

Scottish Hydro Electric Transmission plc

East Coast 400kV Overhead Line Upgrade

EIA Scoping Report

May 2020



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## List of Abbreviations

ACAS	Aberdeenshire Council Archaeology Service
AM	Amplitude modulation
ATV	All-terrain vehicle
BSI	British Standards Institution
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
CTMP	Construction Traffic Management Plan
DAB	Digital Audio Broadcasting
EclA	Ecological Impact Assessment
ECoW	Environmental Clerk of Works
ECU	Scottish Government Energy Consents Unit
EIA	Environmental Impact Assessment
EMF	Electric and Magnetic Field
EIA Report	Environmental Impact Assessment Report
EPZ	Equipotential zone
EZoI	Ecological Zone of Influence
FLS	Forestry and Land Scotland
FRA	Flood Risk Assessment
GEMP	General Environmental Management Plans
GDL	Gardens and Designed Landscapes
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HER	Historic Environment Record
HGV	Heavy Goods Vehicle
HES	Historic Environment Scotland
HRA	Habitats Regulation Assessment
ICNIRP	International Commission on Non-Ionising Radiation Protection
Km	Kilometres
kV	Kilovolt
LED	Light-emitting diode
LLA	Local Landscape Area
LNR	Local Nature Reserve
LNCS	Local Nature Conservation Sites
LW	Long Wave
MW	Medium Wave
NNR	National Nature Reserve
NSR	Noise Sensitive Receptor
NVC	National Vegetation Classification
OHL	Overhead Line
OPGW	Optical Ground Wire
PAN	Planning Advice Note
PKHT	Perth & Kinross Heritage Trust
PWS	Private Water Supply
RTIS	Radio and Television Investigation Service

SAC	Special Areas of Conservation
SBN	Scoping Briefing Note
SEPA	Scottish Environment Protection Agency
SHE Transmission	Scottish Hydro Electric Transmission plc
SM	Scheduled Monument
SNRHE	Scottish National Record for the Historic Environment
SNH	Scottish Natural Heritage
SPT	Scottish Power Transmission
SPP	Species Protection Plan
SSSI	Site of Special Scientific Interest
TV	Television

## Executive Summary

Scottish Hydro Electric Transmission plc (SHE Transmission, hereafter referred to as ‘the Applicant’) is proposing to apply for consent to the Energy Consents Unit to upgrade approximately 168 kilometres of an existing 275 kilovolts overhead line (OHL), connecting substations at Kintore, Fetteresso, Alyth T-Junction and the Applicant’s licence boundary with Scottish Power Transmission, to enable operation at 400 kilovolts (kV). Steel and tower leg foundation refurbishment works would also be undertaken on towers, where required. The route largely crosses rural, agricultural land.

An Environmental Impact Assessment (EIA) was undertaken in 2013 for the upgrade of this section of OHL (though it also included a wider scope of work). However, the application was subsequently withdrawn prior to determination due to changes in scope, project need and timescales, and aspects progressed separately. More recently, works were undertaken in 2016 and 2017 to replace the earthwire along the route of the Proposed Development.

The purpose of this EIA Scoping Report is to ensure that the subsequent EIA is proportionate and focused on the key impacts likely to give rise to significant adverse effects, and to obtain agreement on the EIA approach and scope from the Energy Consents Unit and Statutory Consultees. As well as identifying aspects to be considered in the EIA Report, this document also identifies those aspects that are not considered necessary to assess further. **Table E1** below lists each topic and the elements proposed to be scoped in and out from further assessment, with further discussion and justification for doing so provided in this Scoping Report.

**Table E1: Summary of environmental topics scoped in / out of the EIA**

Topic	Scoped In	Scoped Out
<b>Hydrology, Hydrogeology, and Soils</b>	<p>Construction impacts upon the following:</p> <ul style="list-style-type: none"> <li>• surface watercourses, groundwater and private water supplies;</li> <li>• water resources availability;</li> <li>• mobilisation of contaminated soil / bedrock;</li> <li>• fisheries;</li> <li>• flooding;</li> <li>• soil erosion, compaction and excavation losses;</li> <li>• loss of peat soils; and</li> <li>• groundwater dependent terrestrial ecosystems</li> </ul>	<p>Operational Impacts – no predicted change to the hydrological, hydrogeological or soils environment during operation</p>
<b>Ecology and Nature Conservation</b>	<p>Construction impacts upon the following:</p> <ul style="list-style-type: none"> <li>• ecologically designated sites;</li> <li>• legally protected and notable species; and</li> <li>• habitats.</li> </ul>	<ul style="list-style-type: none"> <li>• Operational impacts</li> <li>• Construction impacts on the following designated sites: <ul style="list-style-type: none"> <li>- Special Areas of Conservation – Methven Moss; Dunkeld - Blairgowrie Lochs; Craighall Gorge; Red Moss of Netherley; Turflundie Wood; Firth of Tay and Eden Estuary; Garron Point.</li> </ul> </li> </ul>

Topic	Scoped In	Scoped Out
		<ul style="list-style-type: none"> <li>- Site of Special Scientific Interest – Hare Myre, Monk Myre and Stormont Loch; Loch of Park; Balloch Moss; Gartwhinzean Meadow; Den of Ogil; Devon Gorge; Back Burn Wood and Meadows; Den of Airlie.</li> <li>- Local Nature Conservation Site – Barmekin Wood; Mergie.</li> <li>• Construction impacts on agricultural land and built-up areas</li> </ul>
<b>Ornithology</b>	Construction impacts upon protected ornithological species.	<ul style="list-style-type: none"> <li>• Common passerines (songbirds)</li> <li>• Construction impacts upon European designated sites</li> <li>• Overwintering waterfowl (swans and geese)</li> <li>• Operational impacts</li> </ul>
<b>Cultural Heritage</b>	Construction impacts upon archaeological and cultural heritage features	<ul style="list-style-type: none"> <li>• The direct and indirect impacts during construction and operation on the following: <ul style="list-style-type: none"> <li>- World Heritage Sites;</li> <li>- Marine Protected Areas; and</li> <li>- Conservation Areas.</li> </ul> </li> <li>• All indirect impacts on the setting of designated and undesignated assets during operation</li> <li>• Impacts upon on Listed Buildings and Gardens and Designed Landscapes</li> </ul>
<b>Noise and Vibration</b>	Operational OHL noise	<ul style="list-style-type: none"> <li>• Construction impacts</li> <li>• Noise from intermittent operational maintenance</li> </ul>
<b>Electric and Magnetic Fields</b>	Operational impacts	None
<b>Landscape and Visual</b>	None	All aspects – topic scoped out
<b>Land Use</b>	None	All aspects – topic scoped out
<b>Recreation and Tourism</b>	None	All aspects – topic scoped out
<b>Air Quality and Climate</b>	None	All aspects – topic scoped out
<b>Material Assets and Waste</b>	None	All aspects – topic scoped out
<b>Major Accidents and Disasters</b>	None	All aspects – topic scoped out
<b>Population and Human Health</b>	None	All aspects – topic scoped out
<b>Traffic and Transport</b>	None	All aspects – topic scoped out
<b>Radio and TV Interference</b>	None	All aspects – topic scoped out

The Applicant invites consultees to comment on the following:

- What environmental information do you hold or are aware of that will assist in the EIA described here?
- Do you agree with the proposed approach for baseline collection, prediction and significance assessment?
- Are there any key issues or possible effects which have been omitted?
- Do you agree with the list of issues to be scoped out, and the rationale behind the decision?
- Of those issues identified for assessment, which do you consider the most important/material and which the least?

Responses to this Scoping Report should be directed to the Energy Consents Unit (ECU) of the Scottish Government to ensure all responses are collated and included within the Scoping Opinion.

Responses should be directed to: [EconsentsAdmin@gov.scot](mailto:EconsentsAdmin@gov.scot)

When submitting a response to the Scoping Report, the Applicant would be grateful if you could also send a copy of your response to the address below: [heather.gray@sse.com](mailto:heather.gray@sse.com)

Copies of this document can be found online at:

<https://www.ssen-transmission.co.uk/projects/east-coast-onshore-400kv-ohl-upgrade/>

A digital version of this Scoping Report is available at the link below. This presents the key information of this Scoping Report alongside interactive maps and images.

Should you wish to view the digital Scoping Report, please visit:

<https://storymaps.arcgis.com/stories/2d0cdd838e02406e9d20e908faef8760>

## 1 INTRODUCTION

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### 1.1 The Proposals

- 1.1.1 Scottish Hydro Electric Transmission plc (SHE Transmission), hereafter referred to as 'the Applicant', owns and maintains the electricity transmission network across the north of Scotland.
- 1.1.2 Due to the growth in renewable electricity generation in the north and north-east of Scotland, upgrade of the transmission network is required in order to provide the necessary increase in transmission capacity.
- 1.1.3 The Applicant is proposing to apply for consent under Section 37 of the Electricity Act 1989 to upgrade approximately 168 kilometres (km) of an existing 275 kV overhead line (OHL), connecting substations at Kintore, Fetteresso, Alyth T-Junction and the Applicant's licence boundary with Scottish Power Transmission (SPT) as shown on **Figure 1.1**, to enable operation at 400 kV (hereafter referred to as the Proposed Development).

### 1.2 The Regulations

- 1.2.1 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, hereafter referred to as the 'EIA Regulations', contain two schedules. Schedule 1 lists projects where an Environmental Impact Assessment (EIA) is mandatory. Schedule 2 lists projects where EIA may be required "where proposed development is considered likely to give rise to significant effects on the environment by virtue of factors such as its nature, size or location".
- 1.2.2 The Proposed Development falls within Schedule 1 of the EIA Regulations, as it meets criteria of paragraph (4) of Schedule 1. An EIA is therefore mandatory and an Environmental Impact Assessment Report (EIA Report) will accompany the Section 37 application.

### 1.3 Scoping Briefing Note

- 1.3.1 A Scoping Briefing Note (SBN) was prepared to initiate discussion on the proposed scope of the EIA Report with stakeholders comprising the Scottish Government Energy Consents Unit (ECU), Aberdeenshire Council, Perth and Kinross Council, Angus Council, Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA) and Historic Environment Scotland (HES). Feedback obtained through this consultation has been taken into consideration in the preparation of this report.

## 1.4 Previous Environmental Assessment

- 1.4.1 An EIA was undertaken in 2013 for upgrading this section of OHL and is documented within the East Coast 400 kV Reinforcement Project Environmental Statement (April 2013<sup>1</sup>), hereafter referred to as the 'Previous ES'.
- 1.4.2 The Previous ES supported a Section 37 application for a wider scope of work beyond that of the Proposed Development, including the upgrade of the OHL north of Kintore, diversion of a section of OHL and the construction and alteration of substations. However, this application was subsequently withdrawn prior to determination due to changes in scope, project need and timescales, and the additional scope of works aspects have been progressed separately. With regards to the OHL upgrade works, the Previous ES considered re-insulating only and assumed replacement of the conductors only if they were damaged.
- 1.4.3 The Previous ES assessed the environmental topics discussed within this Scoping Report (and further topics, given the wider scope of work) and identified the adverse and beneficial predicted significant environmental effects. The OHL works were assessed as having limited potential environmental effects and none were considered to be significant.
- 1.4.4 The only identified potential long-term significant effect related to radio and television interference at nearby residences from the increased electric field strength of the OHL. The assessment concluded that this would be limited to reception of medium and long wave (AM) radio signals; however, reception of digital TV, digital radio and FM radio would be unaffected. Mitigation was proposed in the form of the provision of digital radios for affected residences, where necessary.
- 1.4.5 More recently, works have been undertaken from 2016 to 2017 to replace the earthwire of the OHL Route (hereafter referred to as the earthwire replacement works). These works did not require an EIA however relevant assessments<sup>2</sup>, such as ecology and cultural heritage, were undertaken by the Applicant to ensure the potential environmental impacts were minimised.

## 1.5 Purpose of the EIA Scoping Report

- 1.5.1 The purpose of this EIA Scoping Report is to document and enable the statutory consultees to provide comment on the proposed scope of works for the EIA and to ensure that the EIA for the Proposed Development is focused on the key impacts likely to give rise to significant adverse effects. As well as identifying aspects to be considered in the EIA, this document also identifies those aspects that are not considered necessary to assess further. All relevant environmental issues are identified to confirm that the assessment process described will meet legislative requirements.
- 1.5.2 In accordance with the "EIA Regulations", this EIA Scoping Report contains:
- a plan sufficient to identify the Site which is the subject of the Proposed Development;
  - a brief description of the nature and purpose of the Proposed Development and its possible effects on the environment; and
  - such other information or representations as the person making the request may wish to provide or make.
- 1.5.3 This EIA Scoping Report has been issued to the ECU to request a Scoping Opinion.

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<sup>1</sup> Scottish Hydro Electric Transmission (SHET) (2013). East Coast 400kV Reinforcement Project Environmental Statement.

<sup>2</sup> RSK (2016). Kintore to Kincardine Overhead Line: Earth Wire Replacement. March 2016.

1.5.4 The Applicant invites consultees to comment on the following:

- what environmental information do you hold or are aware of that will assist in the EIA described here?
- do you agree with the proposed approach for baseline collection, prediction and significance assessment?
- are there any key issues or possible effects which have been omitted?
- do you agree with the list of issues to be scoped out, and the rationale behind the decision?
- of those issues identified for assessment, which do you consider the most important / material and which the least?

## 1.6 Scoping Report Methodology

1.6.1 This EIA Scoping Report presents the findings of an initial appraisal of the likely environmental effects of the Proposed Development on the receiving environment. It provides a basic overview of the baseline conditions as understood at the time of writing and the likely potential effects as a result of the Proposed Development. Where site survey and further assessment are deemed necessary, the methodologies are outlined in that section. Environmental topics included for initial assessment in this EIA Scoping Report are:

- Hydrology, Hydrogeology and Soils;
- Ecology and Nature Conservation;
- Ornithology;
- Cultural Heritage;
- Noise and Vibration;
- Electric and Magnetic Fields; and
- Other Issues (Landscape and Visual, Land Use, Recreation and Tourism, Air Quality and Climate, Material Assets and Waste, Major Accidents and Disasters, Population and Human Health, Traffic and Transport and Radio and TV Interference).

