

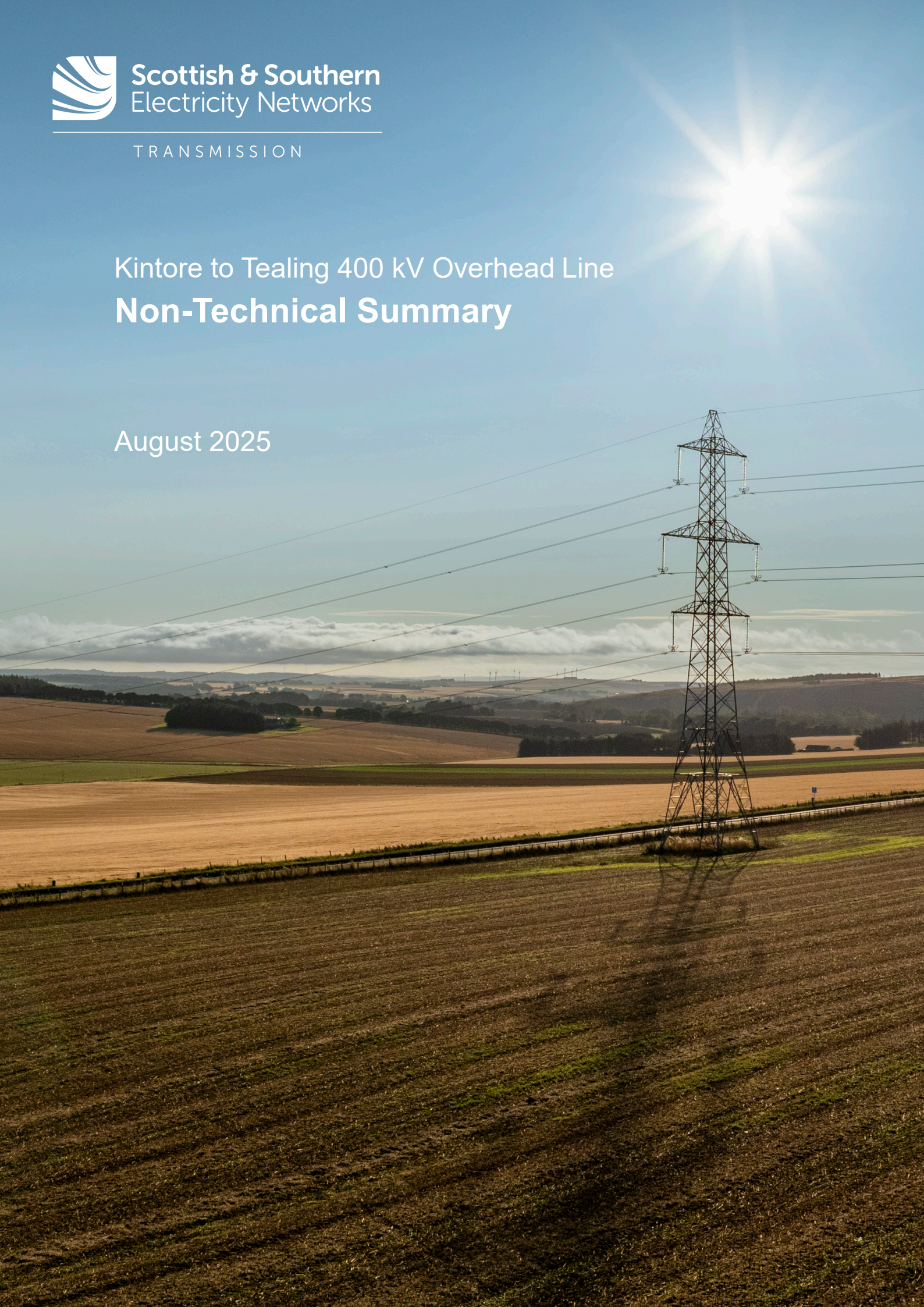


Scottish & Southern  
Electricity Networks

TRANSMISSION

# Kintore to Tealing 400 kV Overhead Line **Non-Technical Summary**

August 2025







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## 1. INTRODUCTION AND BACKGROUND

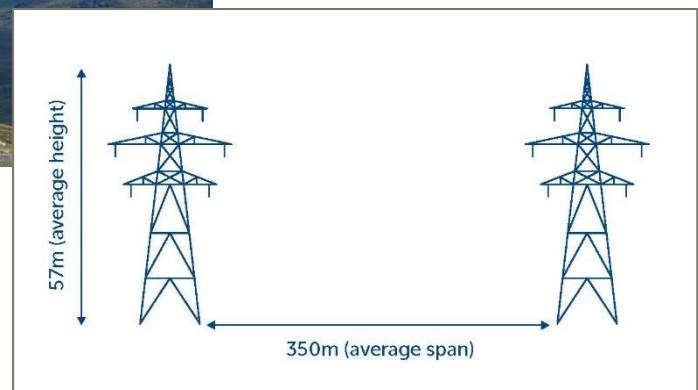
### 1.1 Overview

1.1.1 This Non-Technical Summary (NTS) summarises the Environmental Impact Assessment Report (EIAR) for proposals for a new overhead transmission line (OHL) between Kintore and Tealing in North East Scotland. It has been prepared on behalf of Scottish Hydro Electric Transmission plc ('the Applicant'), who, operating as Scottish and Southern Electricity Networks Transmission ('SSEN Transmission'), own, operate, maintain and develop the electricity transmission network in the north of Scotland and Scotland's remote islands. SSEN Transmission has a licence for the transmission of electricity in the north of Scotland and is closely regulated by Ofgem<sup>1</sup>.

1.1.2 SSEN Transmission is seeking consent under Section 37 of the *Electricity Act 1989* to install, operate and keep installed a new double circuit 400 kilovolt (kV) overhead electricity transmission line, supported by steel lattice towers, and ancillary overhead line works, that extend approximately 119.04 km between the existing Kintore Substation in Aberdeenshire and a proposed new substation at Emmock, near Tealing in Angus<sup>2</sup>. The proposals are referred to in the EIAR and this NTS as the 'Proposed Development'. The location of the Proposed Development is presented in **Figure A: Overview of the Proposed Development** set out at the end of this **Section 1: Introduction and Background**. The Proposed Development has six defined geographical Sections:

- Section A: Proposed Emmock 400 kV substation to Forfar;
- Section B: Forfar to Brechin;
- Section C: Brechin to Laurencekirk;
- Section D: Laurencekirk to Proposed Hurlie 400 kV substation;
- Section E: Proposed Hurlie 400 kV substation to the River Dee; and
- Section F: north of the River Dee to Kintore Substation.

#### Representative Steel Lattice Tower Design



<sup>1</sup> Ofgem is the UK energy regulator. [Online] Available at: <https://www.ofgem.gov.uk/>.

<sup>2</sup> The approximately 119.04 km length relates to the required length of new 400 kV OHL (approximately 105.2 km long) and the length of other works required for realignment and reconductoring of some existing OHLs, including temporary diversions (approximately 13.84 km long) to accommodate the Proposed Alignment of the proposed new 400 kV OHL (see **Section 3: Project Description**).

- 1.1.3 The Proposed Development will require integration with a number of other associated projects which are required to enable future connections to the high voltage electricity transmission network and export routes to areas of demand. They are:
- Two new 400 kV substations, one at Tealing (approximately 5 km to the north of Dundee, known as the proposed Emmock substation<sup>3</sup>), and one located in Fetteresso Forest (approximately 7 km west of Stonehaven, known as the proposed Hurlie substation<sup>4</sup>).
  - Proposed OHL upgrading - two existing 275 kV OHLs require reconducted to 400 kV and connecting to the proposed new Emmock 400 kV substation. These are subject to separate applications for Section 37 Consent and deemed planning permission under the Alyth to Tealing 400 kV OHL Upgrade application<sup>5</sup>, and Tealing to Westfield 400 kV OHL Upgrade application<sup>6</sup>.
  - Proposed OHL tie-ins and tie-backs (connections between substations and OHLs) - an EIA Scoping Report has been produced to address OHL tie-ins and tie-backs between the proposed Emmock Substation and Tealing substation. This also includes the diversion of short sections of the Alyth to Tealing 275 kV OHL and Tealing to Westfield 275 kV OHL<sup>7</sup> and two short sections of OHL removal.
- 1.1.4 These are subject to separate consent applications and do not form part of the Proposed Development. They were therefore not assessed in the EIAR, although their potential for cumulative effects with the Proposed Development has been considered.
- 1.1.5 An Environmental Impact Assessment (EIA) has been undertaken for the Proposed Development in accordance with *The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017* (the 'EIA Regulations') to assess the likely significant effects of the Proposed Development on the environment. The findings of the EIA are presented in the EIAR including the measures which will be taken to avoid, reduce, and, wherever possible, offset predicted likely significant adverse effects (known as mitigation measures). The EIAR should be referred to for full details of the Proposed Development, the predicted significant environmental effects of the proposals and the mitigation measures.
- 1.1.6 The Section 37 Application will be submitted to the Scottish Government Energy Consents Unit (ECU). During this process SSEN Transmission will carry out the required<sup>8</sup> notifications which will take the form of advertisements placed in a national newspaper, the Edinburgh Gazette, as well as in local newspapers to inform local communities and the general public that the application has been made to the Scottish Ministers. All stakeholders including members of the general public may make representations on the application and these will be published on the ECU's web portal. The Scottish Ministers will consider all relevant material available to them before making any decision on the application.
- 1.1.7 Separate to the EIAR, the following documents will also be submitted as part of the Section 37 application:
- Planning Statement;
  - Socio-Economic Report;
  - Marine Directorate Science Evidence Data and Digital Checklist;

<sup>3</sup> SSEN Transmission, November 2024. *Emmock substation Planning Application 24/00699/FULN*. [Online] Available at: <https://planning.angus.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=SN6VOFCFMUA00>.

