacts from fixed plant installations (associated with the substation and converter station)	✗	✓	✗
	Ground borne vibration impacts from fixed plant installations	✗	✗	✗
Air Quality				
	Amenity impacts due to release of fugitive dust and dust soiling	✗	✗	✗
	Human health impacts due to release of particulate matter	✗	✗	✗
	Ecological impacts due to fugitive dust and dust soiling	✗	✗	✗
	Local air quality impacts due to traffic and non-road machinery	✗	✗	✗
Access, Traffic & Transport				
	Impacts on severance	✓	✗	✗
	Impacts on driver delay	✓	✗	✗
	Impacts on pedestrian delay and amenity	✓	✗	✗
	Impacts on accidents and safety	✓	✗	✗



Topic	Potential Effect	Construction	Operation	Decommissioning
	Impacts on hazardous loads	✓	✗	✗
Land Use & Agriculture				
	Impacts on soils and classification status	✓	✗	✓
	Impacts on land subject to agri-environmental schemes	✓	✗	✓
	Impacts on transmission of agricultural pests and diseases	✓	✗	✓
	Impacts due to disruption of agricultural operations	✓	✗	✓
	Impacts due to disruption and alteration of land-drainage systems	✓	✗	✓
	Land take	✗	✓	✗
	Economic impacts on individual landowners and farmers	✗	✗	✗
Recreation, Tourism & Socio-economics				
	Impacts on employment and expenditure	✓	✗	✓
	Impacts on amenity and access	✓	✓	✓
	Impacts on recreational users	✓	✗	✓
	Impacts on accommodation demand	✓	✗	✓
Human Health (as standalone chapter)	Significant health and wellbeing effects	✗	✗	✗



Topic	Potential Effect	Construction	Operation	Decommissioning
Accidents & Disasters	Loss of life, permanent injury and/ or temporary or permanent destruction of an environmental receptor.	x	x	x
Electric & Magnetic Fields	EMF during operation	x	✓	x