1.6.2 The following sections of this Scoping Report aim to provide sufficient detail to characterise the potential interactions between the Proposed Development and the environmental receptors identified. In presenting a rationale for the proposed scope of environmental assessment, this report has taken the sensitivity of the current state of the environment into account, based on an understanding of the baseline conditions. The Scoping Report has also been prepared with reference to the potential magnitude of impacts, considering the typical construction and operational activities, physical characteristics and potential emissions / residues associated with the Proposed Development.

1.6.3 Where there is sufficient evidence to support scoping a topic out of the EIA process, this is presented. Otherwise, where it is considered that there is the potential for likely significant effects, the Scoping Report provides details of the proposed scope or detailed impact assessment, including the approach to further baseline data collection and brief details of the proposed methodology for impact assessment which would be employed for each topic.

## 2 Description of the Proposed Development

### 2.1 Introduction

2.1.1 The Proposed Development consists of upgrading approximately 168 km of OHL between Kintore (north-west of Aberdeen) and the Applicant's Licence Boundary at Blairingone (east of Stirling), hereafter referred to as the OHL Route.

2.1.2 The OHL Route, as shown in **Figure 1.1** is comprised of (from north to south):

- 32 km between Kintore substation and Fetteresso substation;
- 67 km between Fetteresso substation and Alyth T-junction; and
- 69 km between Alyth T-junction and the Applicant's licence boundary with SPT (hereafter referred to as Tower 34), near Blairingone.

2.1.3 The OHL Route passes through the following Local Authority areas:

- Aberdeenshire
- Angus; and
- Perth and Kinross.

2.1.4 The environmental constraints in proximity to the OHL Route are shown on **Figure 2.1** and the internationally designated ecological sites in proximity to the OHL Route are shown on **Figure 2.2**. The environmental constraints and designated sites are discussed in more detail in Sections 4 – 10 of this Scoping Report.

### 2.2 Proposed Development

2.2.1 The main components of the Proposed Development are as follows and are described in more detail in Section 2.5:

- replacement of conductors, insulators and fittings on the existing steel lattice towers;
- re-sagging of the existing Optical Ground Wire (OPGW) (i.e. the earthwire on top of the tower); and
- where required, tower condition works including steelwork and tower leg foundation work to strengthen the existing steel lattice towers.

2.2.2 Associated works required to facilitate the Proposed Development would include vegetation clearance, access track upgrades, temporary site compounds, and temporary measures to protect the road, rail and water crossings. Furthermore, the increase in operating voltage of the OHL requires a wider wayleave corridor, therefore some tree felling may be required where there are infringements to this corridor. Deemed consent for these works will be sought under the Town and Country Planning (Scotland) Act 1997.

2.2.3 **Figure 1.1** shows the location of where the Proposed Development interfaces with the following existing and proposed substations, which are being progressed separately and do not comprise part of the Proposed Development:

- the proposed Kintore 400 kV substation extension, Aberdeenshire. Consent for this substation extension, adjacent to the existing Kintore 132 / 275 kV substation, was granted by Aberdeenshire Council in 2012 (Application reference: G/APP/2012/2133). The permission was renewed in 2015 (Application reference: APP/2015/2520) and the consent is due to expire in November 2021. However, due to a change in the site layout, a revised application is currently being progressed in parallel to the Proposed Development and will be the subject of a separate planning application

made by the Applicant under the Town and Country Planning (Scotland) Act 1997, as amended, in summer 2020. Tie-in of the existing Kintore to Fetteresso double-circuit 275 kV OHL Route into this new substation extension will also be the subject of a separate application by the Applicant in summer 2020 for consent under section 37 of the Electricity Act 1989, as amended;

- the existing Fetteresso 132 / 275 kV substation, Aberdeenshire. Minor works will be required at this substation to replace the existing 132 / 275 kV transformers with 132 / 400 kV transformers as part of the wider East Coast 400 kV upgrade; and
- the proposed Alyth 275 / 400 kV substation, Perth and Kinross. Consent for this substation was previously granted by Perth and Kinross Council in 2012 (Application reference: 12/00948/FLM). The permission was renewed in 2014 (Application reference: 14/01949/FLM) and further extended in 2018 (Application reference: 18/00200/FLN). However, due to a change in the design and layout of the substation, a revised application for consent under the Town and Country Planning (Scotland) Act 1997, as amended, was submitted by the Applicant in October 2019 (Application reference: 19/01747/FLN). This application is currently pending determination. Tie-in of the existing double circuit 275 kV OHLs into this substation is the subject of a separate application under section 37 of the Electricity Act 1989, as amended. This application was submitted by the Applicant in October 2019 (Application reference: ECU00001952) and was approved by Scottish Ministers in April 2020.

## 2.3 Construction Programme

- 2.3.1 It is anticipated that the OHL upgrade works would be conducted over three outage seasons (April to October) with works commencing in April 2023 (subject to approvals being granted), which would allow completion by October 2025.
- 2.3.2 The detailed construction programme is subject to change as the design progresses and is subject to statutory consents and wayleaves being granted.

## 2.4 Construction Environmental Management

- 2.4.1 A Construction Environmental Management Plan (CEMP) will be prepared and implemented by the Principal Contractor. This document would detail how the Principal Contractor would manage the site in accordance with all commitments and mitigation detailed in the EIA Report, statutory consents and authorisations, and industry best practise and guidance.
- 2.4.2 The CEMP would also reference the Applicant's General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs). The implementation of the CEMP would be managed on-site by a suitably qualified and experienced Environmental Clerk of Works (ECoW), with support from other environmental professionals as required.

## 2.5 Construction Practices and Phasing

### Phase 1 - Enabling works

#### *Site Compounds*

- 2.5.1 It is currently anticipated that a minimum of three main compounds will be required to facilitate construction works, the location of which would be confirmed by the Principal Contractor(s) and therefore would not be known nor considered in the EIA. Potential impacts from the compounds would be minimised and controlled via the CEMP, which would be prepared and implemented by the Principal Contractor.

- 2.5.2 In addition, it is likely that a 'rolling' arrangement for the provision of small sub yards, offices and welfare facilities would be required at convenient positions throughout the route, each for a short period of approximately four to six weeks duration to supply the work within each local section. The sub yards would be fed from the bulk delivery site. The use of smaller multiple yard sites would minimise the quantity and lengths of journeys required to supply to and recover from each work area.
- 2.5.3 The obtaining of any necessary planning consent or other authorisations required for the site compounds would be the responsibility of the Principal Contractor.

#### *Access Arrangements*

- 2.5.4 Access would be required to each tower for delivery of fittings, fixtures, working platforms and plant. Access requirements to each tower would depend on the tower type and the operations required at the tower.
- 2.5.5 Existing tower access routes utilised by the Applicant's operation and maintenance teams would be used whenever possible. Many individual tower sites would be accessible from public roads and farm tracks and in such circumstances normal site vehicles such as 4x4 Hiab wagons, transit vans, 4x4 pickup trucks, quad bikes and tractors would be utilised.
- 2.5.6 Where there are no public roads or farm tracks, should ground conditions permit, it may be possible in dry weather for the vehicle types indicated above to gain access to certain sites without causing ground surface damage. If damage is likely it may be necessary to undertake access upgrades to allow the use of the above vehicles, or to use specialist low ground bearing pressure vehicles.
- 2.5.7 Access upgrades and protection can be undertaken in a number of ways. The preferred method for each site would be selected by the Principal Contractor based on the suitability to withstand expected construction loads, cause the least environmental damage and be installed / recovered at the lowest cost. Measures to mitigate the potential impact of each type of access will be addressed in the EIA Report, in general terms.
- 2.5.8 The range of construction access options likely to be considered include:
- installation of temporary metal or plastic roadway panels (e.g. Trakway);
  - installation of temporary stone roads on a geo-textile fabric base;
  - patching of existing accesses (for light use only); or
  - use of specialised low ground bearing pressure vehicles.

#### *Tree Felling*

- 2.5.9 As a result of the proposed increase in operating voltage of the existing OHL from 275 kV to 400 kV, there is a requirement for a wider wayleave corridor along the OHL Route to ensure resilience of the OHL network is maintained during operations. Studies are currently underway to determine whether any additional tree felling would be required along the OHL route to ensure that mandatory clearance distances are maintained. The requirements for tree felling will be confirmed ahead of submission of the Section 37 application and incorporated in the EIA as required.

## **Phase 2 – OHL Upgrade Works**

#### *Re-conductoring works*

- 2.5.10 Re-conductoring is generally undertaken in sections of between 5 to 15 towers in length, with each section taking approximately one to two weeks to complete depending on the number of towers within the section. Re-conductoring teams usually consist of 20 to 25 suitably trained and qualified personnel.

- 2.5.11 For each section to be re-conducted, the towers at either end would be set up for positioning of winching and tensioner equipment, conductor drums and reels. This machinery requires to be set up on an equipotential zone (EPZ) to protect the workers from potential electric shock. The EPZ would typically consist of metal trackway panels covering an area of approximately 12 m by 8 m. Some towers may require two EPZ areas to be set up, depending on location.
- 2.5.12 All towers within the pull section would be accessed to prepare the tower site and to prepare the conductors for pulling. This would involve setting up demarcation around the tower base and working areas using warning cones, ropes or temporary barriers. The tower peaks and arms would be accessed to remove existing fittings and dampers and to transfer the conductors into a running out block attached to the tower steelwork.



**Photograph 2.1 Typical EPZ with equipment set up for re-conductoring**

- 2.5.13 The towers at either end of the pull would be set up with a winch at one end and a tensioner machine at the other. These machines would be positioned on the EPZ and anchored. The conductor drum with the new conductor would be set up at the tensioner end tower, while empty drum reels would be set up at the winch end to spool the conductor being replaced. The towers at both ends would be accessed and rigged to the equipment on the ground. Photograph 2.1 illustrates a typical EPZ with equipment set up for re-conductoring.
- 2.5.14 Once works are set up, the pulling out of the new conductors would be carried out. This is done by pulling in the old conductor which in turn is connected to the new conductor. As the old conductor is pulled through and reeled up from one end of the section, the new conductor is pulled through behind it. During the pull, operatives with radio communication would be positioned at key locations within the section to observe the operations and monitor progress. The operation would continue until the new conductor has been pulled through all towers in the section with the old conductor now spooled. The winch and tensioner machines would be used throughout this operation to control the sag until the new conductor is connected into the conductor fittings at either end of the section, along with a tail formed down each end tower in preparation for jointing the conductors.

### *Re-sagging of the existing earthwire*

- 2.5.15 The existing earthwire / Optical Ground Wire (OPGW) would be re-sagged to maintain mandatory electrical distances (phase to earth) and lightning shielding angle requirements with the new conductors (complying with the latest British Standard BS EN 50341-2-9).
- 2.5.16 Re-sagging is generally undertaken in sections matching those used for re-conductoring. The teams required for re-sagging may be different from the re-conductoring team and comprise fewer workers.
- 2.5.17 For each section to be re-sagged, the existing OPGW located on the top / peak of the towers would be transferred to roller blocks to release the current loads / tensions, in a similar way as would be done for the re-conductoring.
- 2.5.18 Once all suspension towers within the re-sag section have been transferred to roller blocks, a new load / tension would be pulled or released at the towers at either end of the section. When the required load / tension values have been achieved, the OPGW would be clamped in place again to each tower.

### *Replacement of Insulators and Fittings*

- 2.5.19 Insulators and fittings would be replaced along each pull section at the same time as the re-conductoring works are undertaken, to minimise the number of visits required to each tower location.
- 2.5.20 The exact method of working would be determined by the Principal Contractor. Typically, once the conductor has been transferred to a running out block attached to the tower steelwork, the old insulator string would be disconnected from the tower crossarm and lowered to the ground. The new insulator string would be lifted, and attached, to the crossarm.
- 2.5.21 This work is typically carried out by a team of four operatives plus a chargehand and a plant operator using a transit type van and / or low ground bearing pressure vehicles, where necessary. A small winch may also be used to lift and lower the insulator strings. Pull lifts would likely be used to lift and support the conductors whilst the insulators are replaced.
- 2.5.22 For suspension towers<sup>3</sup>, the operatives would typically access the conductor beneath the tower crossarms by using lightweight aluminium hook ladders. The ladders may be hoisted up the tower manually or by using a small winch.
- 2.5.23 For tension towers<sup>4</sup>, a tower working platform would be required to enable the operatives to access the conductors and insulators. This would be lifted into place utilising the winches set up for conductor restringing, and securely attached beneath the appropriate tower crossarm and stabilised with temporary ground anchors.
- 2.5.24 It is likely that one suspension insulator changing team would be able to change the insulators on two towers on one circuit (i.e. six suspension insulator sets) per day. Tension insulators would take longer to replace (approximately three insulator sets per day), due to the requirement to install a working platform.

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<sup>3</sup> Suspension towers are where the conductors are suspended from vertically hanging insulators and are generally used where the OHL follows a straight route.

<sup>4</sup> Tension towers are towers where the insulators connect horizontally to the towers and can accommodate an angle / change of direction for the OHL route.

2.5.25 Photograph 2.2 shows a team of operatives replacing insulators sets on an existing OHL suspension tower.



**Photograph 2.2: Replacing insulators on an existing OHL tower**

#### *Conductor Clipping In*

2.5.26 On completion of re-conductoring, insulator replacement and the sagging of conductor final tension, the conductors would be clamped into new suspension clamps at each suspension tower, commonly referred to as 'clipping in'.

2.5.27 Typically, teams of four operatives, with one van and one all-terrain vehicle (ATV), would carry out clipping in operations.

#### *Scaffolds and Crossings*

2.5.28 Where there are major roads, railways or built-up areas under the section of the route being upgraded, it is likely that a form of mechanical protection, such as scaffolding or other approved method, would need to be supplied and erected to protect members of the public and property in case of equipment failure.