<sup>4</sup> SSEN Transmission, December 2024. *Hurlie substation Planning Application APP/2024/1951*. [Online] Available at: <https://upa.aberdeenshire.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=SNUVKWCAJ2G00>.

<sup>5</sup> SSEN Transmission, 2024. *Alyth to Tealing OHL 400kV Upgrade (Reconductoring) application for Section 37 consent ECU00005167* [Online] Available at: <https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00005167>. (submitted June 2024).

<sup>6</sup> SSEN Transmission, 2024. *Tealing to Westfield OHL 400kV Upgrade (Reconductoring) application for Section 37 consent ECU00005168*. [Online] Available at: <https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00005168>. (submitted July 2024).

<sup>7</sup> SSEN Transmission, August 2024. *Proposed Emmock and Tealing Overhead Line Tie-ins and Tie-Backs – Scoping Request ECU00005204*. [Online] Available at: <https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00005204>. (submitted August 2024)

<sup>8</sup> Scottish Government, 2022. *Good Practice Guidance for Applications under Section 36 and 37 of the Electricity Act 1989*. [Online] Available at: <https://www.gov.scot/isbn/9781804351185>.

- Electric and Magnetic Fields (EMF) Compliance Report; and
  - Pre-Application Consultation (PAC) Report.
- 1.1.8 Notice of the Section 37 application, including this NTS, the EIAR and associated documents and figures, will be available for viewing at the following public locations during normal opening hours as shown in **Table 1.1: Section 37 Application and EIAR Viewing Locations**.
- 1.1.9 An electronic version is available online at: <https://www.ssen-transmission.co.uk/projects/project-map/kintore-tealing-400kv-ohl-connection/>.
- 1.1.10 This NTS and the EIAR are available in other formats if required. For details, including costs, contact:

Via email to: [tkup@sse.com](mailto:tkup@sse.com)

OR

By writing to:

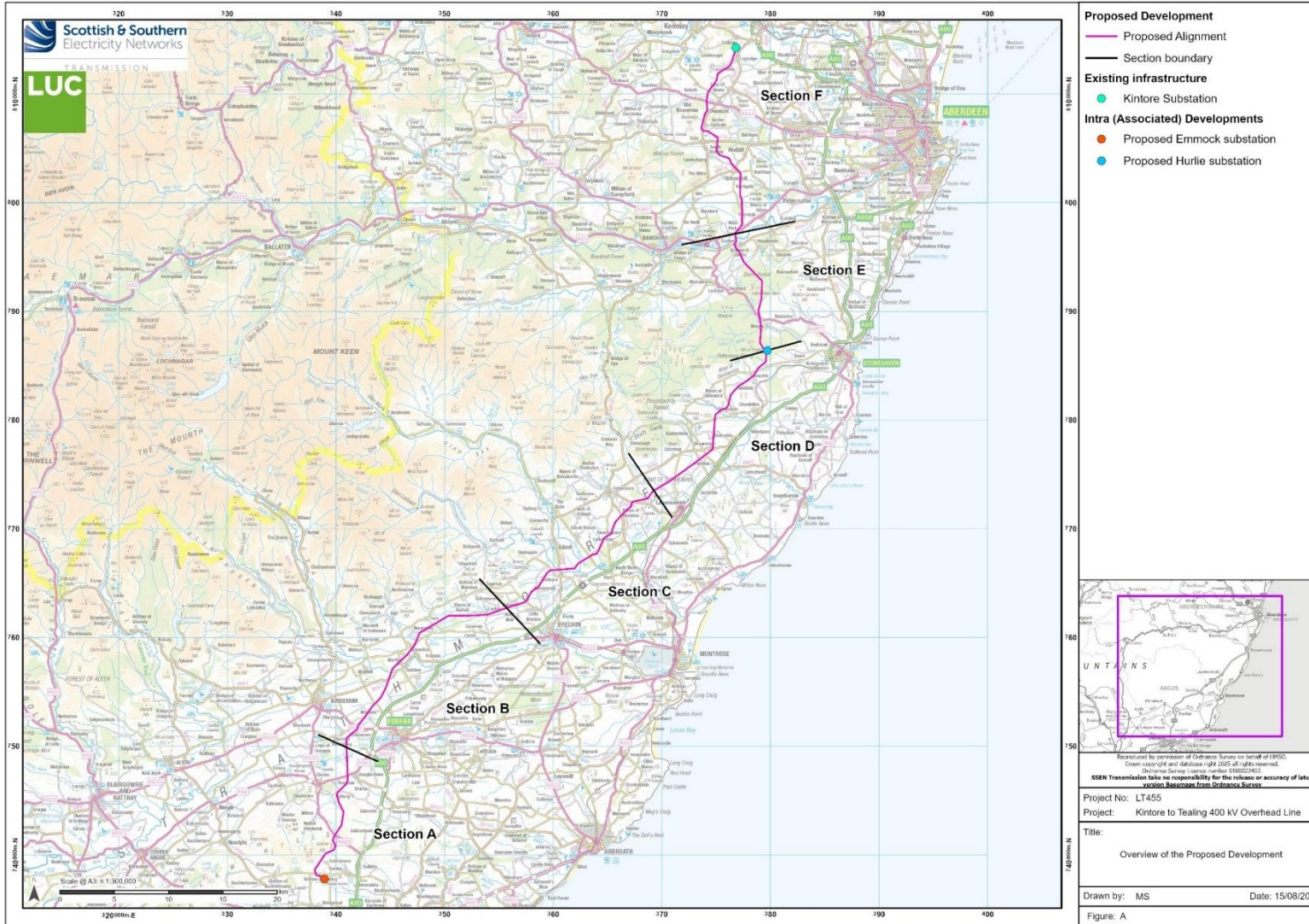
For the Attention of the Kintore to Tealing Community Liaison Manager  
SSEN Transmission  
200 Dunkeld Road  
Perth

**Table 1.1: Section 37 Application and EIAR Viewing Locations**

Location	Opening Hours	Address
Angus Council, Angus House	Monday to Friday: 8am - 5pm	Orchardbank Business Park Orchardbank Forfar Angus DD8 1AN
Culter Library	Monday: 1pm-7pm Tuesday, Wednesday & Thursday: 10am - 1pm & 2pm - 5pm Saturday: 10am - 1pm	189 North Deeside Road Peterculter Aberdeen AB14 0UJ
Fintry Library	Monday: 9am - 1pm & 2pm - 7pm Tuesday: 9am - 1pm & 2pm - 5.30pm Wednesday: 10am - 1pm & 2pm - 5.30pm Thursday: 9am - 1pm Friday: 9am - 1pm & 2pm - 5.30pm	1 Findcastle Street Dundee DD4 9EW
Inverurie Library	Tuesday: 8.45am - 5.15pm Wednesday: 8.45am - 5.15pm Thursday: 8.30am - 5.30pm Saturday: 10am - 2pm	Inverurie Town Hall Market Place Inverurie AB51 3SN
Mearns Community Library	Monday: 2pm - 6pm Wednesday: 10am - 3pm Thursday: 2pm - 6pm Saturday: 10am - 12pm	Mearns Community Campus Aberdeen Road Laurencekirk AB30 1ZJ
Stonehaven Library	Tuesday: 9am - 6pm Wednesday: 9am - 5pm Friday: 9am - 5pm Saturday: 10am - 2pm	Evan Street Stonehaven AB39 2ET
Westhill Library	Tuesday: 10am - 7pm Wednesday: 10am - 7pm Thursday: 10 am - 6pm Saturday: 9am - 1pm	Westhill Primary School Westhill Drive Westhill AB32 6FY



Figure A: Overview of the Proposed Development





## 2. NEED FOR THE PROPOSED DEVELOPMENT

### 2.1 Background

2.1.1 The need for the Proposed Development has been established by planning policy and technical and economic requirements.

### 2.2 National Planning Policy

2.2.1 The Proposed Development is supported by Scottish national planning policy through the Scottish Government's *National Planning Framework 4* (NPF4)<sup>9</sup>, which emphasises the need for strategic reinforcement of the transmission grid to connect and transmit from renewable energy development. NPF4 is Scotland's long-term spatial strategy that guides development and infrastructure planning to 2045 outlining Scotland's spatial planning policies and priorities. NPF4 identifies 18 National Developments including the Proposed Development.



### 2.1 Technical and Economic Need

2.1.1 There is an established technical and economic need for the Proposed Development shown by:

- a transmission system planning exercise encompassing the entire National Grid (considering the upgrades necessary to accommodate the UK generation and demand requirements); and
- the regulatory approval from Ofgem as part of its ongoing assessment process.

2.1.2 The need for the Proposed Development has been carefully assessed and established as part of those regimes outlined below.

#### Transmission System Planning

2.1.3 In July 2022, National Grid Electricity System Operator (ESO) (as of 1 October 2024 now known as the National Energy System Operator (NESO)) published *Pathway to 2023 Holistic Network Design* (HND)<sup>10</sup>, setting out that further reinforcement of the electricity transmission network is needed to connect the new, large-scale, renewable sources of energy in Scotland.

2.1.4 NESO undertook a follow up exercise called *Beyond 2030*<sup>11</sup> and confirmed the required onshore and offshore transmission reinforcement work identified as part of the HND (including the Proposed Development) was needed to support the large-scale delivery of electricity generated from offshore wind, taking electricity from where it is generated to where it is needed across Great Britain.

#### Ofgem: Regulatory Approval Process

2.1.5 To enable the delivery of the required transmission infrastructure for 2030 Ofgem established a new regulatory framework for Transmission Operators, including SSEN Transmission, to obtain regulatory approval of the economic case for delivery and funding of qualifying infrastructure projects identified as part of the 'Pathway to 2030' exercise.

2.1.6 This process is known as the Accelerated Strategic Transmission Investment (ASTI) Framework and demonstrates the regulatory support by Ofgem for the delivery of the onshore infrastructure identified by NESO.

<sup>9</sup> Scottish Government, 2023. *National Planning Framework 4*. [Online] Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2023/02/national-planning-framework-4/documents/national-planning-framework-4-revised-draft/national-planning-framework-4-revised-draft/govscot%3Adocument/national-planning-framework-4.pdf>.

<sup>10</sup> National Grid ESO, 2022. *Pathway to 2023 Holistic Network Design*. [Online] Available at: <https://www.neso.energy/document/262681/download>.

<sup>11</sup> National Grid ESO, 2024. *Beyond 2030 A national blueprint for a decarbonised electricity system in Great Britain*. [Online] Available at: <https://www.neso.energy/document/315516/download>.

- 2.1.7 The Proposed Development is within the scope of the ASTI Framework. Ofgem noted in the ASTI Framework Decision<sup>12</sup> that: “By including projects within the list of ASTI projects, we are accepting the needs case for these projects ...”.
- 2.1.8 Support and endorsement for this has been noted from the UK Government Department for Energy Security and Net Zero.

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<sup>12</sup> Ofgem, 2022. *Decision on accelerating onshore electricity transmission investment*. Page 5. [Online] Available at: [https://www.ofgem.gov.uk/sites/default/files/2022-12/ASTI%20decision%20doc%20-%20Final\\_Published.pdf](https://www.ofgem.gov.uk/sites/default/files/2022-12/ASTI%20decision%20doc%20-%20Final_Published.pdf).

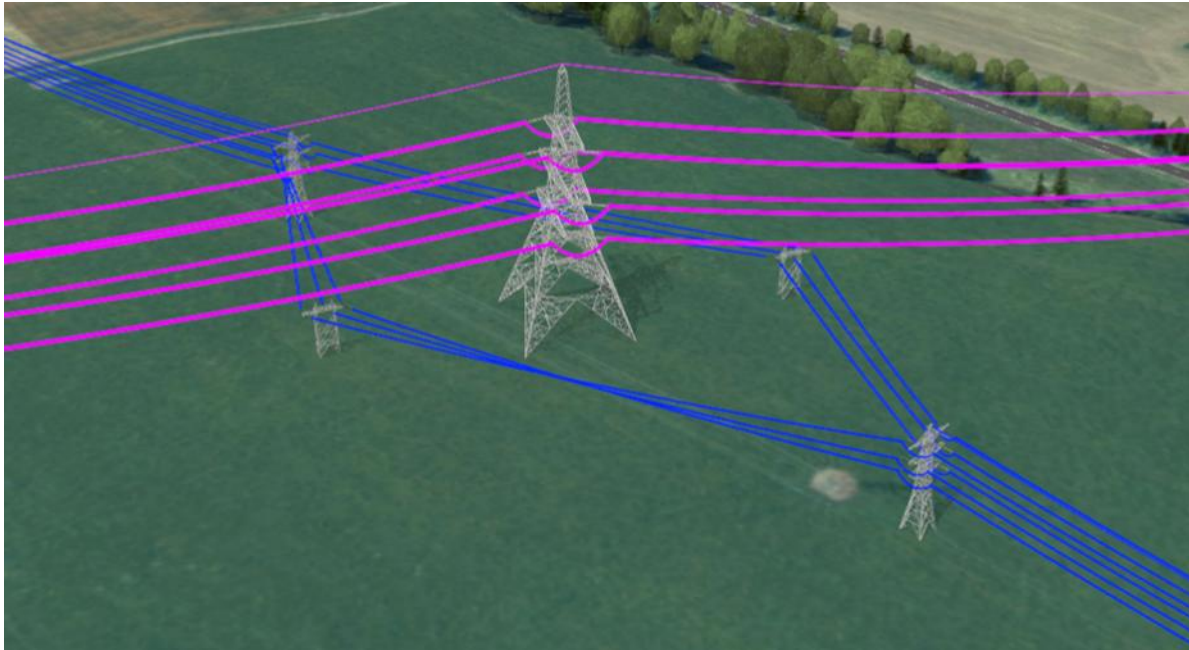
### 3. PROJECT DESCRIPTION

#### 3.1 Introduction

- 3.1.1 Between the existing Kintore Substation, and the proposed Hurlie and Emmock substations, the Proposed Development would comprise the construction of a new double circuit 400 kV OHL and steel towers, totalling 105.2 km in length<sup>2</sup>.
- 3.1.2 The Proposed Development is located within the administrative areas of Aberdeenshire and Angus Councils, generally crossing areas of agricultural lowland from Kintore in the north to Tealing in the south on land located between the uplands of the Grampian mountains to the west and the North Sea coast to the east.
- 3.1.3 The Proposed Development has been separated into six geographic Sections A to F, shown on **Figure B: Proposed Development** (set out at the end of this NTS) with the sections described below:
- Section A – from the proposed new substation at Emmock, near Tealing, to the north of the intersection of the Proposed Development with the Kerbet Water and Dean Water near Douglastown;
  - Section B – from west of Forfar near Douglastown, to the northwest of Brechin;
  - Section C – from the northwest of Brechin to the north of Greenbottom Wood located to the northwest of Laurencekirk;
  - Section D – from the northwest of Laurencekirk to the proposed new substation at Hurlie, within Fetteresso Forest;
  - Section E – from the proposed new Hurlie substation to the north of the River Dee where the Proposed Development crosses the A93 Aberdeen to Banchory; and
  - Section F – from the north of the River Dee to Kintore Substation at the northern end of the Section.
- 3.1.4 The Proposed Development includes the following works, which have been assessed and the predicted effects of which are reported in the EIAR:
- construction of approximately 105.2 km of new 400 kV double circuit OHL between the existing Kintore Substation and the new 400 kV substations at Hurlie and Emmock, including downleads into the substations;
  - permanent realignment of approximately 0.95 km of the existing Kintore to Tealing 275 kV OHL south of Kintore Substation and removal of the redundant section of the Kintore to Tealing 275 kV OHL following its realignment;
  - permanent realignment of approximately 440 m of the existing Kintore to Craigiebuckler 132 kV OHL and termination tower (also south of Kintore Substation) and removal of the redundant section of OHL following its realignment underground;
  - a crossing of the existing Craigiebuckler to Tarland 132 kV OHL (approximately 350 m of OHL) using a diamond crossing design at Landerberry, southeast of Echt and removal of the redundant section of the Craigiebuckler to Tarland 132 kV following the completion of the diamond crossing;
  - reconductoring of the existing Craigiebuckler to Tarland 132 kV OHL (approximately 4.75 km) at Landerberry southeast of Echt;
  - permanent realignment of approximately 1.2 km of the existing Kintore to Fetteresso 275 kV/400 kV OHL, southwest of Kirkton of Durris and removal of the redundant section of this OHL following its realignment;
  - installation of temporary earthing to conductor / tower steelwork on the existing Kintore to Fetteresso 275 kV OHL, existing Craigiebuckler to Tarland 132 kV OHL, and the existing Kintore to Craigiebuckler 132 kV OHL. Upon completion of the permanent works the earthing would be removed; and
  - construction of temporary OHL diversions to facilitate the permanent modifications to existing OHLs, as detailed above, which are required to construct the new 400 kV OHL. Temporary diversions are required for the following circuits:
    - temporary diversion of the existing Kintore to Tealing 275 kV OHL south of Kintore (approximately 1.10 km);
    - temporary diversion of the existing Craigiebuckler to Tarland 132 kV OHL (approximately 0.62 km); and
    - temporary diversion of the existing Kintore to Fetteresso 275 kV / 400 kV OHL (approximately 1.21 km).



- 3.1.5 In summary, the Proposed Development would comprise approximately 105.2 km of new 400 kV double circuit OHL, approximately 10.91 km OHL for the permanent realignment and reconductoring of other existing OHLs, and associated temporary diversions comprising approximately 2.93 km, resulting in an overall total of 119.04 km of OHL.



**Illustrative OHL Diamond Crossing**

- 3.1.6 The following works would also be required as part of the Proposed Development, and to facilitate its construction and operation:

- a Cable Sealing End Compound of dimensions approximately 30 m by 45 m, southeast of Kintore Substation to facilitate the undergrounding of approximately 1.76 km of the existing Kintore to Craigiebuckler 132 kV OHL;
- the upgrade of existing, or creation of new access junctions (bellmouths) at public road access points along the Operational Corridor for the Proposed Development (via existing and new access tracks);
- the formation of access tracks (permanent, temporary, and upgrades to existing access tracks) including a permanent access track to the Cable Sealing End Compound and the installation of bridges and culverts to facilitate access along the route of the new OHL. Existing farm/forestry tracks would be used where possible;
- public road improvements which would be required in multiple areas within the vicinity of the Proposed Development to facilitate the passage of construction traffic to access points along the route; and
- temporary working areas around infrastructure and the formation of flat areas to site temporary plant, vegetation clearance and management, other temporary measures required during construction, such as measures to protect road and water crossings during construction (erection of scaffolding etc.), and removal of temporary works and site reinstatement, including replanting where required along the route.