2.5.29 Photograph 2.3 shows an example of temporary construction scaffold at a road crossing.



**Photograph 2.3: Illustrative Image of Temporary Construction Scaffolds**

#### *Steel Works and Foundation Works*

- 2.5.30 Depending on the outcome of the successful Principal Contractor's engineering studies and OHL condition assessments, there may be a requirement for steel reinforcement works or foundation reinforcement works at existing tower locations along the OHL route.
- 2.5.31 Steel reinforcement works would comprise the replacement of deteriorated or damaged steelwork and the addition of new steel bars where required to strengthen the tower<sup>5</sup>. New steelwork, plant and materials would be delivered to each tower location by a 4x4 Hiab wagon or similar, immediately before the commencement of the works at that location. A team of three to four engineers would undertake the steel reinforcement works, which would take approximately two days per tower location. At each tower identified for reinforcement, the working area would be demarcated with warning cones, barriers or temporary fencing. The steel bars would be lifted and lowered in a controlled manner using a rope or winch, and new bars secured into place. On completion of the works, all scrap materials would be removed from the site and placed in skips at the project site compound for collection by a licensed waste contractor.
- 2.5.32 Foundation reinforcement works may be required where engineering studies indicate that the existing foundations are not strong enough to support the new conductors<sup>6</sup>. The foundation works would typically take 14 to 21 days per tower location, depending on local ground conditions, and would comprise the following steps:
- materials and plant would be delivered to the tower locations by 4x4 Hiab wagon, or similar;
  - the area to be excavated would be marked out by the site engineer or foreman and excavated using a tracked excavator. Topsoil and subsoil would be stockpiled in separate areas for final replacement when backfilling;

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<sup>5</sup> Experience of similar projects suggests that approximately 30% of towers would be typically subject to minor strengthening across the route. This would be determined by the successful Principal Contractor

<sup>6</sup> Experience of similar projects suggests that approximately 10% of towers would typically be subject to foundation upgrades across the route. This would be determined by the successful Principal Contractor.

- the excavation would be protected from collapse in accordance with the statutory regulations, and all excavations fenced off using edge safe protection barriers or fencing;
- any excess water from the excavation would be pumped out and discharged to suitable ground, with sediment control measures implemented if required in consultation with the project ECoW;
- the excavation would be prepared for concrete pouring, repairs would be undertaken or in a worst-case situation the existing concrete column removed using the excavator with a mounted hydraulic breaker and / or hand breaker;
- following completion of all foundation preparation works, ready-mixed concrete would be ordered for delivery to site. The concrete would be poured into the excavation until the pad and column is complete, where possible in one pour;
- following completion of concrete works and after allowing sufficient curing time, all formwork and excavation shoring equipment would be removed from the excavation, and the excavation backfilled with suitable soil free of any large stones or boulders, and covered with topsoil to the original ground surface level; and
- on completion of the works, all materials and equipment would be removed from the site.

### *Mobile Security*

2.5.33 Mobile security would patrol at all non-working times where materials, plant and equipment are positioned outside the main store facilities to deter theft and vandalism.

2.5.34 Static or mobile security may also need to be considered at the main stores site and any satellite storage sites.

### **Phase 3 – Commissioning**

2.5.35 The OHL and support towers would then be subject to an inspection process to check and repair minor defects. This allows the successful Principal Contractor and the Applicant to check that the works have been built to specification and are fit to energise. The Proposed Development would also go through a commissioning procedure for the switchgear, communications and protection controls through the substations at Kintore, Fetteresso, Alyth and Kincardine. The circuits would then be energised from the substations.

### **Phase 4 – Reinstatement**

2.5.36 Following the commissioning of the Proposed Development, all construction sites would be reinstated. Reinstatement would form part of the contract obligations for the successful Principal Contractor and would include the removal of all temporary tower access routes, all work sites around the tower locations and the reinstatement of all construction compounds and decommissioned structures.

### *Reinstatement of Tower Access Routes*

2.5.37 Reinstatement of excavated temporary stone tracks would involve the replacement of subsoil and topsoil, and grading and installation of drainage, as required, with turves replaced vegetation side up. Where there are insufficient turves the ground would be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise. Temporary tracks placed on top of the existing ground level would not require any reinstatement measures.

### *Reinstatement of Tower Sites*

- 2.5.38 Where required (e.g. where foundation strengthening has occurred), the soil would be stored within the working area at each tower during the works. Subsoils and topsoil removed to enable the reinforcement of the foundations would be temporarily stockpiled in separate bunds within the working area, with stripped turves stored on top of the bunds.
- 2.5.39 Reinstatement would involve the replacement of subsoil and topsoil, with turves, replaced vegetation side up. Where there are insufficient turves the ground would be allowed to re-vegetate naturally.

### *Reinstatement of Construction Compounds*

- 2.5.40 Construction compound sites and sub-yards would be reinstated at the end of construction with all buildings and materials removed and soils appropriately reinstated.

## **2.6 Construction Employment and Hours of Work**

- 2.6.1 The Applicant considers it important to act as a responsible developer with regards to the communities which host the construction works. The delivery of a major programme of capital investment provides the opportunity to maximise the support of local communities. Employment of construction staff would be the responsibility of the Principal Contractor; however, the Applicant would encourage the Principal Contractor to make use of suitable labour and resources from areas local to the location of the Proposed Development.
- 2.6.2 It is envisaged that there will be a number of separate teams working at the same time at different locations within the vicinity of the Proposed Development. The resource levels will be dependent on the final construction sequence and will be determined by the Principal Contractor.
- 2.6.3 Construction activities would, in general, be undertaken during daytime periods only. For weekdays, this would involve work between approximately 07:00 to 19:00 in the summer and 07:30 to 17:00 (or as daylight allows) in the winter. At weekends, the working hours would be approximately 07:00 to 17:00 in the summer and 07:30 to 17:00 (or as daylight allows) in the winter.
- 2.6.4 Any variation in these working hours would be agreed in advance with the appropriate local authorities.

## **2.7 Construction Traffic**

- 2.7.1 Construction of the Proposed Development will give rise to regular numbers of staff transport movements, with small work crews travelling to and from work site areas. The construction compounds would have a safe area for parking away from public roads.
- 2.7.2 Vehicle movements will be required to construct temporary or upgraded access roads; deliver the foundation and tower components and conductor materials to the site, and deliver and collect materials and construction plant from the main site compound and to individual tower locations.
- 2.7.3 The Principal Contractor would determine where access is required, and for which items of plant, and prepare Traffic Management Plans in consultation with the Applicant and the local authorities. Traffic Management Plans would describe all mitigation and signage measures that are proposed on the public road accesses based on access maps and subsequent site assessments.
- 2.7.4 Temporary traffic lights may be required at some locations (e.g. for delivery of scaffold materials). For minor tracks and other crossings, the installation of appropriate warning signs and provision of staff with stop / go boards to control any passing traffic may be adequate.

2.7.5 **Table 2.1** provides an indicative summary of the total anticipated traffic movements associated with the construction of the Proposed Development, broken down by Phases.

**Table 2.1: Anticipated Construction Traffic Movements**

Proposed Development Phase	Peak Light Vehicles / Day	Peak Heavy Vehicles / Day
OHL Re-conductoring and Reinsulation	6	2
OHL Commissioning	4	2

## 2.8 Operation and Management of the Transmission Connection

2.8.1 In general, an OHL requires very little maintenance. Regular inspections are undertaken to identify any unacceptable deterioration of components so that they can be replaced.

2.8.2 From time to time, inclement weather, storms or lightning can cause damage to either the insulators or the conductors. If conductors are damaged, short sections may have to be replaced. Insulators and conductors are normally replaced after about 40 years, and towers painted every 15 to 20 years.

## 3 Methodology

### 3.1 Introduction

- 3.1.1 The EIA Report will be prepared in accordance with the EIA Regulations and consideration will also be given to advice contained in the Scottish Government's Planning Advice Note (PAN) 1/2013<sup>7</sup> and Planning Circular 1/2017<sup>8</sup>, where relevant.
- 3.1.2 The EIA will comprise a series of environmental assessments targeted to assess the potentially significant effects which the Proposed Development is likely to have on the environment. Each topic included in the EIA will be incorporated as a separate chapter in the main body of the EIA Report, or included as an appendix if the assessment of the subject matter requires to be more detailed.
- 3.1.3 On receipt and consideration of this Scoping Report, the ECU will issue the report to the statutory consultees and will issue the findings of their review of the proposed scope of the EIA in the ECU's Scoping Opinion.
- 3.1.4 The EIA Report will make clear reference to where a point raised in the Scoping Opinion has been addressed. This will include a scoping matrix which will detail all of the consultation responses received during the scoping and EIA process, with a reference to where these responses have been addressed.

### 3.2 Identification of Baseline

- 3.2.1 To identify the scale of likely significant effects as a result of the Proposed Development, it is necessary to establish the existing baseline environmental conditions and their sensitivities.
- 3.2.2 The baseline scenario will be established through the following methods, where relevant:
- site visits and surveys;
  - desk-based studies;
  - review of existing information; and
  - consultation with the relevant consultees.

### 3.3 Assessment of Likely Significant Environmental Effects

- 3.3.1 The terms used in the assessment of effects are generally defined as follows:
- 'impact' is specific and defined as the action being taken, for example, cutting down trees.
  - 'effect' is defined as the change resulting from that action, for example, loss of habitat.
- 3.3.2 The assessment of significance will consider the magnitude of change (from the baseline conditions), the sensitivity of the affected environment / receptors and (in terms of determining residual effects) the extent to which mitigation and enhancement will reduce or reverse adverse effects. In addition, further influences such as those listed below have been factored into the assessment using professional judgement:
- likelihood of occurrence;
  - geographical extent;

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<sup>7</sup> Environmental Impact Assessment. Planning Advice Note 1/2013. Scottish Government. Available at: <https://www.gov.scot/publications/planning-advice-note-1-2013-environmental-impact-assessment/>

<sup>8</sup> Environmental Impact Assessment Regulations. Planning Circular 1/2017. Scottish Government. Available at: <https://www.gov.scot/publications/planning-circular-1-2017-environmental-impact-assessment-regulations-2017/>

- value of the affected resource;
- adherence of the proposals to legislation and planning policy; and
- reversibility and duration of the effect.

3.3.3 Identification of impacts will consider the magnitude (scale) of change from the established baseline conditions, for the construction stage and operational period of the Proposed Development. As the project concerns upgrading and refurbishment of existing structures, decommissioning is not considered applicable and is scoped out of the EIA.

3.3.4 The sensitivity of the receptor / receiving environment to change will be determined using professional judgement, consideration of existing designations (such as Sites of Special Scientific Interest (SSSIs)) and quantifiable data, where possible.

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

3.3.6 The result of the assessment is the determination of whether the likely effect would be significant or not significant, direct or indirect, adverse or beneficial and temporary or permanent. Several criteria will be used to determine whether or not the likely environmental effects of the Proposed Development will be deemed 'significant', including:

- international, national and local standards;
- sensitivity of receiving environment;
- extent and magnitude of the effect; and
- reversibility and duration of the effect.

3.3.7 Each effect will be assessed taking account of the predicted magnitude of change and the sensitivity of the receptor as shown in **Table 3.1** below to determine an overall significance.

**Table 3.1: Matrix for Determining the Significance of Effects**

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

3.3.8 Major and moderate effects are considered to be significant in the context of the EIA Regulations. Minor and negligible effects are not considered significant.

3.3.9 Specific criteria have been adopted for certain technical assessments in accordance with widely recognised EIA guidelines published by professional bodies. Where applicable, these are referenced in the respective technical chapters.

### 3.4 Identification of Mitigation Measures

- 3.4.1 Following the initial assessment, mitigation measures will be recommended to prevent, reduce or remedy any significant adverse environmental effects identified. Such measures would be implemented during design, construction and / or operation of the Proposed Development. Each technical chapter will detail the measures recommended to mitigate any identified significant adverse effects, and a summary of the recommended mitigation measures will be provided.
- 3.4.2 Following the implementation of mitigation measures, an assessment of the significance of any residual effects will be undertaken. The findings will be presented in each technical chapter of the EIA Report.

### 3.5 Cumulative Effects

- 3.5.1 There are two aspects to Cumulative Effects, defined as follows:
- in-combination effects: the combined effect of the Proposed Development together with other reasonably foreseeable developments (taking into consideration effects at the site preparation and earthworks, construction and operational phases).
  - effects interactions: the combined or synergistic effects caused by the combination of several effects on a particular receptor (taking into consideration effects at the site preparation and earthworks, construction and operational phases), which may collectively cause a more significant effect than individually. A theoretical example is the culmination of disturbance from dust, noise, vibration, artificial light, human presence and visual intrusion on sensitive fauna (e.g. certain bat species) adjacent to a construction site.
- 3.5.2 The potential for cumulative effects will be considered in relation to other EIA developments for which an application has been submitted or approved within the study area relevant to each particular issue or as otherwise confirmed through the Scoping Opinion. The basis for this is that only these developments have the potential to result in significant cumulative effects in combination with those arising from the Proposed Development. The final list of developments to be considered in the cumulative effects assessment will be frozen one month prior to publication to allow sufficient time to compile the EIA Report.

### 3.6 Assumptions and Limitations

- 3.6.1 The key assumptions and limitations applied to the preparation of this Scoping Report are set out below. Assumptions and limitations specific to certain topics are identified in the appropriate technical chapter.
- Baseline conditions have been established from a variety of sources, including historical data, but due to the dynamic nature of certain aspects of the environment, conditions will change during the construction and operation of the Proposed Development. Site surveys and desk-based data collection will be undertaken during the EIA to supplement this data to bring it up to date for the assessments;
  - Information received by third parties is complete and up to date. Further consultation will be undertaken during the EIA where relevant and appropriate to verify existing data and collection additional information;
  - The design, construction and completed stages of the Proposed Development will satisfy minimum environmental standards, consistent with contemporary legislation, practice and knowledge; and
  - The existing tower access routes are not fully defined at this stage and so the constraints and study areas presented in this Scoping Report are based upon the OHL Route. The access routes

will be included in the EIA and presented in the EIA Report and the baseline information updated accordingly to reflect this.