Possible Additional Works

- 3.1.7 Other works may be required that are not included in the Section 37 application and are not part of the Proposed Development and have not been considered in the EIAR. Appropriate consents would be sought for those works by the Principal Contractors or SSEN Transmission as appropriate. These include:

- borrow pits and quarries to source stone for the construction of access tracks;
- temporary construction compounds; and
- modification of the existing electricity distribution network.

### 3.2 Description of Overhead Line Infrastructure

#### Towers and Spans

- 3.2.1 Three basic types of towers are proposed: suspension towers which are used for straight sections of OHL, angle/tension towers which are generally required where there is a need to change direction, and terminal towers at the substations. All towers have a lattice design and would be constructed from fabricated galvanised steel which would be grey in colour. The towers would have an average height of 57 m, and there would be 320 towers in total<sup>13</sup>. No operational lighting would be required on the towers.
- 3.2.2 The steel towers would support six conductor (cable) bundles on six horizontal cross-arms. The conductor bundles would be supported from insulator sets attached to each of the cross arms. The distance between towers would vary depending on topography, constraints, and land usage. The average span length would be 351 m with a maximum span of 501 m. The conductors would achieve a minimum clearance from the ground of 9 m under normal operating conditions in all areas. There may be locations where additional clearance may be required. Some OHL will include bird diverters<sup>14</sup> where identified as necessary for mitigation for certain bird species.

#### Access

- 3.2.3 Safe construction access would be required to each tower construction site for delivery of materials, plant, fittings, fixtures, working platforms and operatives. Access requirements to each tower depend on the tower type and the construction operations required. Many individual tower sites would be accessible from public roads and existing farm/forestry tracks and where possible, existing accesses would be utilised, however access spurs from these existing tracks to the location of tower construction sites are required in some areas. New watercourse crossings, formed with culverts or bridges, would be constructed where new tracks cross surface watercourses.
- 3.2.4 Existing road junctions would be utilised where possible however, numerous new or upgraded access junctions (bellmouths) would require formation in agreement with the respective local authority Roads Department to safely connect access tracks with the public road network.

### 3.3 Limit of Deviation

- 3.3.1 The Proposed Development would incorporate a Limit of Deviation (LOD) which is an area around the proposed infrastructure within which the position of towers and access tracks can be moved to avoid constraints identified from detailed design and surveys following consent. The EIAR considered the potential for variation in predicted environmental effects of the Proposed Development in the event that infrastructure would need to be repositioned within the LOD. Where there were areas of particular constraint, and in order to avoid or reduce the effects of moving towers or access tracks within the LOD, the width of the LOD was reduced in some areas. In order to move the towers and access tracks within the LOD, the Principal Contractors would be required to adhere to a change control process. This would ensure that there was no unacceptable increase in adverse effects from the repositioned infrastructure compared with those assessed in the EIAR.

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<sup>13</sup> This includes 301 towers for the proposed 400 kV OHL, and 19 towers for the other works including realignments, diamond crossing and termination tower in the Cable Sealing End Compound.

<sup>14</sup> Bird diverters are used to reduce the risk of birds colliding with the OHL. They will be installed where there is a risk of collision, for example where flight activity shows that there is a high risk of bird collision, near to protected sites for birds and over waterways.

### 3.4 Typical Construction Activities for Overhead Line Infrastructure

3.4.1 High voltage OHL construction typically follows a standard sequence of events as follows:

- Enabling works: this includes work to existing distribution and transmission lines, temporary OHL diversions, constructing new and upgrading existing access tracks (temporary and permanent), changes to the public road to facilitate safe access, new watercourse crossings, forestry clearance and vegetation management, formation of site compounds, and realignment of existing OHL infrastructure.
- Construction works: construction of tower foundations, steel lattice towers, and conductor stringing. A temporary working area up to 100 m by 100 m is required at each tower location to facilitate access, laydown and assembly. Where encountered, topsoil would be stripped from the temporary working area to allow installation of tower erection pads, soil will be stored for reuse where possible. Piling may be required. The formation of each tower foundation would take approximately four weeks. The conductor would be delivered to the site on wooden drums in pre-determined pulling section lengths. Prior to stringing the conductors, temporary protection measures (eg netted scaffolds), would be required across public roads, existing access tracks etc. Helicopters may be used during the conductor stringing phase.



**Representative Tower Construction**

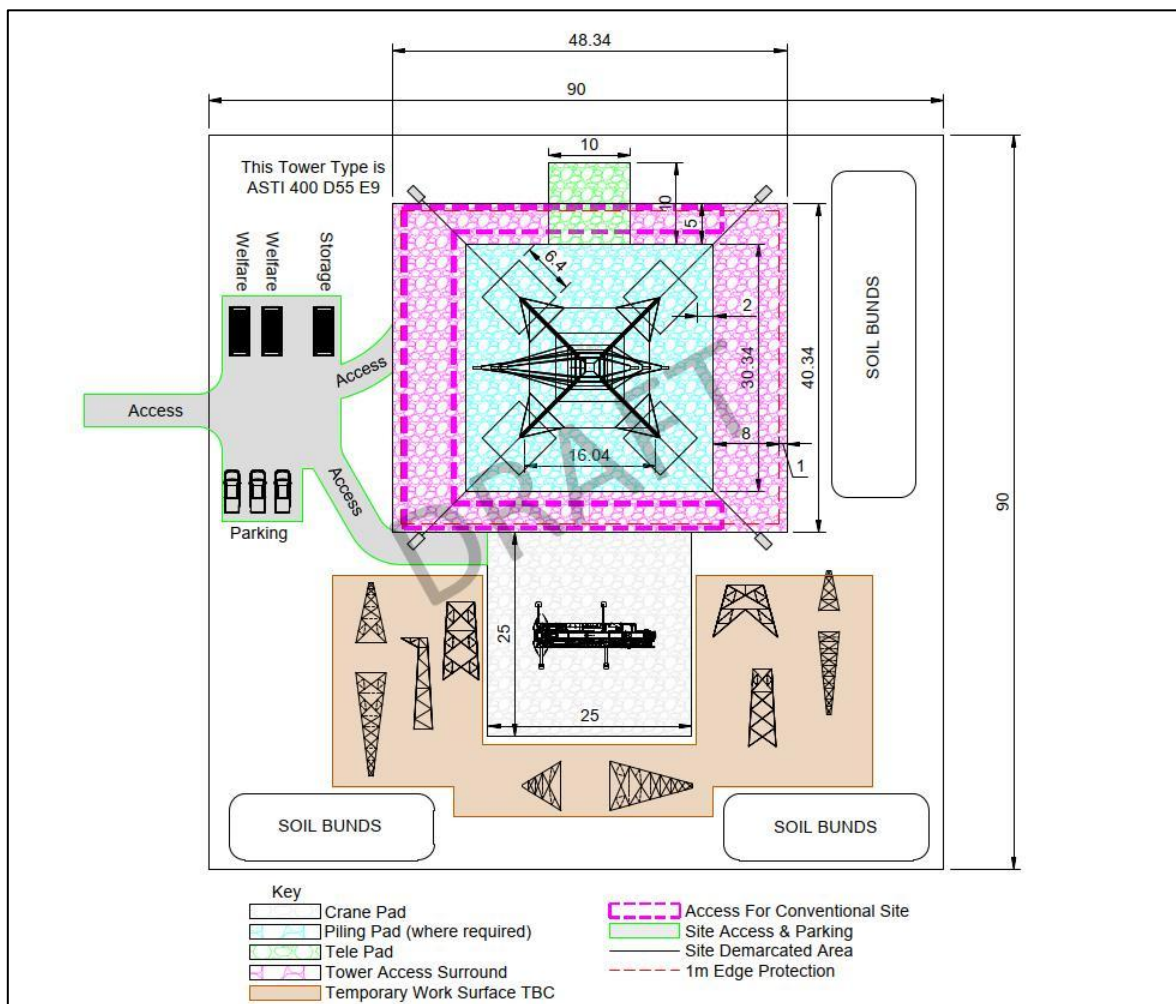




Representative Tower Foundation Construction



Representative Construction Scaffolds



Illustrative Temporary Working Area Arrangement

- OHL commissioning: including the inspection and snagging process, after which the circuits would be energised from the substations in a phased sequence.
- Dismantling existing OHLs: removal of the sections of any redundant existing OHLs would occur once the Proposed Development has been commissioned. The Operational Corridor for any existing OHLs that have been dismantled would be returned to the landowners.
- Reinstatement: this includes reinstatement of all temporary tower access tracks, tower construction sites and construction compounds.

3.4.2 It is anticipated that the construction sequence outlined above would be followed for the Proposed Development, subject to further detailed design and construction planning by the Principal Contractors.

### 3.5 Operational Corridor

3.5.1 The Operational Corridor is the designated area around the Proposed Development that is maintained to ensure safe and reliable operation of the overhead line. The Operational Corridor would typically be 45 m either side of the OHL centreline. Trees are generally removed from the Operational Corridor to facilitate construction and to ensure continued safe operation of the OHL. Off-site compensatory woodland planting will be required. SSEN Transmission is committed to providing appropriate compensatory planting and the extent, location and composition of such planting will be agreed with Scottish Forestry and will take into consideration any revision to felling and restocking plans.

### 3.6 Construction Programme, Employment, Hours of Work and Traffic

3.6.1 It is anticipated that the construction works would take place over approximately a five year period, beginning in 2026, with an energisation date of late 2030. The works would be carried out in two sections concurrently. SSEN Transmission encourages their Principal Contractors to, where possible, employ suitable local labour and resources. A high level outline programme is presented in **Table 3.1: Indicative Construction Programme** showing yearly quarters.