## 4 Hydrology, Hydrogeology and Soils

### 4.1 Introduction

- 4.1.1 This chapter will assess the potential effects of the Proposed Development on Hydrology, Hydrogeology, and Soils in relation to the construction and operation phases of the Proposed Development.
- 4.1.2 The expected impact of the Proposed Development on Hydrology, Hydrogeology, and Soils is limited due to the nature of the Proposed Development, which is unlikely to cause a significant disturbance to the hydrology, hydrogeology and soils environment. In light of this and the geographical scale of the scheme, a high-level approach will be undertaken for the assessment rather than detailed site-specific investigation.

### 4.2 Baseline

- 4.2.1 A desk study and data search will be undertaken to identify the baseline environment, including information on solid and drift geology, surface water and groundwater, flood risk and designated sites.
- 4.2.2 Sources of information to inform the baseline review will include existing studies, including the Previous ES and the earthwire replacement works surveys.
- 4.2.3 Our initial review indicates that the OHL Route crosses a number of river catchments and watercourses. The OHL Route crosses 13 key river catchments<sup>9</sup> although this will be confirmed as part of the assessment. These are the:
- River Don;
  - River Dee (Grampian);
  - Kincardine and Angus Coastal;
  - Bervie Water;
  - River North Esk (Tayside);
  - River South Esk (Tayside);
  - River Tay;
  - Perth Coastal;
  - River Earn;
  - Earn Coastal;
  - River Leven (Fife); and
  - River Devon.
- 4.2.4 The OHL Route also passes through a number of sites designated for hydrological sensitivities; River Dee Special Area of Conservation (SAC); River South Esk SAC; River Tay SAC; Pitkeathly Mires SAC / SSSI; and North Esk and West Water Palaeochannels SSSI.
- 4.2.5 Private water supplies are expected to be present in the areas surrounding the OHL Route. Current data will be gathered from the relevant local authority Environmental Health Department to determine if additional nearby properties are served by private water supplies.
- 4.2.6 The OHL Route crosses several Drinking Water Protected Areas and Nitrate Vulnerable Zones.

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<sup>9</sup> River Basin Management Plans Interactive Map, SEPA. Available at: <http://marine.gov.scot/data/sepa-river-basin-management-plans-interactive-map>

- 4.2.7 There are sections of the OHL Route located in areas subject to flooding, based on the SEPA indicative flood risk mapping. An initial review indicates that several of the tower locations are located in areas of flood risk, according to SEPA mapping. These include Tower 525, near Echt, and Tower 160, by the River Tay near Redgorton.
- 4.2.8 The likely presence of potential groundwater dependent terrestrial ecosystems (GWDTE<sup>10</sup>) will be considered where ecology survey information becomes available as part of the EIA, such as at Pitkeathly Mires SAC / SSSI.
- 4.2.9 British Geological Society and soils mapping will be reviewed to identify baseline geological and soils conditions, including peat deposits.
- 4.2.10 Fisheries are located along the OHL Route. These will be identified through a desk study, including a review of previous assessments.

### 4.3 Sensitive Receptors

- 4.3.1 The sensitive receptors within the study areas are expected to include surface water and groundwater features, private water supplies, fisheries and potentially peat.

### 4.4 Issues Scoped Out

- 4.4.1 All operational impacts will be scoped out of this assessment as there is not expected to be any impacts that are likely to be significant from the operation of the Proposed Development. This is because the Proposed Development will use the existing infrastructure (i.e. no new towers will be introduced) and the operational requirements (e.g. maintenance) will be unchanged and therefore there will be no impact on Hydrology, Hydrogeology and Soils after completion of the construction phase.
- 4.4.2 The Previous ES did not identify the presence of peat at the substation and line diversion sites. A Peat Landslide Hazard and Risk Assessment<sup>11</sup> (PLHRA) was scoped out. It is not anticipated that works associated with the Proposed Development would warrant PLHRA; however, should such risks be identified during the EIA, where existing steel lattice tower foundation upgrade works are required, further investigation and assessment will be undertaken as required.

### 4.5 Potentially Significant Effects

- 4.5.1 Potentially significant effects that may result from the construction phase of the Proposed Development are:
- pollution of surface watercourses, groundwater and private water supplies: including from suspended sediment in surface water bodies, hydrocarbon and oil pollution. Potential sources of suspended sediments on construction sites include excavations, exposed ground and stockpiles, plant and wheel washing, dust, and mud on-site access roads;
  - impact on water resource availability, including impacts to groundwater levels from any dewatering required;
  - mobilisation of contaminated soil / bedrock;

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<sup>10</sup> plant communities reliant on constant water movement typically identified through a combined assessment of topography, geohydrology and botany

<sup>11</sup> Scottish Government (2017). Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments. Available: <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2017/04/peat-landslide-hazard-risk-assessments-best-practice-guide-proposed-electricity/documents/00517176-pdf/00517176-pdf/govscot%3Adocument/00517176.pdf>.

- impact of pollution on fisheries: including from suspended sediment in surface water bodies, hydrocarbon and oil pollution. Sources of oils and hydrocarbons include leaks from access vehicles and powered hand tools;
- flooding: including from the obstruction of watercourses during construction and the increased runoff due to soil compaction;
- soil erosion, compaction and excavation losses during access or construction;
- loss of peat soils if there are peatland or mire systems present; and
- impacts upon GWDTE.

## 4.6 Assessment Methodology

4.6.1 The assessment of effects will be carried out in accordance with the principles contained within the Applicant's GEMPs as well as a range of standard guidance documents from Construction Industry Research and Information Association (CIRIA), Forestry and Land Scotland (FLS), SEPA, SNH, the Scottish Government and Scottish Renewables relating to water pollution, abstractions, watercourse crossings, sustainable drainage, peat management and forestry.

4.6.2 The following tasks will be undertaken in the completion of the assessment:

- data request from relevant stakeholders, including SEPA, Scottish Water and relevant local authorities;
- desk-based study to obtain baseline and historical data;
- identification of the potential impacts of the Proposed Development and assessment of their significance based on the magnitude of the impact and the sensitivity of receptors; and
- identification of options for the mitigation of potential effects in accordance with applicable legislation, policies and guidance.

4.6.3 The desk-based study will involve a review of the previous ES and all relevant previous environmental reports to identify any gaps in baseline information which require updating. The desk-based study will involve the following elements:

- use of OS maps to identify watercourse catchments, water bodies, springs and boreholes within 1 km of the Proposed Development;
- identification of any relevant designated or protected sites within a 1 km study area surrounding the Proposed Development;
- collation of historical hydrological and flooding information (where available);
- review of SEPA flood risk areas;
- collation of preliminary data on public and private water abstractions and discharges, assumed to be made available upon request to local authorities;
- collation of available meteorological data for the Eastern Scotland climate region;
- collation of available surface water and groundwater quality data for the region;
- interpretation and collation of GWDTE information; and
- collation of current land use information.

4.6.4 Assessment of private water supplies will comprise a desk study, including a review of previous assessments

4.6.5 The impact assessment will be undertaken in accordance with the EIA Regulations and the significance of effects will be determined in accordance with the criteria set out in Section 3.3 of this Scoping Report.

- 4.6.6 This assessment will include the impacts of any works required for access routes. Particular attention will be paid to the potential hydrological and water quality impacts upon any water supplies within the vicinity of the OHL Route and any aquatic ecological features identified within the ecology assessment. The potential water quality impacts through enhanced erosion of disturbed peat will also be considered.
- 4.6.7 The Site will be assessed for flood risk in line with Scottish Planning Policy. A basic flood risk assessment will be undertaken, which will involve a review of previous flood risk assessment and current SEPA flood risk mapping.

## **4.7 Summary**

- 4.7.1 The above provides a comprehensive summary of the tasks to be undertaken during the EIA with regards to hydrology, hydrogeology and soils. Any effects likely to have a significant effect on the sensitive receptors, such as pollution of surface watercourses, groundwater and private water supplies, will be evaluated within the EIA Report.
- 4.7.2 A high-level approach will be adopted to the assessment considering the geographical extent of this study, and the nature of the Proposed Development. Mitigation measures will be proposed, where required, for likely significant effects. In this case, we would anticipate the main issues to be potential water quality impacts to private water supplies, potential pollution impacts to water bodies resulting from access and construction activities, and potential loss of GWDTE.

## 5 Ecology

### 5.1 Introduction

5.1.1 This chapter will consider the potential effects of the Proposed Development on habitats and species along the OHL Route and within the wider local area.

### 5.2 Baseline Conditions

5.2.1 A review of existing ecological data gathered to support the Previous ES and the earthwire replacement works of the OHL Route in 2016, has been undertaken. The following resources have also been reviewed.

- SNH Site Link<sup>12</sup>; and
- Improvement Service (IS) Spatial Hub: Source of Scottish Local Government Spatial Data<sup>13</sup>.

5.2.2 To date, there has been no direct consultation with stakeholders regarding the Proposed Development.

5.2.3 The following non-avian European designated SACs are located within 10 km of the OHL Route, as shown on **Figure 2.2**:

- River Dee – OHL Route crosses the SAC;
- River Tay – OHL Route crosses the SAC;
- Pitkeathly Mires – OHL Route crosses the SAC;
- River South Esk – OHL Route crosses the SAC;
- Methven Moss – 5.2 km;
- Dunkeld - Blairgowrie Lochs – 5.2 km;
- Craighall Gorge – 6.4 km;
- Red Moss of Netherley – 6.5 km;
- Turflundie Wood – 7.9 km;
- Firth of Tay and Eden Estuary – 9.7 km; and
- Garron Point – 9.9 km.

5.2.4 The following (biological) nationally designated SSSIs are located within 1 km of the OHL Route:

- Pitkeathly Mires – OHL Route crosses the SSSI;
- Devon Gorge – OHL Route crosses the SSSI;
- Gannochy Gorge – 30 m;
- Hare Myre, Monk Myre and Stormont Loch – 400 m;
- Loch of Park – 520 m;
- Balloch Moss – 595 m;
- Gartwhinzean Meadow – 685 m;
- Den of Ogil – 770 m;
- Devon Gorge – 820 m;
- Back Burn Wood and Meadows – 860 m; and

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<sup>12</sup> Available: <https://sitelink.nature.scot/home> [Accessed March 2020]

<sup>13</sup> Available: <https://www.spatialhub.scot/> [Accessed March 2020]

- Den of Airlie – 910 m.

5.2.5 Local Nature Conservation Sites (LNCS) were identified using the IS Spatial Hub online mapping tool<sup>14</sup>. The OHL Route extends through the following LNCS (listed north to south):

- Candyglirach – botanical and invertebrate interests;
- Loch of Park – botanical and aquatic interests;
- River Dee – botanical, aquatic and bird interests; and
- Strathifinella – botanical, aquatic and geological interests.

5.2.6 The OHL Route does not pass through the following LNCS, however it does lie within 1 km of them:

- Barmekin Wood – botanical interests; and
- Mergie – botanical and aquatic interests.

5.2.7 Along the OHL Route, there are numerous pockets of ancient woodland, non-designated woodland, moorland, agricultural land, running water, standing water and built-up areas with terrestrial and aquatic habitats, as shown on **Figure 2.2**. These habitats may support the following legally-protected or notable (e.g. Scottish or local biodiversity priority) fauna:

- Amphibians;
- Reptiles;
- Otter;
- Water vole;
- Beaver;
- Pine marten;
- Red squirrel;
- Badger;
- Bats;
- Salmonids;
- Freshwater pearl mussel;
- Wildcat; and
- Aquatic and terrestrial invertebrates.

5.2.8 Legally protected and notable (e.g. Scottish or local biodiversity priority, rare or vulnerable) flora could also be present within semi-natural habitats along the OHL Route.

5.2.9 Non-native invasive species of flora and fauna that are considered to be outside their native range are also likely to be present.

5.2.10 Localised areas may support GWDTEs.

### 5.3 Sensitive Receptors

5.3.1 Based on the available baseline data, important ecological features within the Proposed Development's potential Ecological Zone of Influence<sup>15</sup> (EZOI) are anticipated to be as follows:

- SACs – River Dee; River Tay; Pitkeathly Mires; River South Esk;

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<sup>14</sup> Although the IS Spatial Hub online mapping tool allows data to be viewed, it does not allow spatial data to be publicly downloaded. As part of the work to be undertaken during the EIA, attempts will be made to obtain the data including requesting from Local Authorities.

<sup>15</sup> The range over which effects could be realised on ecological interests, depending on factors such as effect pathways (e.g. hydrological connectivity), the sensitivity of species/habitats (e.g. typical disturbance distances), and their ecology (e.g. territory size, supporting habitat). The EZOI would be specific to each species/habitat.

- SSSIs – Pitkeathly Mires; Devon Gorge; Gannochy Gorge;
- LNCSs – Barmekin Wood; Candyglirach; River Dee; Mergie; Strathifinella;
- protected and notable species – amphibians, reptiles, otter, water vole, beaver, badger, pine marten, red squirrel, bats, salmonids, freshwater pearl mussel, wildcat, aquatic and terrestrial invertebrates, notable plant species;
- habitats – ancient woodland, non-designated woodland, moorland, running and standing water; and
- GWDTEs.

## 5.4 Issues Scoped Out

5.4.1 All operational impacts are scoped out as the post-construction situation will not be different (in ecological terms) from the current baseline situation.

5.4.2 Construction impacts on the following designated sites are scoped out due to them being located outside the EZol:

- SACs – Methven Moss; Dunkeld - Blairgowrie Lochs; Craighall Gorge; Red Moss of Netherley; Turflundie Wood; Firth of Tay and Eden Estuary; Garron Point.
- SSSIs – Hare Myre, Monk Myre and Stormont Loch; Loch of Park; Balloch Moss; Gartwhinzean Meadow; Den of Ogil; Back Burn Wood and Meadows; Den of Airlie.
- LNCSs – Barmekin Wood; Mergie.

5.4.3 Construction impacts on agricultural land and built-up areas have also been scoped out due to being of low ecological value when considered in isolation. It is recognised that these managed landscapes offer resources for protected and notable species (e.g. badger, bats); this would be captured in any assessment of effects on these species as important ecological features. Further, general ecological protection measures will be captured in the CEMP.