**Table 3.1: Indicative Construction Programme**

Activity	2026				2027				2028				2029				2030				2031			
	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Mobilisation																								
Road Improvements																								
Access Construction																								
Tower Foundations																								
Tower Assembly																								
Wiring / Commissioning																								
Energisation																								
Reinstatement																								

3.6.2 Working hours are currently anticipated to be between approximately 07:00 to 19:00 during British Summer Time (BST) and 07:00 to 18:00 during Greenwich Mean Time (GMT), seven days a week. Special measures and arrangements would be made for works in proximity to sensitive receptors. Any out of hours working would be agreed in advance with the relevant local authority.

3.6.3 Construction of the Proposed Development would give rise to regular numbers of staff transport movements, with small work crews travelling to and from work site areas. Plant and materials would be delivered to site, requiring movements of heavy goods vehicles (HGVs). Temporary traffic control measures may be required at some locations.

A Construction Traffic Management Plan (CTMP) will be prepared in agreement with the relevant local authorities prior to construction works commencing.

### 3.7 Environmental Management During Construction

- 3.7.1 General Environmental Management Plans (GEMPs) have been developed by SSEN Transmission to cover a wide range of topics, including oil storage and refuelling, soil management, working in or near water, working in sensitive habitats, working with concrete, watercourse crossings, waste management, contaminated land, private water supplies, forestry, dust management, biosecurity on land, restoration, and bad weather. Species Protection Plans (SPPs) have also been developed by SSEN Transmission in agreement with NatureScot to cover a range of species. The Principal Contractors will be required to prepare detailed site-specific versions of the GEMPs and SPPs and implement them on site.
- 3.7.2 The Principal Contractors will develop and implement a Construction Environmental Management Plan (CEMP) to detail how the construction process will be managed in line with all commitments, mitigation, statutory consent conditions, authorisations and industry best practice and guidance. A detailed Construction Traffic Management Plan (CTMP) will also be prepared by the Principal Contractors, agreed with the relevant local and national roads authorities and implemented on site to mitigate the effects of disruption from the movement of vehicles on communities, roads users and people undertaking recreation (see **Section 13: Traffic and Transport**).
- 3.7.3 The Principal Contractors will appoint an Environmental Manager and Advisory Environmental Clerks of Works (ECoWs) during construction of the Proposed Development to oversee and ensure implementation of key mitigation and management plans on site. Other specialist Clerks of Works will also be appointed in line with contract requirements.

### 3.8 Operation, Maintenance and Decommissioning

- 3.8.1 In general, OHLs require very little maintenance. Periodic inspections are undertaken generally using light vehicles to identify any unacceptable deterioration of components, so that they can be replaced.
- 3.8.2 The Proposed Development would not have a fixed operational life, and decommissioning can be considered to have the same environmental effects as the construction phase. As such it is not discussed in detail in the EIAR.



## 4. ALTERNATIVES AND THE ROUTEING PROCESS

### 4.1 Introduction

4.1.1 The *EIA Regulations* require SSEN Transmission to report upon the reasonable alternatives that were studied and the main reasons for the choice of the development, taking into account the environmental effects. This section sets out the alternatives considered by SSEN Transmission for the Proposed Development including the routeing process for the OHL which was progressed through the corridor, route and alignment selection stages.

### 4.2 Strategic Alternatives

4.2.1 Following establishment of the need for the project (see **Section 2: Need for the Proposed Development**) it was determined that a 'do nothing' approach would not meet the network requirements. In a 'do-nothing' scenario, the electricity network would not have capacity to transfer power from onshore and offshore renewable generation to key centres of demand across the country, and the UK Government's targets of 50 gigawatts (GW) of offshore wind generation by 2030 and delivery of Net Zero targets could not be met.

4.2.2 SSEN Transmission assessed the potential technical options to reinforce the transmission network against its statutory and licence framework which consisted of both onshore and offshore options. An onshore option was selected for the Proposed Development, which meant that there was an initial strategic choice to make between OHL or underground cable (UGC) technology for the route.

4.2.3 The practical application of 400 kV UGC was not considered to be a reasonable alternative technology for the Proposed Development for a range of cost, technical and environmental reasons. SSEN Transmission's submission to the National Energy System Operator (NESO) set out that the use of UGC did not meet the requirements for an economical network when a suitable alternative comprising OHL was available for the required network function. After the NESO recommendations to proceed with the reinforcements, the development of the Kintore to Tealing 400 kV OHL Connection project commenced based on OHL technology for its full length.

4.2.4 As part of the consultation phase during project development, SSEN Transmission explained the technical challenges involved in undergrounding to consultees. These were presented within a document prepared by SSEN Transmission titled "*The challenges with undergrounding at 400 kV*"<sup>15</sup>, which set out the rationale behind the decision to adopt a continuous OHL route.

### 4.3 Alternative OHL Corridors, Routes and Alignments

#### Routeing Approach

4.3.1 An iterative approach was taken to the identification, appraisal and selection of alternatives through the corridor, route and alignment design stages of the OHL. This followed SSEN Transmission's *Routeing Procedure*<sup>16</sup> which provides a systematic framework for the identification and appraisal of alternatives for OHL projects. The routeing process and the final configuration of the Proposed Development was informed at each stage through consideration and appraisal of technical (engineering), economic, and environmental criteria. It was also informed by feedback from consultation with statutory and non-statutory consultees, local communities and landowners.

#### Corridor Options Selection

4.3.2 Corridor options were identified by SSEN Transmission as broad study areas within which route options for the proposed 400 kV OHL could subsequently be identified. The Study Area for corridor options was primarily defined as the area between the North Sea coast to the east and the mountainous terrain to the west. At this stage the Proposed Development was separated into two sections: Section 1: Tealing to Fiddes (the southern section); and Section 2: Fiddes to Kintore (the northern section). Within each of the sections, three potential corridor options were identified.

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<sup>15</sup> SSEN Transmission, n.d. *The challenges with undergrounding at 400 kV*. [Online] Available at: <https://www.ssen-transmission.co.uk/globalassets/projects/2030-projects/2030-project-documents/the-challenges-with-undergrounding-at-400kv.pdf>

<sup>16</sup> SSEN Transmission. *Procedures for Routeing Overhead Lines and Underground Cables of 132kV and above PR-NET-ENV-501*.

- 4.3.3 The key feedback from consultation on these options is presented in the *Report on Consultation (November 2023)*. Following review of feedback from the consultation relevant to the corridor options, no information was received which warranted further appraisal or review of the evidence base supporting the SSEN Transmission's preference for the Preferred Corridor. Corridor 1b was taken forward to the routeing stage as the Proposed Corridor in Section 1 and Corridor 2b in Section 2 as they were considered to be the least constrained option overall across the environmental, technical and cost considerations.

#### Route Options Selection

- 4.3.4 The route options selection stage involved the identification of route options between 1 km and 2 km wide, within which subsequent OHL alignments could be developed. Due to the length of the Proposed Development, the Proposed Corridor was separated into six geographic 'Sections' from south to north (Sections A-F). Between two and six route options were identified within each Section. These were appraised and information was prepared to present the outcomes for consultation.
- 4.3.5 From May to July 2023, consultation was undertaken on the Preferred Corridor and Preferred Route in a combined consultation event. One of the key changes resulting from the feedback to this engagement was moving the proposed Fiddes substation site to the proposed Hurlie substation site in Fetteresso Forest. This change necessitated a revised OHL routeing process in Section D and the southern part of Section E. As part of this process, a review of the previously Preferred Routes was undertaken and a new option was identified in the southern part of Section F. These new route options were the subject of public consultation in March 2024.
- 4.3.6 Following review of consultation feedback, further changes were recorded for consideration in the alignment phase. Additional route options were also identified following consultation (in Section E/F) to reflect feedback, and in these sections parallel options were both taken forward by SSEN Transmission to be developed in more detail as alignment alternatives.
- 4.3.7 The final Proposed Route was confirmed by SSEN Transmission in a Report on Consultation which was published in August 2024. The Proposed Routes taken forward to alignment selection were: A1, B1.1, C1, D4, E1 (in the northern part of Section E), E2 (in the southern part of Section E) and F1.3 (extended into the previous Route F2 in the northern part of Section F), with the additional options of E4 and F3 as shown in **Figure C: Options Taken Forward To Alignment Appraisal** set out at the end of this **Section 4: Alternatives and the Routeing Process**.

#### Alignment Options Selection

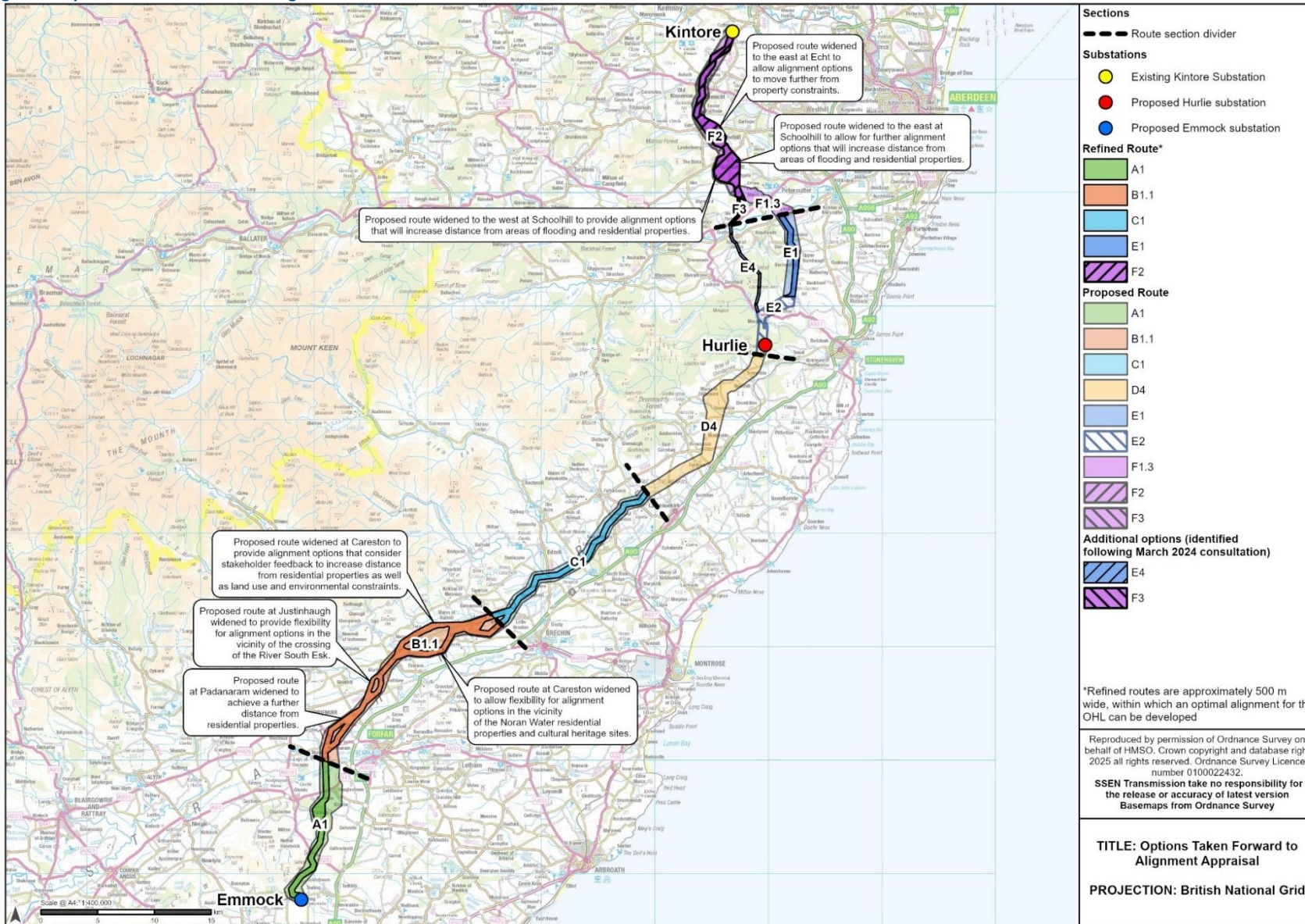
- 4.3.8 The Alignment Selection stage involved developing a Potential Alignment within the Proposed Route, which was technically, environmentally and economically viable.
- 4.3.9 An iterative design development process was implemented involving SSEN Transmission's OHL Design Contractors working closely with the land, environment and project design teams. In some locations, where more significant, overlapping or complex constraints were identified and a preference for an OHL alignment could not be easily identified, additional OHL options were developed and referenced as 'alternative alignments'. The comparative appraisal of alternative alignments followed the same overall approach as for corridor and route selection based on SSEN Transmission's *Routeing Guidance*<sup>16</sup>.
- 4.3.10 The findings of the appraisal of the alternative alignments led to the identification of a preference in each of the eight locations where alternatives were developed. In each location the preferred alternative was then identified as forming part of the Potential Alignment in the reporting of the appraisals and the material subsequently prepared for the Alignment Consultations held in September and October 2024. The consultations resulted in alignment refinement based on the feedback received. The resultant Proposed Alignment was taken forward as the Proposed Development (as shown in **Figure B: Proposed Development** set out at the end of this NTS).
- 4.3.11 A summary of the OHL alternatives selected from the corridor, route and alignment stages is presented in **Table 4.1 Summary of Selected Corridor, Route and Alignment Alternatives**.

**Table 4.1: Summary of Selected Corridor, Route and Alignment Alternatives**

Alternatives Considered		Alternatives Selected
<b>Corridor Options Selection</b>		
Corridor 1a, 1b, 1c	Corridor 1b	The Proposed Corridor taken forward to Route stage
Corridor 2a, 2b, 2c	Corridor 2b	
<b>Route Options Selection</b>		
Route A1, A1.1	Route A1	The Proposed Route taken forward to Alignment stage
Route B1, B1.1, B1.2, B1.3	Route B1.1	
Route C1, C1.1, C1.2, C2, C3	Route C1	
Route D1, D1.1, D1.2, D2, D2.1, D3, D4, D5	Route D4	
Route E1, E1.1, E1.2, E2, E3, E4	Routes E2/E1 & E2/E4	
Route F1, F1.1, F1.2, F2, F2.1, F1.3, F3	Routes F1.3/F2 & F3/F2	
<b>Alignment Selection</b>		
Alternative Alignment 1a, 1b	Alternative Alignment 1a	The Proposed Alignment in locations where alternative alignments were considered
Alternative Alignment 2a, 2b	Alternative Alignment 2a	
Alternative Alignment 3a, 3b	Alternative Alignment 3a	
Alternative Alignment 4a, 4b, 4c, 4d, 4e	Alternative Alignment 4a	
Alternative Alignment 5a, 5b	Alternative Alignment 5a	
Alternative Alignment 6a, 6b, 6c	Alternative Alignments in this location did not form part of the Proposed Alignment.	
Alternative Alignment 7a, 7b, 7c	Alternative Alignment 7c	
Alternative Alignment 8a, 8b, 8c	Alternative Alignment 8a	



Figure C: Options Taken Forward to Alignment



## 5. EIA METHODOLOGY

### 5.1 Introduction

- 5.1.1 Environmental Impact Assessment (EIA) is a process culminating in the preparation of an EIAR that identifies, describes and assesses the likely significant effects of the Proposed Development on the environment.
- 5.1.2 When determining an application for consent (such as a Section 37 application), the relevant decision maker (in this case the Scottish Ministers) must examine the EIAR along with other submitted documentation and reach a reasoned conclusion on whether development consent or planning permission is to be granted and consider whether it is appropriate to impose conditions which may include mitigation and monitoring measures amongst other controls.
- 5.1.3 The EIAR, and this NTS, has been prepared in accordance with the *EIA Regulations* and has been informed by current best practice guidance from the UK and Scottish Governments, local authorities, and industry professional bodies.

### 5.2 EIA Scope

- 5.2.1 The EIA Scoping process enables the potential likely significant effects of the proposals to be identified at an early stage. Although not a legislative requirement, scoping was identified as being a useful tool early in the project development process as it provides key consultees the opportunity to comment on the Proposed Development and its emerging likely significant environmental effects.
- 5.2.2 An EIA Scoping Report was issued to the Energy Consents Unit of the Scottish Government in September 2024, with a Scoping Opinion being provided by the Energy Consents Unit on 19 December 2024. The responses and requests contained within the Scoping Opinion were considered in detail during the EIA process. Both the Scoping Report and Scoping Opinion are set out in the EIAR.
- 5.2.3 Generally, the Scoping Opinion supported the proposed scope of the EIA confirming that “*Scottish Ministers are satisfied with the scope of the EIA set out at Chapter 16 of the Scoping report*”. These topics were therefore addressed in the EIA and discussed in the EIAR:
- Land Use and Prime Agricultural Land;
  - Forestry;
  - Landscape and Visual Amenity;
  - Cultural Heritage;
  - Ecology;
  - Ornithology;
  - Hydrology, Hydrogeology, Geology and Soils;
  - Traffic and Transport;
  - Noise and Vibration; and
  - Cumulative Effects.
- 5.2.4 The following topics were scoped out of the EIA as significant effects were not considered to be likely:
- Population and Human Health;
  - Air Quality;
  - Climate Change;
  - Major Accidents and Disasters; and
  - Telecommunications and Aviation.

### 5.3 Establishing the EIA Baseline

- 5.3.1 To identify the scale of likely significant environmental effects of the Proposed Development, it is necessary to establish the existing baseline character and sensitivity of the area which may be sensitive to effects from the development. The Study Area considered for the purposes of establishing the existing baseline varies by technical discipline.
- 5.3.2 Once the initial environmental baseline character is determined and key receptors are identified and categorised, the potential for likely significant effects on this baseline, arising from the construction and operation of the Proposed Development, are assessed using an appropriate methodology for each technical discipline.
- 5.3.3 Consideration is also given to foreseeable future changes to the baseline in the absence of the Proposed Development, including those associated with climate change.

#### 5.4 Assessment and Mitigation of Likely Significant Effects

5.4.1 The EIA process has been carried to identify potential likely significant effects from the construction and operation of the Proposed Development. Predicted impacts have been assessed by considering the following:

- the geographic extent or magnitude of change (from the existing baseline conditions);
- the sensitivity or value of the affected environmental factors/receptors;
- the availability and likely effectiveness of measures to mitigate impacts;
- the likelihood of occurrence; and
- reversibility and duration of the likely residual effects.

5.4.2 In the assessment, effects evaluated to be Major and Moderate are considered to be Significant in the context of the *EIA Regulations*. Minor and Negligible effects are considered to be Not Significant. Through the EIA and project design process, opportunities are taken to avoid and reduce significant environmental effects through a process called mitigation. In the EIAR mitigation has been developed and organised in a three-tier hierarchy:

1. **Embedded Mitigation:** measures which are incorporated and inherent within the project's design;
2. **Applied Mitigation:** standard/best practice environmental management during construction; and
3. **Additional Mitigation:** bespoke measures identified from the EIA.

5.4.3 Where environmental effects are predicted to be Significant taking account of embedded and applied mitigation, the requirement for further additional mitigation has been considered within each EIA discipline, and the predicted significance of the residual effect is then reported.