## 5.5 Potential Significant Effects

5.5.1 Potential significant effects of the Proposed Development to receptors within an EZol during construction are anticipated to be as follows:

- temporary or permanent direct or indirect loss of, or damage to SACs, (biological) SSSIs, LNCSs, GWDTEs and sensitive terrestrial and aquatic habitats;
- temporary or permanent loss of, obstruction of, or disturbance to legally protected and notable species' resting sites;
- temporary or permanent loss of, modification or disturbance to protected species foraging areas and commuting routes;
- killing and injury of protected and notable species during construction and advance site clearance activities; and
- pollution to habitats with indirect effects on associated protected and notable species.

5.5.2 Construction effects are anticipated to be largely temporary, low magnitude and localised. Significant effects should be possible to avoid if appropriate mitigation is included in the design, planning and implementation of the Proposed Development.

## 5.6 Assessment Methodology

- 5.6.1 As part of the EIA, surveys will be undertaken to supplement the baseline information. An ecological sensitivity level (low, moderate, high) has been assigned to each tower along the OHL Route. The ecological sensitivity level has been determined using all existing ecological data on nature conservation sites, habitats and species (summarised above), supplemented by professional experience of the prevailing landscape. This approach has been designed to focus field survey effort on areas of moderate-high ecological sensitivity/value; covering approximately 50% of the OHL Route. This approach is proportionate to the scale and nature of the Proposed Development and expands upon existing data and assessments used to support relatively recent and similar works on the earthwire replacement works project.
- 5.6.2 The following surveys commenced in April 2020 and will continue through to June 2020 (pending access and satisfactory health and safety precautions<sup>16</sup>). Extended Phase 1 Habitat survey following industry-standard practice<sup>17</sup> to update existing mapping from the earthwire replacement works with current conditions;
- National Vegetation Classification (NVC) survey following industry recognised practice<sup>18</sup> over semi-natural habitats which are located in Pitkeathly Mires SAC and SSSI (high ecological sensitivity);
  - badger survey following methods outlined by Scottish Badgers<sup>19</sup> and aligning with standing advice for planning consultants from SNH<sup>20</sup>; and
  - targeted surveys for otter, beaver and water vole activity with reference to SNH protected species advice for developers<sup>21</sup>.
- 5.6.3 Three distinct survey areas were identified as described in Table 5.1. The results of these surveys will be used to inform any subsequent assessment and provide evidence to support habitat management and mitigation proposals.

**Table 5.1: Ecological Survey Areas**

Study Area	Extent	Ecology surveys
OHL Survey Area	Up to 50 m from towers of either moderate-high ecological sensitivity; and up to 50 m from the conductors spanning in between towers of moderate-high ecological sensitivity	<ul style="list-style-type: none"> <li>• Extended Phase 1 habitat survey;</li> <li>• Badger survey;</li> <li>• Otter survey;</li> <li>• Water vole survey; and</li> <li>• Beaver survey.</li> </ul>

<sup>16</sup> With reference to evolving COVID-19 government advice.

<sup>17</sup> Joint Nature Conservation Committee (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. Joint Nature Conservation Committee, Peterborough.

<sup>18</sup> Rodwell, J. S. (2006). NVC Users' Handbook. JNCC, Peterborough.

<sup>19</sup> Scottish Badgers (2018). Surveying for Badgers. Good Practice Guidelines (V1). Available:

[https://scottishbadgers.org.uk/userfiles/file/planning\\_guidelines/Surveying-for-Badgers-Good-Practice-Guidelines\\_V1.pdf](https://scottishbadgers.org.uk/userfiles/file/planning_guidelines/Surveying-for-Badgers-Good-Practice-Guidelines_V1.pdf) [Accessed March 2020]

<sup>20</sup> Scottish Natural Heritage (2019). Standing advice for planning consultants: Badger. Available: <https://www.nature.scot/sites/default/files/2019-10/Species%20Planning%20Advice%20-%20badger.pdf> [Accessed March 2020]

<sup>21</sup> Scottish Natural Heritage (2019). Planning and development protected species. Available: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-protected-species> [Accessed March 2020]

Study Area	Extent	Ecology surveys
Access Route Survey Area	Up to 50 m from the access routes to towers of either moderate-high ecological sensitivity	<ul style="list-style-type: none"> <li>• Target noting of features used by badgers, otters, water vole, beaver, or other protected/notable fauna;</li> <li>• Target noting of sensitive habitats which should be avoided e.g. heath, bog, flush, fen (no habitat mapping).</li> </ul>
Pitkeathly Mires Survey Area	Up to 100 m from towers and access routes which extend through Pitkeathly Mires SAC and SSSI	<ul style="list-style-type: none"> <li>• NVC survey;</li> <li>• Badger survey;</li> <li>• Otter survey;</li> <li>• Water vole survey; and</li> <li>• Beaver survey.</li> </ul>

- 5.6.4 As noted in **Section 2.5**, studies are currently underway to determine whether any additional tree felling will be required along the OHL Route to maintain mandatory clearance distances as a result of the proposed voltage upgrade. In the event that additional tree felling is required, it is recognised that felling requirements may extend the working area up to 40 m from either side of the OHL Route, such that there would be potential for disturbance to species associated with woodland beyond the 50 m survey areas detailed above. To mitigate this limitation, a precautionary approach will be adopted when assessing the impacts of felling, based on all data recorded to date; and it is assumed that pre-felling surveys (including for bats) will merit a planning condition. Any felling impacts to bat tree roosts identified through future surveys would be mitigated through discrete licensing; the works would be subject to strict European protected species licensing tests
- 5.6.5 The Ecological Impact Assessment (EclA) will be completed in accordance with the Chartered Institute of Ecological and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment<sup>22</sup>. The assessment will use the ecological baseline to identify the important ecological features that could be affected by the construction of the Proposed Development. Important ecological features will be assigned a geographic level of importance based on their conservation status and population / assemblage trends and other relevant criteria (including size, naturalness, rarity and diversity). Details of the Proposed Development will then be used to assess what level of effect each receptor is likely to receive and whether or not that impact will be beneficial or adverse, significant or negligible, and temporary or permanent.
- 5.6.6 Where appropriate, mitigation measures will be recommended within the EclA to remedy any adverse impacts and measures to enhance the local ecology will also be incorporated. An assessment of residual effects will then be undertaken and reported within the EIA Report.
- 5.6.7 Separate to the EclA but for completeness, it is anticipated that SNH will be consulted to revise the Habitats Regulations Appraisal (HRA) of likely significant effects to Pitkeathly Mires SAC. SNH concluded that likely significant effects would occur as part of the Previous ES and earthwire replacement works in 2017, thus an Appropriate Assessment would be required. However, SNH (as the competent authority) were able to conclude there would be no adverse effect on the integrity of this site with specific controls adopted through a method statement. It is anticipated that similar conclusions may be drawn for this Proposed Development to the OHL Route, however a revision will

<sup>22</sup> CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Available: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1.pdf> [Accessed March 2020]

be sought from SNH taking into account the current condition of the SAC, any damage from previous works, and current proposed access routes. Field surveys proposed above for the EclA will ensure sufficient objective, current data are available to support the HRA; specifically, NVC surveys of the OHL Route through Pitkeathly Mires SAC.

- 5.6.8 Further, SNH commented that there were to be no likely significant effects on River Dee SAC, River Tay SAC, and River South Esk SAC from previous planning application (2013) and earthwire replacement (2017). This is anticipated to remain unchanged for the Proposed Development, however will be reaffirmed through consultation regarding Pitkeathly Mires SAC.

## 5.7 Summary

- 5.7.1 With the OHL already a permanent structure and subject to relatively recent earthwire replacement works, existing data (albeit over 18 months old and therefore lapsed in validity in terms of supporting further assessments alone) provides a useful understanding of species and habitats likely to be encountered. These data will be interpreted in combination with targeted field surveys of areas of moderate-high ecological sensitivity covering 25-30% of the Proposed Development. It is anticipated that this approach will provide sufficient current information to inform a robust EclA; address all potential impacts during construction and design essential mitigation to reduce effects which could be significant to a non-significant level.
- 5.7.2 There are not anticipated to be any significant effects during operation relating to the Proposed Development and therefore this aspect is proposed to be scoped out of further assessment.
- 5.7.3 It is anticipated that SNH will be consulted to revise their previous HRA of likely significant effects on Pitkeathly Mires SAC, separately to the EclA.

## 6 Ornithology

### 6.1 Introduction

6.1.1 This chapter will consider the potential effects on ornithological receptors along the OHL Route and within the wider local area resulting from the Proposed Development.

### 6.2 Baseline Conditions

6.2.1 Information on the broad ornithological baseline conditions along the OHL Route is available from the Previous ES and pre-construction surveys undertaken as part of the earthwire replacement works.

6.2.2 **Table 6-1** and **Figure 2.2** identify nine European designated (Natura 2000) sites of ornithological importance (Special Protection Areas (SPAs)) and Wetlands of International Importance (Ramsar sites) which are located within 10 km of the OHL Route.

**Table 6.1: SPAs and Ramsar Sites within 10 km of the OHL Route**

Site Name	Qualifying Features	Distance from OHL Route
Loch of Kinnordy SPA and Ramsar Site	Important populations of overwintering populations of greylag geese and pink-footed goose.	1.8 km
Loch Leven SPA and Ramsar Site	Important populations of overwintering waterfowl, including cormorant, gadwall, goldeneye, pink-footed goose, pochard, shoveler, teal, tufted duck and whooper swan as well as its overwintering waterfowl assemblage.	3.7 km
Loch of Lintrathen SPA and Ramsar Site	Important populations of overwintering populations of greylag geese.	3.8 km
Loch of Skene SPA and Ramsar Site	Important populations of overwintering populations of greylag geese.	4.5 km
South Tayside Goose Roosts SPA and Ramsar Site	Important populations of overwintering populations of greylag geese and pink-footed geese and general waterfowl assemblage.	4.7 km
Cairngorms Massif SPA	Important resident population of golden eagle.	6.2 km
Forest of Clunie SPA	Important populations of breeding hen harrier, merlin, short-eared owl and osprey.	7.8 km
Fowlsheugh SPA	Important populations of breeding seabirds, including fulmar, kittiwake, guillemot, herring gull and razorbill as well as its general seabird assemblage.	9.5 km
Firth of Tay and Eden Estuary SPA and Ramsar	Important populations of overwintering waterbirds, including bar-tailed godwit, common scoter, cormorant, dunlin, eider, goldeneye, goosander, grey plover, greylag goose and black-tailed godwit.	9.7 km

6.2.3 The only nationally designated Site of Special Scientific Interest SSSI within 1 km of the OHL Route which is notified for ornithological features of interest is Hare Myre, Monk Myre and Stormont Loch SSSI. This site is located approximately 400 m from the OHL Route and is notified, amongst other things, for its population of overwintering greylag geese.

- 6.2.4 Breeding bird surveys undertaken to inform the Previous ES were limited to those sections which traverse Devon Gorge SSSI and Pitkeithly Mires SSSI, even though neither are notified for their ornithological interests. The section of the OHL Route which passes through Devon Gorge SSSI was found to support a breeding bird assemblage which was typical of the associated woodland and agricultural habitats. Five species of conservation concern were confirmed or considered likely to be breeding; starling, dunnock, house sparrow, song thrush and yellowhammer. Meanwhile, the section of the OHL Route which passes through Pitkeithly Mires SSSI was found to support a breeding bird assemblage which was typical of the associated upland and wetland habitats. Twelve species of conservation concern were confirmed or considered likely to be breeding, the most notable of which were cuckoo, curlew, lapwing, linnets and skylark.
- 6.2.5 The remainder of the route was assessed based on records of rare breeding species of conservation concern obtained through desk study and consultation. This included records of scarce raptors such as osprey, goshawk, red kite, hen harrier and short-eared owl; capercaillie and black grouse; overwintering waterfowl such as whooper swan and pink-footed geese, and other species such as quail, crossbill and upland wading birds.
- 6.2.6 As identified in **Table 6-1**, the OHL Route passes in close proximity to several SPAs and Ramsar Sites which are recognised for supporting important populations of overwintering waterfowl, in particular geese. The Previous ES identified that the agricultural areas through which the OHL Route passes represent suitable foraging habitat particularly for the geese associated with these designated sites.
- 6.2.7 No dedicated ornithological surveys were undertaken to inform the earthwire replacement works, although pre-construction ecology surveys for the earthwire replacement works did identify a number of raptor nests and a sand martin colony in the vicinity of the northern section between Kintore Substation and Tower 400. Instead, works were largely undertaken in line with the Applicant's Species Protection Plans (SPPs) regarding works in proximity to goshawk and osprey nest sites based on constraints identified from the Previous ES.
- 6.2.8 However, given the time which has elapsed since the Previous ES, the presence and distribution of rare and / or notable breeding and wintering species of conservation concern in proximity to the OHL Route may well have changed. Consequently, an updated desk study and consultation exercise will be undertaken. Consultees for relevant species records will include;
- relevant regional sections of the Scottish Raptor Study Group;
  - The Royal Society for the Protection of Birds (Scotland); and
  - Forestry and Land Scotland.
- 6.2.9 The baseline conditions considered in the Previous ES supplemented by up-to-date information gathered through the desk study and consultation exercise will be used to inform the ornithological impact assessment of the Proposed Development.

### 6.3 Sensitive Receptors

- 6.3.1 Based on the Previous ES and the pre-construction surveys undertaken as part of the earthwire replacement works, the key sensitive ornithological receptors associated with the Proposed Development are expected to be breeding osprey and goshawk as well as the general breeding bird assemblage.
- 6.3.2 The Proposed Development could also potentially disturb overwintering waterfowl from foraging in areas of suitable (predominantly agricultural) habitats in close proximity to the OHL Route, many of which are likely to be affiliated with nearby SPAs and Ramsar Sites as well as Hare Myre, Monk Myre and Stormont Loch SSSI.

- 6.3.3 The list of sensitive receptors will be refined based on any new information which is obtained through the desk study and consultation process.

## 6.4 Issues Scoped Out

- 6.4.1 With the exception of accidental nest destruction and killing or injury of breeding birds' eggs or young, which would be mitigated for through application of appropriate measures such as pre-works nesting bird checks and implementation of works exclusion zones, common passerines (songbirds) are typically at low risk from the impacts associated with the Proposed Development. Consequently, common passerines are scoped out of the impact assessment.
- 6.4.2 Construction impacts are also scoped out for all European designated sites, on the basis that they are located sufficiently far away from the proposed works to prevent be directly affected by them or their associated qualifying interests. With particular reference to more wide-ranging overwintering waterfowl (swans and geese) which are associated with many of these sites, significant effects are considered highly unlikely on the basis that the works will be highly localised and there is an abundance of suitable (agricultural) foraging habitat along the OHL Route to which any disturbed birds can be displaced.
- 6.4.3 Operational effects are scoped out as the Proposed Development will essentially be no different to the baseline conditions of the OHL Route. These include potential impacts of accidental collision mortality and occasional, typically low-level disturbance during maintenance works.

## 6.5 Potential Significant Effects

- 6.5.1 Given the nature of the Proposed Development and the works involved, the main impacts are expected to be the disturbance of breeding and wintering birds directly along and in the immediate vicinity of the OHL Route. There is also a risk of the nests of breeding birds being destroyed and their eggs or young being killed or injured during the works, although as stated above, the risk of this would be significantly reduced through the application of appropriate mitigation measures.
- 6.5.2 These impacts could result in a reduction in the breeding success of locally occurring species, particularly rare breeding species of conservation concern, thereby affecting breeding or foraging behaviour and causing reductions in productivity or survival. However, since these impacts are limited to the construction stage they are predicted to be of short-term duration (i.e. a single breeding season).
- 6.5.3 There is also the potential for the Proposed Development to cause disturbance to overwintering greylag geese associated with Hare Myre, Monk Myre and Stormont Loch SSSI, based on its close proximity to the OHL Route (approximately 400 m). The main potential impact of the proposed works will be the disturbance of birds roosting within the SSSI, rather than of birds foraging in the wider surrounding area, based on the expected availability of alternative foraging resources as detailed above.

## 6.6 Assessment Methodology

- 6.6.1 Following on from the desk study and consultation exercise an assessment will be completed in line with the guidelines of the Chartered Institute of Ecology and Environmental Management<sup>23</sup> (CIEEM). Should any potential effects to any Natura 2000 site be identified, then a Habitats Regulations Appraisal (HRA) will be completed.

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<sup>23</sup> CIEEM: Guidelines for Ecological Impact Assessment in the UK and Ireland (2018)

- 6.6.2 Given that the scope of surveys undertaken to inform the Previous ES was limited to those sections which passed through Devon Gorse SSSI and Pitkeithly Mires SSSI, and the highly typical species assemblages found in those areas are not expected to significantly change, further ornithological surveys of those, or indeed any other sections of the OHL Route are not proposed.
- 6.6.3 Where significant adverse effects are predicted, mitigation measures designed to avoid or minimise such effects to an acceptable, non-significant level will be proposed.
- 6.6.4 The assessment will also consider the effects of the Proposed Development in combination with those associated with other plans or projects as relevant which, when considered together, may give rise to significant cumulative effects.

## **6.7 Summary**

- 6.7.1 The assessment of potential effects on ornithological receptors from the Proposed Development will be based on baseline conditions considered in the Previous ES supplemented by more up-to-date information gathered through the desk study and consultation exercise. The assessment will follow industry-standard guidelines for ecological impact assessment. Potential impacts from the Proposed Development are expected to be the disturbance of breeding and wintering birds and the accidental destruction of nests and eggs, and the killing and injury of young during the construction works. Where necessary mitigation measures will be proposed to avoid or minimise adverse effects to an acceptable level.

## 7 Cultural Heritage

### 7.1 Introduction

7.1.1 This chapter will consider the potential for significant effects on sites of archaeological and cultural heritage interest resulting from the Proposed Development. It will also form the basis for initial consultation with Historic Environment Scotland (HES) and the two local authority historic environment advisors in relation to the Proposed Development:

- Aberdeenshire and Angus - Aberdeenshire Council Archaeology Service (ACAS); and
- Perth & Kinross – Perth & Kinross Heritage Trust (PKHT).

### 7.2 Baseline

7.2.1 The Cultural Heritage assets along the Proposed Development and within a 250 m study area surrounding it are listed in **Table 7.1** and illustrated in **Figure 2.1**. A 250 m study area was applied around the OHL Route to take into consideration the potential direct impacts from access track construction and other temporary works on visible and buried cultural heritage assets.

**Table 7.1: Cultural Heritage Assets in proximity to the OHL Route**

Location of assets	Asset designation
<b>Crossed by the OHL Route</b>	3 Scheduled Monuments 1 Inventory Garden and Designed Landscape (GDL) 1 Registered Battlefield 64 undesignated Cultural Heritage assets <ul style="list-style-type: none"> <li>• Predominantly post-Medieval assets</li> <li>• Likely to be further assets identified through Site survey work and Historic Environment Record (HER) data requests.</li> </ul>
<b>Within 250 m of the OHL Route (excluding those crossed by the OHL Route above)</b>	27 Scheduled Monuments 18 Listed Buildings <ul style="list-style-type: none"> <li>• 1 Category A Listed</li> <li>• 9 Category B Listed</li> <li>• 8 Category C Listed</li> </ul> 3 Inventory GDLs Likely to be further assets identified through Site survey work and HER data requests.

### 7.3 Sensitive Receptors

7.3.1 The sensitive receptors relative to the cultural heritage assessment are the designated and undesignated cultural heritage assets that may be impacted directly by the Proposed Development. The likely causes of these physical impacts will relate to the construction of access tracks or other required temporary works during the construction phase.

7.3.2 An initial assessment identifies the following as sensitive receptors that may be affected by the Proposed Development:

- Dalbog House, fields and cairns (SM4633);

- Haughend enclosure (SM7263);
- Hallyards Cottages (SM7262);
- Cortachy Castle GDL (GDL00108); and
- The Battle of Tippermuir (BTL39).

7.3.3 A further 64 undesignated Cultural Heritage assets are classed as sensitive receptors and are listed on the Scottish National Record for the Historic Environment (SNRHE). These vary from Prehistoric settlements and funerary sites through to Post-Medieval settlements and infrastructure. Further assets are likely to be identified through the site survey and HER data requests.

## 7.4 Issues Scoped Out

7.4.1 The direct and indirect impacts during construction and operation of the Proposed Development on World Heritage Sites, Marine Protected Areas and Conservation Areas will be scoped out of the cultural heritage assessment as there are none which cross the OHL Route or are located within the 250 m study area.

7.4.2 All indirect impacts on the setting of designated and undesignated assets from the operation of the Proposed Development will be scoped out as the re-conductoring works will not introduce any new permanent elements of infrastructure, with the current towers being retained.

7.4.3 Assessment of impacts to Listed Buildings and GDLs will be scoped out as there will be no direct or indirect impacts on any Listed Buildings or GDLs. It is assumed that all new access roads and tracks will not impact on Cortachy Castle GDL (GDL00108). It is also assumed that all temporary access roads and tracks will be removed at the completion of the project.

## 7.5 Potentially Significant Effects

7.5.1 The potential for direct impacts related to the construction of the Proposed Development include:

- permanent, complete or partial loss of an archaeological feature or deposit as a result of ground excavation for the foundation works or any grading of land required for upgrading or new access tracks;
- permanent or temporary loss of the physical integrity of a feature, monument, building, or group of monuments;
- damage to resources due to compaction, desiccation or waterlogging; and
- damage to resources as a result of ground vibration caused by construction.

7.5.2 There are three Scheduled Monuments, a single Registered Historic Battlefield and 64 known undesignated assets crossed by the OHL Route that have the potential to be directly impacted upon during construction. One of the main focusses of the assessment will relate to potential impacts on the Scheduled Monument of Dalbog House field and cairns (SM4633), with the Scheduled Area surrounding Tower 372. The monument comprises circa 150 cairns and areas of rig and furrow that have the potential to be adversely impacted by any construction machinery passing through the area.

7.5.3 The Registered Battlefield of the Battle of Tippermuir (BTL39) covers a large area and contains six towers (Towers 137 to 142) that will need to be accessed across the area. Similarly to the Dalbog House field and cairns, elements of the battlefield may be impacted upon by any construction machinery and access tracks required to undertake works at these locations.

7.5.4 As per the mitigation agreed in the Previous ES, the Scheduled Monuments of Haughend enclosure (SM7263) and Hallyards Cottages (SM7262) will be demarcated out with the scheduled area to avoid any direct impacts. Furthermore, mitigation to avoid direct impacts on all other designated assets will be provided and undesignated assets will be avoided where possible through the design process.

## 7.6 Assessment Methodology

7.6.1 An assessment of direct impacts will be carried out and included in the EIA Report, with reference to the Previous ES and following best practice guidance and methodologies, in agreement with ACAS, PKHT and HES. The Cultural Heritage assessment will include a detailed baseline compiled through a broad and standard range of data sources, including the Previous ES, the HER, HES's National Heritage List, the SNRHE, local authority data sources along with published works and cartographic sources, and topographic, geology and geotechnical data, where available.

7.6.2 A targeted site walkover will be undertaken to assess the visible archaeological resource and archaeological potential of the Proposed Development, with the results included within the assessment. This will allow for the determination of whether previously unrecorded historic features are present on-site. The results of any new archaeological sites will be discussed with the relevant local authority archaeological advisor and HES.

7.6.3 The significance of an effect is assessed by looking at what the changes will be against the existing, or predicted baseline as a result of the Proposed Development. The method for assessing the significance of effect will be based on the environmental value (or sensitivity) of a receptor and the magnitude (degree of change) of the impact. Sensitivity and magnitude will be assessed according to the methodology set out in Section 3.3. The work will be undertaken in accordance with the standards set by the Chartered Institute for Archaeologists (CIfA), as well as HES's Managing Change in the Historic Environment guidance note series<sup>24</sup>. All elements of the assessment will also be undertaken in accordance with the following policies and guidelines:

- By-laws: Code of Conduct (2014)<sup>25</sup>;
- Standards and Guidance for Historic Environment Desk-Based Assessment (2017)<sup>26</sup>; and
- Standards and Guidance for commissioning work on, or providing consultancy advice on, archaeology and the historic environment (2014)<sup>27</sup>.

7.6.4 Implementing accepted good practice during the design and construction phases of the Proposed Development will ensure that many potential effects on cultural heritage can be avoided or reduced. Measures will be embedded into the design to ensure that access tracks and temporary works avoid assets where possible.

7.6.5 The results of the assessment will determine the requirement for any appropriate mitigation measures for the protection of the cultural heritage resource or, where necessary, the investigation and recording of any sites likely to be affected by the Proposed Development where preservation in situ cannot be achieved.

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<sup>24</sup> Historic Environment Scotland, (various) Managing Change in the Historic Environment – Historic Environment Scotland's Guidance note series

<sup>25</sup> Chartered Institute for Archaeologists, 2014 By-laws: Code of Conduct

<sup>26</sup> Chartered Institute for Archaeologists, 2017 Standards and Guidance for Historic Environment Desk Based Assessment

<sup>27</sup> Chartered Institute for Archaeologists, 2014 Standards and Guidance for commissioning work on, or providing consultancy advice on, archaeology and the historic environment

## 7.7 Summary

- 7.7.1 The cultural heritage assessment will focus on the direct impacts of the Proposed Development on the designated and undesignated assets crossed by the OHL Route, as well as those that may be impacted by potential access tracks or temporary works during construction.
- 7.7.2 There is the potential for significant impacts on the Scheduled Monument of Dalbog House field system and cairns (SM4633), and the Battle of Tippermuir Registered Battlefield (BTL39) with mitigation focussing on reduction of the impacts through avoidance of individual features, non-intrusive construction techniques, and archaeological recording.

## 8 Noise and Vibration

### 8.1 Introduction

8.1.1 This EIA chapter will assess the potential effects on noise and vibration sensitive receptors resulting from the construction and operation of the Proposed Development.

### 8.2 Baseline

8.2.1 The OHL Route is located within a predominantly rural area. The main settlements within the vicinity of the OHL Route include Blaringone, Drum, Huntingtower, Kirkton of Kingoldrum and West Park. Smaller settlements, individual dwellings and clusters or properties are also distributed along the length of the OHL Route.

### 8.3 Sensitive Receptors

8.3.1 Noise sensitive receptors (NSRs) are in this instance defined as residential properties within 200 m of the centreline of the OHL Route. Where the OHL meets properties in groups or close settlements, one location may be chosen as representative of several properties that would produce duplicate readings.

### 8.4 Issues Scoped Out

8.4.1 The sections below provide the rationale for excluding certain noise effects from the EIA.

#### Construction Noise

8.4.2 Construction noise will be short term and intermittent, with potential noisy activities, such as tower steel reinforcements and foundation upgrades, taking approximately two to three weeks to complete per tower location depending on local ground conditions. As such, it is considered that construction noise can be controlled through the implementation of a Noise Management Plan, which would be developed as part of the CEMP prepared by the Principal Contractor. The Noise Management Plan would detail how construction noise would be mitigated in line with BS5228-1:2009+A1:2014 – Noise and Vibration Control on Construction and Open Sites. In the event that any towers requiring significant foundation upgrades are located within close proximity to residential properties, these works would be assessed on a case-by-case basis with specific measures included within the Noise Management Plan as required.

8.4.3 As such, no detailed assessment of construction noise associated with plant noise or traffic is proposed as part of the EIA.

#### Noise from Operational Maintenance

8.4.4 Any operational maintenance works required along the line will be short term and intermittent and are not anticipated to give rise to significant effects relating to noise and vibration. As such, this topic is proposed to be scoped out of the EIA.

## 8.5 Potentially Significant Effects

8.5.1 At this preliminary stage, possible effects associated with the operation of the Proposed Development include:

- operational effects of noise from the OHL, which has the potential to increase following installation of the new conductors and the increased operational voltage of the OHL; and
- operational effects of noise from the 'corona discharge' during damp weather along the OHL.

8.5.2 Without mitigation, there is potential for operational noise to be an issue at some NSRs; primarily due to their close proximity to the line and the noise associated with OHLs as a result of a phenomenon known as 'corona discharge'. This phenomenon is generally heightened during damp weather when rain enhances the local electrical field strength allowing an audible discharge to occur.