5.4.4 All mitigation measures identified through the design and EIA processes are collated into a single Schedule of Mitigation commitments which is presented in the EIAR. These measures will be incorporated within relevant contractual requirements to ensure they are implemented, should the proposals be consented.

5.4.5 The key mitigation measures for each technical topic assessed are summarised in **Sections 6 to 15** of this NTS.

#### 5.5 Consultation

5.5.1 SSEN Transmission has sought to maintain an open dialogue with local communities in the vicinity of the Proposed Development. This has included carrying out consultation events, engaging with local elected members such as Ward Councillors and Community Councils and engaging with landowners, residents and businesses.

5.5.2 Stakeholder engagement has been ongoing throughout the different stages of the Proposed Development's design evolution. This has kept key consultees updated and allowed SSEN Transmission to agree important methodological issues for EIA related activities such as survey scopes, assessment methods, and approaches to mitigation.

5.5.3 Consultation was undertaken with the local community and other stakeholders and consultees including:

- pre-consultation meetings for Ward Councillors and Community Councils;
- meetings with Community Councils;
- pre-application meetings with Local Authorities and Statutory Consultees, including NatureScot, Historic Environment Scotland (HES) and the Scottish Environment Protection Agency (SEPA); and
- briefings on Reports on Consultation.



One of the Consultation Events

5.5.4 Consultees were also given the opportunity to provide feedback on the corridor, route, alignment and design solution options identified (see **Section 4: Alternatives and the Routeing Process**), and all responses received were considered and summarised.



- 5.5.1 A 3D interactive model of the alignment options depicting the OHL infrastructure was available at the pre-application events. The 3D model allowed attendees to view the OHL in relation to their property or from a viewpoint they specified, to give an indication of how the infrastructure would look and to assist in their consultation feedback. Illustrative screengrabs from the 3D model are included below:



**Section A – View west from location of the Proposed Emmock Substation**



**Section D – Near Monboddo looking West**



**Section F – Entry to Kintore Substation looking Southwest**

## 6. LAND USE AND PRIME AGRICULTURAL LAND

### 6.1 Introduction

- 6.1.1 The land use assessment provided the baseline land use context for the Proposed Development and presented an assessment of the predicted direct effects on prime agricultural land, recreational airfields and recreational fisheries. The majority of the land required for the Proposed Development is in agricultural use.



**View from Recreational Route north of Echt**

#### Prime Agricultural Land

- 6.1.2 The total area of prime agricultural land directly impacted by the Proposed Development would be 4.97 hectares.

#### Recreational Airfields

- 6.1.3 The Proposed Development's LOD would encroach on the following recreational airfields:

- Gossesslie Airfield;
- Laurencekirk Airstrip; and
- Fordoun Airfield.

#### Recreational Fisheries

- 6.1.4 The Proposed Development would oversail the following key rivers that are used for recreational fishing:

- Kerbet Water;
- Dean Water;
- River South Esk;
- River North Esk (including West Water);
- Bervie Water;
- Cowie Water; and
- River Dee.

- 6.1.5 The River North Esk, River South Esk and the River Dee are considered to be the prime fishing resources in the Study Area and are considered to be of a high sensitivity.

### 6.2 Overview of Effects and Mitigation

- 6.2.1 Overall, the Proposed Development is predicted to result in the total permanent loss of approximately 4.97 hectares of prime agricultural land. Prime agricultural land is a resource of high sensitivity however the overall effects would be **Not Significant**.

- 6.2.2 The effect of the Proposed Development in land use terms on Gossesslie Airfield, Laurencekirk Airstrip and Fordoun Airfield is considered Major which is **Significant**. This is due to the high sensitivity of the airfields to land use changes, the high magnitude of change predicted from the direct impact on the airfields and the high aviation risk levels reported in the Aviation Risk Assessment. Impacts would occur during the construction phase and would continue through operation, and would be direct, adverse and permanent.

- 6.2.3 The overall effect of the Proposed Development in land use terms on recreational fisheries on the Kerbet Water, Dean Water, Bervie Water and Cowie Water would be **Not Significant**.

- 6.2.4 The overall effect on recreational fisheries on the River South Esk, River North Esk and the River Dee is predicted to be Moderate which is **Significant**, based on their high sensitivity. The impact of the Proposed Development on the

fishing resources in these rivers would occur during the construction phase and would continue through operation, and effects would be direct, adverse and permanent. The key effects would be on people accessing watercourses for recreational fishing from exclusion zones under the OHL which would be established for safety reasons.

- 6.2.5 Embedded mitigation measures minimised land use effects during the initial design stages, and applied mitigation will minimise adverse land use effects during construction and operation, notably the application of the CEMP and an Outdoor Access Management Plan (OAMP).
- 6.2.6 At this stage, no additional mitigation is considered feasible in relation to the predicted effects from the Proposed Development on recreational airfields or recreational fisheries. However, liaison with the owners of the airfields and fisheries continues regarding the impacts on their operations.



**View of River Dee from Bridge on Slug Road**

### **6.3 Summary**

- 6.3.1 The residual effect of the Proposed Development on prime agricultural land would be **Not Significant**.
- 6.3.2 The residual effect of the Proposed Development on Gossesslie Airfield, Laurencekirk Airstrip and Fordoun Airfield would be **Significant (Major)** during construction and operation.
- 6.3.3 The residual effect of the Proposed Development on recreational fisheries on the River North Esk, River South Esk and the River Dee would be **Significant (Moderate)**, and **Not Significant** on the Kerbet Water, Dean Water, Bervie Water and Cowie Water during construction, continuing into operation.



## 7. FORESTRY

### 7.1 Introduction

- 7.1.1 The forestry assessment details the impacts of the construction of the Proposed Development upon forestry and woodlands and the implications of management felling (which is the removal of greater areas of forest or woodland to form a 'windfirm edge'<sup>17</sup>). The Operational Corridor has been defined to allow sufficient distance for a tree to fall and not cause damage to the Proposed Development during operation.
- 7.1.2 The Proposed Development would be located partially within some areas of existing forestry and woodlands along the length of the route. The assessment considered species types and designations of forestry and woodlands; there are a variety of mixed broadleaved and coniferous woodland types present including areas of Ancient Woodland.



**Lady Jane's Plantation, predominantly commercial conifer woodland with a small area of mixed broadleaved woodland**



**Durriss Forest, predominantly commercial Sitka spruce with some broadleaves present**

### 7.2 Overview of Effects and Mitigation

- 7.2.1 Felling required for construction of the Proposed Development can be broadly divided into three separate categories:
- Infrastructure Felling - felling required for the Proposed Development footprint;

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<sup>17</sup> Where trees are less likely to fall down from wind disturbance due to prolonged exposure.



- Management Felling – felling recommended as a result of the Infrastructure Felling, i.e. to consolidate forest coupe edges and prevent future windthrow; and
- Scrub/Regeneration Clearance – clearance of trees or shrubs that have naturally regenerated in areas and may not normally require felling permission.

7.2.2 The total felling required for the construction of the Proposed Development would be 214.75 ha as follows;

- Infrastructure Felling totals 138.84 ha;
- Management Felling totals 56.74 ha; and
- Scrub/Regen Clearance totals 19.16 ha.

7.2.3 The assessment concluded that the sensitivity of the forestry and woodland resource was determined to be high given the presence of some areas of Ancient Woodland. Overall, the Proposed Development would have a **Significant (Major)** adverse effect on forestry and woodland during construction.

7.2.4 There are no predicted Significant effects during the operational phase of the Proposed Development.

7.2.5 Embedded mitigation was applied to avoid areas of mixed broadleaved and coniferous woodland including areas of designated Ancient Woodland during the routeing and alignment process as far as possible and taking account of other sensitive constraints.

7.2.6 Applied mitigation includes adherence to SSEN Transmission's compensatory planting proposals to comply with the criteria of the Scottish Government's Control of Woodland Removal Policy. A Compensatory Planting Management Plan has been developed and the extent, location and composition of such planting will be agreed with Scottish Forestry.

7.2.7 The Management Felling of 56.74 ha would not be under the direct control of SSEN Transmission (it would be applied for through separate permission under the *Forestry and Land Management (Scotland) Act 2018*<sup>18</sup> by the affected landowner). It will mitigate against windthrow while maintaining a windfirm edge of trees that are considered less likely to fall down due to wind disturbance as a result of prolonged exposure to the wind.

7.2.8 Off-site planting will compensate for the loss of forestry and woodland totalling 138.84 hectares, this equates to the area of felling required for the Proposed Development's Operational Corridor. This was assessed as the maximum Operational Corridor width required, there is potential to narrow the Operational Corridor during construction to allow greater tree retention depending on factors such as tree height and topography. The methodology for this will be detailed within the Woodland Retention Plan with a particular focus on where ancient woodland and native woodland removal can be reduced.

7.2.9 An Outline Biodiversity Enhancement Plan (Outline BEP) has also been developed which details measures that will be implemented to conserve, restore and enhance biodiversity where possible. Such measures will deliver at least a 10% net gain in biodiversity and will deliver broad benefits for a range of ecological features on-site and off-site.

7.2.10 Prior to felling an arboriculture survey will be carried out to identify any veteran or ancient trees that may be affected by the works and a Tree Protection Plan will be implemented if required.

### 7.3 Summary

7.3.1 The effects from the Proposed Development from permanent loss of forestry and woodland following the application of embedded and applied mitigation would be **Significant (Major)**; these effects would occur during the construction phase.