## 8.6 Assessment Methodology

8.6.1 Background noise surveys will be undertaken, entailing the attended collection of night-time background noise levels at NSRs, or groups of such NSRs, within 200 m of the centreline of the OHL Route during suitable dry weather conditions, before construction.

8.6.2 The noise impact from the OHL during dry conditions will be assessed using the British Standard 4142:2014 noise assessment approach.

8.6.3 During wet conditions, the noise output from OHLs varies according to the number and size of rain droplets accumulated on the surface of the conductors. Therefore, there is a strong relationship between the rainfall rate and the noise output from an OHL. Background noise levels also increase with rainfall rate, such that during very heavy rain OHL noise is generally inaudible. For these reasons an alternative noise assessment method to deal with rain-induced noise is required. The external rain-induced noise levels will be assessed using the methodology developed by National Grid and detailed in their Technical Report TR(T) 94<sup>28</sup>, which is recommended by the Department of Energy & Climate Change for the assessment of rain induced noise.

8.6.4 Predictions will be undertaken using a spreadsheet tool or computer noise model (SoundPlan), whichever is deemed to be more appropriate. The predicted noise level at the receptors will be compared with criteria as agreed with each local authority's Environmental Health Officer.

8.6.5 Mitigation measures will be outlined where required, should there be any significant impacts at the noise sensitive receptors.

8.6.6 The proposed approach will focus on a proactive involvement in the design of the scheme to avoid or minimise possible effects where possible, and the identification of further generic and site specific measures as required. Possible noise effects will be identified by considering the location of sensitive receptors in relation to the levels of predicted noise associated with the operation of the OHL.

## 8.7 Summary

The proposed noise assessment will consider potential significant effects from operational OHL noise due to "corona discharge", during both dry and wet conditions. It is proposed that construction noise and noise from intermittent operational maintenance are scoped out of the EIA, as no significant effects are predicted.

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<sup>28</sup> Technical Report No. TR(T)94, 1993. A method for assessing the community response to overhead line noise. National Grid Technology & Science Laboratories.

## 9 Electric and Magnetic Fields

### 9.1 Introduction

9.1.1 This chapter will consider the potential for significant effects resulting from Electric and Magnetic Fields (EMF) on sensitive receptors.

### 9.2 Baseline

9.2.1 EMFs arise from electric charges and current flow. Exposure guidelines have been developed by the International Commission on Non-Ionising Radiation Protection (ICNIRP) to ensure the protection of human health in different situations, occupational exposure and public exposure, which were adopted by the UK National Radiological Protection Board (now Public Health England and devolved administration bodies) for application in the UK.

9.2.2 The typical field strengths for 275 kV and 400 kV OHLs (shown in **Table 9.1**) are well within the ICNIRP exposure guidelines, therefore no likely significant effect on human health associated with EMFs is predicted as a result of current or future operation of the OHL.

**Table 9.1: Typical EMF and UK Exposure Guidelines<sup>29</sup>**

Source	Electric Field (kV/m)		Magnetic Field ( $\mu$ T)	
	Typical field beneath OHL	Typical field 25m from OHL	Typical field beneath OHL	Typical field 25m from OHL
UK Public exposure Basic Restriction	9		360	
Typical field 275 kV and 400 kV OHL	3 - 5	0.2 – 0.5	20 – 30	5 – 10

### 9.3 Sensitive Receptors

9.3.1 Sensitive receptors are considered to be the occupants of dwellings and other buildings and areas of land where there is a public right of way within 100 m of the OHL Route.

### 9.4 Issues Scoped Out

9.4.1 No aspects are proposed to be scoped out of the EMF assessment.

### 9.5 Potentially Significant Effects

9.5.1 Although significant effects associated with EMF are not expected, the results will be presented alongside and compared with public and occupational exposure limits; the derivations and significance of which will be fully explained to the reader.

<sup>29</sup> Electric and magnetic fields and health. Overhead Powerlines. Available online: <http://www.emfs.info/sources/overhead/>

## **9.6** Assessment Methodology

- 9.6.1 An assessment of the change in EMF strengths due to the reconducted and reinsulated OHL operating at 400 kV will be undertaken through calculation.
- 9.6.2 Maximum field strengths will be calculated based on the input conditions as stated in the DECC Document "Power Lines: Demonstrating compliance with EMF public exposure guidelines", March 2012.
- 9.6.3 Approximate (worst case) field strengths will be calculated for all address locations within a 100 m corridor of the centre line. These locations will be identified using Ordnance Survey map / address data.
- 9.6.4 The results will be aggregated to understand the overall impact, whilst preserving the privacy of individual receptors.

## **9.7** Summary

- 9.7.1 The EMF assessment will focus on the direct impacts of the Proposed Development on sensitive receptors within 100 m of the OHL Route. This will be assessed through a calculation for individual addresses and the results aggregated to understand the overall impact.
- 9.7.2 Although significant effects associated with EMF are not expected, the results will be presented alongside and compared with public and occupational exposure limits; the derivations and significance of which will be fully explained to the reader.

## 10 Other Issues to be Scoped Out

### 10.1 Introduction

10.1.1 The sections below set out the topics which are proposed to be excluded from further assessment in the EIA and provides the justification for doing so.

### 10.2 Landscape and Visual

#### *Baseline Conditions*

10.2.1 The landscape surrounding the OHL Route is characterised by rural landscapes which progress to agricultural lowland and lowland hills towards a highland landscape into the Cairngorms National Park to the west.

10.2.2 The existing OHL passes through The Braes of the Mearns Local Landscape Area (LLA) and the Dee Valley LLA. No National Scenic Areas or Wild Land Areas are present along the OHL Route. The OHL passes largely through agricultural land.

#### *Potential for Significant Effects*

10.2.3 The construction compounds and sub-yards required for construction would introduce new features to the landscape, which may change the view of the landscape and impact upon the landscape character. However, impacts would be localised and temporary. Likewise, landscape and visual impacts due to the works at the tower locations would be localised and temporary and given the typical plant and equipment and methods involved, would be minimal.

10.2.4 No new infrastructure would be constructed as part of the Proposed Development and therefore once completed the towers would appear visually the same.

10.2.5 Given the nature of the Proposed Development, landscape and visual impacts are predicted to be contained to the construction phase only as there would be no visual change during operation. However, with consideration of the typical methods of works (as described in Section 2) and the plant and machinery required, impacts would be temporary and localised and are unlikely to be significant. All compounds and temporary accesses would be reinstated upon completion and any new accesses created are unlikely to significantly change the landscape character.

#### *Issues Scoped Out*

10.2.6 No likely significant effects are predicted as a result of the Proposed Development and therefore landscape and visual assessment is proposed to be scoped out of the EIA Report in its entirety.

### 10.3 Land Use

#### *Baseline Conditions*

10.3.1 The majority of towers along the OHL Route are on arable land, as well as a combination of heathland and moorland or rough hill pasture and forest and woodland. Access is maintained by the Applicant to existing towers for operation and maintenance purposes.

### *Potential for Significant Effects*

- 10.3.2 Land use impacts associated with the Proposed Development are anticipated to be temporary, of low magnitude and localised, and would typically be a temporary disturbance to access or use of land or severance of land parcels. Any towers that would require refurbishment to the foundations would involve some localised excavation, however this would not be substantive and would be constrained to the area around the tower leg and then reinstated upon completion. Many of the existing towers already possess access tracks in good condition, though upgrades to some tracks may be required. Upon completion of the works, any temporary track solutions would be removed.
- 10.3.3 Dialogue would be maintained by the Applicant and the appointed Principal Contractor with landowners, local tenants and property owners throughout the construction period to ensure any potential disruption is kept to a minimum. Standard construction best practice measures would be included in the CEMP and Construction Traffic Management Plan (CTMP) which would be produced and implemented by the Principal Contractor, such as appropriately signed diversions or any temporarily disturbed access and removal and, if appropriate, reinstatement of land uses.
- 10.3.4 With consideration of the above, significant effects are considered unlikely.

### *Issues Scoped Out*

- 10.3.5 No likely significant effects are predicted as a result of the Proposed Development and therefore assessment of land use is proposed to be scoped out of the EIA Report in its entirety.

## **10.4 Recreation and Tourism**

### *Baseline Conditions*

- 10.4.1 Various sections of land close to or under the OHL Route are currently used for recreational activities. These primarily include walking and horse riding. Several Core Paths are crossed or are near to the OHL Route. A number of other footpaths are also present in the surrounding area. The OHL Route also crosses Route 195 of the National Cycle Network, south-west of Aberdeen. Some of the towns and cities near to the OHL Route provide further tourism and recreation facilities such as hotels and leisure centres. Some of the more elevated positions to the west of the OHL Route within the landscape provide opportunities for hiking or mountain biking.

### *Potential for Significant Effects*

- 10.4.2 Due to the nature of the Proposed Development, disruption of recreational activities would be limited to short term construction effects such as temporary disruption to core paths or other walkways due to access routes required for the works. There may also be indirect impacts upon the amenity of any nearby tourism and recreation facilities due to noise, dust or visual impacts from the construction works, however these would be localised, short term, temporary negligible impacts which are not considered to be significant.
- 10.4.3 Any disruption to footpaths or cycle paths would be signposted and, if appropriate, a safe diversion would be put in place and discussed with the relevant Local Authority. The CEMP would contain an Outdoor Access Plan, which would identify any locations where public and private accesses would be impacted by the construction works and set out the means to mitigate the effects, such as appropriate signage and detailing diversion routes. The CEMP and CTMP would contain standard industry best practice measures to minimise the noise, dust and visual impacts during construction works.
- 10.4.4 No likely significant effects are anticipated.

### *Issues Scoped Out*

- 10.4.5 No likely significant effects are predicted as a result of the Proposed Development and therefore assessment of recreation and tourism is proposed to be scoped out of the EIA Report in its entirety.

## **10.5 Air Quality and Climate**

### *Baseline Conditions*

- 10.5.1 Due to the largely rural nature of the OHL Route, air quality pollutant levels are indicated to be low.
- 10.5.2 The OHL Route does not pass through any Air Quality Management Areas.

### *Potential for Significant Effects*

- 10.5.3 Impacts can arise on air quality and contribution to climate change from developments of this type due primarily to generation and dispersal of dust and airborne particulate matter and emissions from plant, construction traffic and construction activities. However, as construction works would be temporary and short term and given the relatively small amount of emissions generating plant or vehicles required (typically the winch and tensioner, welfare facilities and construction vehicles), the effects would be localised, short term and intermittent, and not considered to be significant.
- 10.5.4 With regards to the vulnerability of the Proposed Development to the effects of climate change, as the nature of the Proposed Development is to upgrade the OHL and reinforce existing assets (i.e. the steel and tower leg foundation works) it is considered that it would provide a minor benefit to the vulnerability of climate change effects.
- 10.5.5 Potential effects would further be minimised through the implementation of construction best practice mitigation measures which would be set out in the CEMP.

### *Issues Scoped Out*

- 10.5.6 No likely significant effects are predicted as a result of the Proposed Development and therefore an assessment on air quality and climate change is proposed to be scoped out of the EIA Report in its entirety.

## **10.6 Material Assets and Waste**

### *Baseline Conditions*

- 10.6.1 The Proposed Development concerns existing steel lattice towers. There will be some negligible material and waste generation associated with the routine maintenance of the existing OHL.

### *Potential for Significant Effects*

- 10.6.2 The Proposed Development would require material consumption for the replacement of the conductors, insulators, other fittings, steel and foundation works. Waste would be generated from the old conductors and fittings and also the replaced steelwork as well as general construction waste from the compounds and sub-yards.
- 10.6.3 Considering the nature and scale of the Proposed Development, material use and waste generation will be limited in type and quantity, and no significant effects are anticipated. The use of recycled materials where it is feasible to do so and minimisation of waste will be advocated and this will be included in the CEMP which would be produced and implemented by the Principal Contractor.

### *Issues Scoped Out*

- 10.6.4 No likely significant effects are predicted as a result of the Proposed Development and therefore an assessment on material assets and waste is proposed to be scoped out of the EIA Report in its entirety.

## **10.7 Major Accidents and Disasters**

### *Potential for Significant Effects*

- 10.7.1 The potential for significant effects is related to the vulnerability of the OHL to major accidents and disasters. These are likely to be limited to those associated with unplanned power outages, due to extreme weather or structural damage. Crisis management and continuity plans are in place across the SSE Group. These are tested regularly and are designed for the management of, and recovery from, significant energy infrastructure failure events.
- 10.7.2 The Proposed Development, although causing a temporary disturbance during construction, will not have any operational effects and the OHL will continue to operate as it does currently although at a higher voltage. The refurbishment works may slightly improve the resilience of the OHL to major accidents and disasters.

### *Issues Scoped Out*

- 10.7.3 No likely significant effects are predicted as a result of the Proposed Development and therefore an assessment on major accidents and disasters is proposed to be scoped out of the EIA Report in its entirety.

## **10.8 Population and Human Health**

### *Baseline Conditions*

- 10.8.1 The OHL Route predominantly passes through a rural to semi-rural landscape. The closest main settlement in the proximity of the OHL Route is Perth (approximately 500 m at its nearest point). Otherwise, the OHL Route passes by towns, villages or smaller hamlets. Some isolated residential properties are located in close proximity to the OHL Route.
- 10.8.2 The existing tower structures and OHL operate and are maintained in accordance with all relevant health and safety legislation and guidelines.

### *Potential for Significant Effects*

- 10.8.3 The impacts on population and human health for a development of this nature and scale are limited and comprise a composite of the effects of other topics such as noise, air quality, hydrology (private water supplies) and EMFs.
- 10.8.4 Social and community factors are unlikely to be significantly affected by the Proposed Development, although there is potentially a benefit to the local economy during the construction phase. It is not anticipated that any of these topics are likely to give rise to significant effects on human receptors and as such the impacts on human health are not anticipated to be significant.
- 10.8.5 The most likely impacts upon population and human health are from noise and vibration (discussed in Section 8 of this report) and EMF (discussed in Section 9 of this report), which are proposed to be scoped in as individual assessments. All other factors of Population and Human Health are considered unlikely to present a significant effect.

### *Issues Scoped Out*

- 10.8.6 No likely significant effects are predicted as a result of the Proposed Development and therefore an assessment on population and human health is proposed to be scoped out of the EIA Report in its entirety.

## **10.9 Traffic and Transport**

### *Baseline Conditions*

- 10.9.1 The OHL Route passes or is near to several different grades of roads ranging from access tracks to trunk roads. Notably, the OHL Route crosses several A-roads, including the A91, A9, A926, A957, and A944.
- 10.9.2 Existing wayleaves and access tracks are in place to the towers, most recently used for the earthwire replacement works in 2016 and 2017.

### *Potential for Significant Effects*

- 10.9.3 Given the nature of the Proposed Development, there is minimal potential for significant traffic and transport effects to be generated. Potential impacts during construction may occur due to the generation of additional vehicle movements associated with construction traffic. However, the volume of traffic likely to be generated is not considered likely to significantly increase average daily flows.
- 10.9.4 The works will require access to towers in predominantly rural locations, however existing wayleaves are in place and the Proposed Development would use the existing access tracks from the 2016 to 2017 earthwire replacement works, thereby minimising the need to create new tracks. The constructions works may also temporarily disrupt private accesses such as to farms or agricultural fields.
- 10.9.5 The Principal Contractor would prepare a CTMP which would include best practice measures to mitigate the potential impacts such as specifying construction traffic routes to suitable roads and appropriately signed diversions where required. Existing access tracks would be used wherever possible and where this may temporarily impact upon users, this would be communicated and managed. The volume of construction traffic is not predicted to be significant. No significant effects are considered likely.

### *Issues Scoped Out*

- 10.9.6 No likely significant effects are predicted as a result of the Proposed Development and therefore an assessment on traffic and transport is proposed to be scoped out of the EIA in its entirety.

## **10.10 Radio and TV interference**

### *Baseline Conditions*

- 10.10.1 At sufficiently high voltages and in particularly adverse weather radio interference may occur due to corona, a phenomenon which causes the air surrounding conductors to become ionized, resulting in the conductors partially discharging. This only affects longwave (LW) and medium wave (MW) signals, which carry Amplitude Modulation (AM) radio.

- 10.10.2 Corona discharge is usually an intermittent phenomenon and is associated with either a faulty electrical connection or a faulty component. It is rarely found on steel-structure lines, as hardware tends to remain tightly fastened. It is not considered a source of long-term annoyance as the equipment is built and maintained to high standards and any such discharge would be the subject of remedial action.
- 10.10.3 LW and MW interference is very common and can occur for a wide variety of reasons<sup>30</sup> including weather due to differences in atmosphere, electric motors within common household appliances, light-emitting diode (LED) lights, street lighting and passing traffic. Under certain weather conditions, there are likely to be cases of limited AM radio interference at properties in close proximity to the OHL Route.
- 10.10.4 The Radio and Television Investigation Service (RTIS) in the regulatory body The Office of Communications (Ofcom) undertake investigations into complaints of radio and television interference of all kinds and from all sources. Published information<sup>31,32</sup> indicates few cases of interference attributable to OHLs of 100 kV and over, and the number of complaints has fallen over recent years.

#### *Potential for Significant Effects*

- 10.10.5 As the Proposed Development would increase the voltage carried by the OHL to 400 kV, there is the potential that the increased electrical field could potentially increase radio and television (TV) interference.
- 10.10.6 The most likely impacts caused by the Proposed Development would be upon LW and MW signals which carry AM radio. AM is the oldest radio broadcasting system and over the years the number of radio stations broadcasting on AM is reducing, as they move to more reliable, higher-quality FM or digital platforms and there are now only a limited number of radio stations still operating on AM. The Proposed Development is not considered to cause interference to TV, FM or Digital Audio Broadcasting (DAB) signals. This conclusion was also reached in the Previous ES, which found the only likely impact to be interference upon AM radio for residents very close to the OHL.
- 10.10.7 Interference to AM signals is already very common from a variety of sources and it is considered that the Proposed Development would not cause a significant effect to AM interference. Any complaints by nearby residents raised to Ofcom or RTIS and found to be attributable to the Proposed Development would be appropriately dealt with by the Applicant on a case-by-case basis. It is proposed to scope out further assessment of radio and TV interference.

#### *Issues Scoped Out*

- 10.10.8 No likely significant effects are predicted as a result of the Proposed Development and therefore an assessment on Radio and TV interference is proposed to be scoped out of the EIA Report in its entirety.

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<sup>30</sup> Troubleshooting interference to AM radio. RTIS. Webpage. Available at: <https://www.radioandtvhelp.co.uk/help-guides/radio/troubleshooting-interference-to-am-radio>. [Accessed 25.03.2020]

<sup>31</sup> TV or radio interference problems. Ofcom. Webpage. Available at: <https://www.ofcom.org.uk/tv-radio-and-on-demand/how-to-report-a-complaint/tv-or-radio-interference-or-reception-problems> [Accessed 25.03.2020]

<sup>32</sup> Radio and Television Investigation Service. Webpage. Available at: <https://www.radioandtvhelp.co.uk/what-are-you-having-problems-with>. [Accessed 25.03.2020]

## 11 Summary of Scoping

11.1.1 This Scoping Report set out the environmental topics and aspects whereby significant effects are considered likely and therefore proposed to be included in the EIA and the topics and aspects proposed to be scoped out of the EIA as no significant effects are predicted.

11.1.2 **Table 11-1** below lists each topic and the elements scoped in and out from further assessment; with a summary of the justification for doing so.

**Table 11.1: Environmental topics and aspects Scoped In and out**

Topic	Scoped In	Scoped Out
<b>Hydrology, Hydrogeology, and Soils</b>	<p>Construction impacts – assessment will consider:</p> <ul style="list-style-type: none"> <li>• surface watercourses, groundwater and private water supplies;</li> <li>• water resources availability;</li> <li>• mobilisation of contaminated soil/bedrock;</li> <li>• impacts upon fisheries;</li> <li>• flooding;</li> <li>• soil erosion, compaction and excavation losses during access or construction;</li> <li>• loss of peat soils if there are peatland or mire systems present; and</li> <li>• impacts upon GWDTE</li> </ul>	<p>Operational Impacts – no predicted change to the hydrological, hydrogeological or soils environment during operation</p>
<b>Ecology and Nature Conservation</b>	<p>Construction impacts – an EclA will be undertaken which will consider:</p> <ul style="list-style-type: none"> <li>• Impacts upon ecologically designated sites</li> <li>• Impacts upon legally protected and notable species</li> <li>• Impacts upon habitats</li> </ul>	<p>Operational impacts - the post-construction situation will not be different (in ecological terms) from the current baseline situation.</p> <p>Construction impacts on the following designated sites are scoped out due to being outside the EZol:</p> <ul style="list-style-type: none"> <li>• SACs – Methven Moss; Dunkeld - Blairgowrie Lochs; Craighall Gorge; Red Moss of Netherley; Turflundie Wood; Firth of Tay and Eden Estuary; Garron Point.</li> <li>• SSSIs – Hare Myre, Monk Myre and Stormont Loch; Loch of Park; Balloch Moss; Gartwhinzean Meadow; Den of Ogil; Devon Gorge; Back Burn Wood and Meadows; Den of Airlie.</li> <li>• LNCSs – Barmekin Wood; Mergie.</li> </ul> <p>Construction impacts on agricultural land and built-up areas have also been scoped out due to being of low ecological value when considered in isolation.</p>

Topic	Scoped In	Scoped Out
<b>Ornithology</b>	Construction impacts upon protected ornithological species	<p>Common passerines (songbirds) are scoped out as they are considered low risk from the impacts, with consideration of appropriate mitigation</p> <p>Construction impacts are scoped out for all European designated sites as they are located sufficiently far away from the proposed works to be directly affected by them or their associated qualifying interests.</p> <p>More wide-ranging overwintering waterfowl (swans and geese) are scoped out as significant effects are considered highly unlikely on the basis that the works will be highly localised and there is an abundance of suitable (agricultural) foraging habitat</p> <p>Operational effects are scoped out as the Proposed Development would be no different in ornithological terms.</p>
<b>Cultural Heritage</b>	Construction impacts upon archaeological and Cultural Heritage features	<p>The direct and indirect impacts during construction and operation on the following are scoped out, as there are none located within 250 m of the OHL Route: are scoped out upon:</p> <ul style="list-style-type: none"> <li>• World Heritage Sites,</li> <li>• Marine Protected Areas, and</li> <li>• Conservation Areas</li> </ul> <p>All indirect impacts on the setting of designated and undesignated assets from the operation of the Proposed Development will be scoped out as the works will not introduce any new permanent elements of infrastructure</p> <p>Assessment on Listed Buildings and GDL's is scoped out as there will be no direct or indirect impacts on any Listed Buildings or GDL's.</p>
<b>Noise and Vibration</b>	Operational noise impacts	Assessment of construction noise and operational maintenance noise.
<b>Electromagnetic Fields</b>	Operational impacts - An assessment of the change in electric and magnetic field strengths the proposed development increasing voltage to 400 kV	None
<b>Landscape and Visual</b>	None	<p>Construction impacts are scoped out as the impacts are predicted to be minor, temporary and localised.</p> <p>Operational impacts are scoped out as the landscape and visual environment would be no different from the baseline</p>

Topic	Scoped In	Scoped Out
<b>Land Use</b>	None	Construction impacts are scoped out as the impacts are predicted to be minor, temporary and localised. Operational impacts are scoped out as a change in land use would be temporary during construction only and would be reinstated upon completion of the works
<b>Recreation and Tourism</b>	None	Construction works are unlikely to significantly affect recreation and tourism receptors and standard construction best practice would minimise impacts Operational impacts are scoped out as the situation would be no different than to the baseline.
<b>Air Quality and Climate</b>	None	Construction impacts are scoped out as no significant effects are predicted and impacts would be minimised through standard industry best practice measures Operational impacts are scoped out as the situation would be no different than to the baseline.
<b>Material Assets and Waste</b>	None	Construction impacts are scoped out as although materials would be used and waste generated during construction, the quantities are not predicted to be significant and would be minimised via measures contained in the CEMP. Operational impacts are scoped out as the situation would be no different than to the baseline.
<b>Major Accidents and Disasters</b>	None	Construction and operation impacts are scoped out as no significant effects are predicted
<b>Population and Human Health</b>	None	Construction and operation impacts are scoped out as no significant effects are predicted. The relevant aspects such as Noise and Vibration and EMF are scoped in.
<b>Traffic and Transport</b>	None	Construction impacts are scoped out as the volume of construction traffic anticipated is not predicted to result in a significant effect. Operational impacts are scoped out as there would be no change to the baseline.
<b>Radio and TV Interference</b>	None	Construction impacts are not applicable. Operational impacts are scoped out as no significant effects are predicted.

## 12 Next Steps

12.1.1 The Applicant invites consultees to comment on the following:

- what environmental information do you hold or are aware of that will assist in the EIA described here?
- do you agree with the proposed approach for baseline collection, prediction and significance assessment?
- are there any key issues or possible effects which have been omitted?
- do you agree with the list of issues to be scoped out, and the rationale behind the decision?
- of those issues identified for assessment, which do you consider the most important/material and which the least?

12.1.2 All responses should be addressed to: [EconsentsAdmin@gov.scot](mailto:EconsentsAdmin@gov.scot)

12.1.3 When submitting a response to the Scoping Report, the Applicant would be grateful if you could also send a copy of your response to: [heather.gray@sse.com](mailto:heather.gray@sse.com)

12.1.4 The Scoping Opinion provided will be used to finalise the terms of the EIA and the specific approach to the individual assessments.

12.1.5 All comments received will be included in the EIA Report for reference, unless consultees request otherwise.

## Appendix A – List of Consultees

The following consultees will be consulted by the ECU to inform the scope of the EIA. These, and other stakeholders, may also be contacted by topic specialists during the EIA process for information to inform topic assessments.

<b>Consultees</b>	
<b>Statutory Consultees</b>	
Angus Council	Aberdeenshire Council
Historic Environment Scotland	Perth & Kinross Council
SEPA	SNH
<b>Internal Scottish Government Advisors</b>	
Transport Scotland	Marine Scotland
Scottish Forestry	
<b>Non-statutory consultees</b>	
British Horse Society	BT
Civil Aviation Authority - Airspace	Crown Estate Scotland
Defence Infrastructure Organisation	Fisheries Management Scotland
Joint Radio Company	John Muir Trust
Mountaineering Scotland	NATS Safeguarding
Nuclear Safety Directorate (HSE)	RSPB Scotland
Scottish Water	Scottish Rights of Way and Access Society (ScotWays)
Scottish Wildlife Trust	Scottish Wild Land Group (SWLG)
Visit Scotland	BAA Aerodrome Safeguarding (Aberdeen)
Edinburgh Airport	BAA Aerodrome Safeguarding (Edinburgh)
Tayside Raptor Study Group	Tayside Biodiversity Partnership
Perth and Kinross Countryside Trust	Marine Life Angus
National Trust for Scotland	Forestry and Land Scotland
North East Scotland Agriculture Advisory Group	Forth Fisheries Trust
Tay Foundation	The Esks Rivers & Fisheries Trust
River Dee Trust	Forth DSFB
Tay DDSFB	Esk DSFB
Dee DSFB (Aberdeenshire)	RAF
National Grid	Cairngorms National Park Authority
Fossoway Community Council	Milnathort and Orwell Community Council
Kinross Community Council	Earn Community Council
Glenfarg Community Council	Scone and District Community Council
Burrelton and District Community Council	Luncarty, Redgorton and Moneydie Community Council
Methven Community Council	Spittalfield and District Community Council
Coupar Angus Community Council	Meigle & Ardler Community Council
Alyth Community Council	Blairgowrie and Rattray Community Council
Mearns Community Council	Stonehaven and District Community Council
Crathes, Drumoak, Durris Community Council	Cluny, Midmar and Monymusk Community Council
Kemnay Community Council	Kintore and District Community Council
Echt and Skene Community Council	Kirriemuir Community Council
Kirriemuir Landward East Community Council	Kirriemuir Landward West Community Council
Inveresk Community Council	

## Appendix B - Figures