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<sup>18</sup> The Scottish Government, 2019, *The Felling (Scotland) Regulations 2019*, Edinburgh. [Online] Available at: <https://www.legislation.gov.uk/ssi/2019/49>

## 8. LANDSCAPE AND VISUAL AMENITY

### 8.1 Introduction

8.1.1 The landscape and visual impact assessment considered the potential effects of the Proposed Development on landscape and visual amenity during construction and operation. The assessment included potential effects on landscape and visual receptors, including landscape character and views experienced by people. A Residential Visual Amenity Assessment (RVAA) was undertaken specifically to consider the visual effects of the Proposed Development on residential amenity at nearby properties during operation. There are a number of landscape designations in the area of the Proposed Development, from south to north:

- Sidlaw Local Landscape Area (LLA);
- River South Esk LLA;
- Angus Glens LLA;
- Braes of the Mearns Special Landscape Area (SLA);
- Dee Valley SLA; and
- Bennachie SLA.

### 8.2 Overview of Effects and Mitigation

#### Construction

8.2.1 Construction landscape effects are considered to be short-term and partially reversible. Most of the effects occurring during this phase relate to physical disturbance of existing landcover and potential for long-term change or loss of characteristic landscape features, including woodland and vegetation. The construction of the Proposed Development would have both physical and perceptual effects on the landscape character in all Sections (A-F) of the Proposed Development. **Significant** landscape effects would be the result of physical changes to landscape features and generally would occur within 1 km from the Proposed Development.

8.2.2 **Significant** perceptual landscape effects would occur as a result of visibility of partially constructed steel lattice towers. Generally, beyond 1 km of the construction works, effects on landscape character would reduce and would be **Not Significant** due to the decreased perceptibility of construction activity.

8.2.3 A number of landscape designations would be affected during construction as follows.

- The Sidlaw LLA is located approximately 1 km west of the Proposed Development. Given the temporary nature of construction activities it is predicted that effects would be **Not Significant**.
- The Proposed Development would cross the River South Esk LLA between Wolflaw and Murthill. The Proposed Development would result in localised impacts on some of the special qualities of the River South Esk LLA and would have **Significant** effects. These effects would be localised and temporary.
- The Angus Glens LLA is located approximately 0.8 km northwest of the Proposed Development. Given the temporary nature of construction activities, it is predicted that effects would be **Not Significant**.
- The Braes of the Mearns SLA is located approximately 1.4 km north of the Proposed Development. Given the temporary nature of construction activities, it is predicted that effects would be **Not Significant**.
- The Proposed Development would cross the Dee Valley SLA between Kirkton of Durriss and Loch of Park. The Proposed Development would result in localised impacts on some of the special qualities of the Dee Valley SLA and would have **Significant** effects. These effects would be localised and temporary.
- The Bennachie SLA is located approximately 3.3 km northwest of the Proposed Development. Given the temporary nature of construction activities, it is predicted that effects would be **Not Significant**.

8.2.4 Visual effects would occur on a range of visual receptors including residents, road users and recreational receptors in all Sections (A-F) of the Proposed Development. **Significant** effects on views and visual amenity during construction would generally affect receptors within approximately 1 km of the Proposed Development. Such effects would result from the visibility of construction activity including the erection of steel lattice towers, creation and upgrading of access tracks, vehicle movements and construction lighting in hours of darkness, particularly where the Proposed Development crosses higher land.

- 8.2.5 From more distant and elevated areas beyond 1 km, intervening features such as woodland and roadside vegetation, would partially or fully screen construction activities, particularly ground level activity. The perceptibility of construction activity would reduce as the distance between the Proposed Development and receptors increases, with many views limited to the erection of steel lattice towers and threading of conductors.



**View from Barmekin Hill**

Operation

- 8.2.6 Landscape effects would occur within 1 km and across all Sections of the Proposed Development during operation. Such effects would be **Significant** and as the result of physical changes to landscape features including:
- the introduction of large scale vertical infrastructure into the landscape;
  - large scale features introduced in relation to the medium scale of the underlying landscape and the rolling nature of the landform;
  - the loss of coniferous woodland, broadleaved trees and riparian woodland; and
  - disruption to the distinctive patchwork of large open fields.
- 8.2.7 A number of landscape designations would be affected during operation as follows.
- The Sidlaw LLA is located approximately 1 km west of the Proposed Development. Visibility of the Proposed Development would affect views from hill summits within the LLA. However, effects on the special qualities of the LLA would be **Not Significant**.
  - Approximately 2.3 km of the Proposed Development would be located within the River South Esk LLA where it crosses the River South Esk at Craigeassie. Physical effects would include the ongoing change from felling, as well as the presence of six steel towers. The Proposed Development would have localised **Significant** effects on the LLA.
  - The Angus Glens LLA is located approximately 0.8 km northwest of the Proposed Development. Visibility of the Proposed Development would affect the scenic views however the Proposed Development would be backclothed by landform and as such effects would be **Not Significant**.
  - The Braes of the Mearns SLA is located approximately 1.4 km north of the Proposed Development. It would have an effect on the strong contrast between the flat agricultural land of the Howe of the Mearns in the south, and the ridge in the north which marks the Highland Boundary Fault, however these effects are considered to be **Not Significant**.
  - Approximately 3.1 km of the Proposed Development would be located within the Dee Valley SLA. Physical effects would include woodland loss where the OHL crosses the River Dee. The loss of this woodland would result in the fragmentation of woodland affecting its visual relationship with the River Dee, detracting from the visual diversity and richness of landscape character of the SLA. Overall, the Proposed Development would have localised **Significant** effects on the special qualities of the SLA.
  - The Bennachie SLA is located approximately 3.3 km north of the Proposed Development. Visibility of the Proposed Development from the SLA would be limited due to the woodland and forestry cover. Effects on the SLA would be **Not Significant**.

- 8.2.8 Visual effects would occur on a range of visual receptors including residents, road users and recreational receptors broadly across all Sections (A-F) of the Proposed Development. **Significant** effects on views and visual amenity would occur within 1 km of the Proposed Development, where close-to-middle distance views of the Proposed Development would be available. In addition, from more distant locations beyond 1 km especially in open expansive areas, views of the Proposed Development in the middle distance are predicted. Such visual effects would be the result of the introduction of large scale vertical features that would be prominent in views as the Proposed Development crosses Strathmore, and in many views where it would be seen to break the skyline.
- 8.2.9 Within the Dee Valley, the Proposed Development would be visible as it descends the southern slopes of the valley and crosses the River Dee, with steel lattice towers appearing as prominent large scale features. The Proposed Development would be particularly prominent in views north of the River Dee and a locally prominent hillock east of Echt.
- 8.2.10 The Residential Visual Amenity Assessment (RVAA) concluded that the Proposed Development would result in a high magnitude of change on a number of properties in each Section of the Proposed Development during operation, however it would not be so overbearing or dominant in the views from these properties to affect living conditions.



View west from Padanaram



Photomontage of view west from Padanaram with the Proposed Development

- 8.2.11 Sequential effects on views, as experienced from key routes, were considered, including A roads, B roads with an interaction with the Proposed Development, railway lines, National Cycle Network (NCN) routes and walking and recreational routes.
- 8.2.12 Embedded mitigation of potential landscape and visual effects during construction and operation was considered during the initial alignment design and assessment stages of the Proposed Development. The landscape and visual assessment process informed modifications and refinements to the design of the Proposed Development, including consideration of individual tower locations and access tracks during the design and assessment process.
- 8.2.13 Applied mitigation includes the application of standard good practice measures which will be implemented during construction and operation including the application of SSEN Transmission's GEMPs, SPPs and the CEMP during



construction. The following will be key features of the CEMP, with several forming key design objectives as set out in the Outline Landscape Mitigation Design Guide in the EIAR:

- existing landscape features such as hedgerows, woodland, tree belts and stone dyke field enclosures will be retained as far as practical;
- any temporary disturbance to, or temporary removal of, existing field boundaries (eg hedgerows or fences) will be undertaken sensitively to ensure successful reinstatement; and
- following the installation of the main components of the Proposed Development, construction works (eg temporary working areas and temporary access tracks) and previously disturbed areas will be restored and revegetated during the reinstatement phase.

8.2.14 Additional mitigation will further restore and enhance landscape features within the Operational Corridor that would be altered by the Proposed Development, including: softening of wayleave corridors around the edges of forestry and woodland to create a more naturalistic look. Landscaping beyond the reinstatement of existing ground conditions is subject to landowners' agreement.

8.2.15 An Outline Landscape Mitigation Design Guide has been prepared which includes these principles amongst others and which will be featured in the CEMP.

### 8.3 Summary

8.3.1 The application of the embedded, applied and additional mitigation measures will assist in integrating the Proposed Development into the surrounding landscape. However, these measures are not considered to reduce the level of Significance of landscape and visual effects identified, as such, the residual effects would be:

#### During Construction

- **Significant (Major)** effects on 53 Visual Receptor Areas;
- **Significant (Moderate)** effects on 11 Landscape Character Types;
- **Significant (Moderate)** effects on the River South Esk LLA and the Dee Valley SLA; and
- **Significant (Moderate)** effects on 49 Visual Receptor Areas.

#### During Operation

- **Significant (Major)** effects on ten Landscape Character Types;
- **Significant (Major)** effects on the River South Esk LLA and the Dee Valley SLA;
- **Significant (Major)** effects on one B class road and one National Cycle Network (NCN) Route;
- **Significant (Major)** effects on 68 Visual Receptor Areas;
- **Significant (Moderate)** effects on two Landscape Character Types;
- **Significant (Moderate)** effects on 37 Visual Receptor Areas; and
- **Significant (Moderate)** effects on users of a number of key roads.

## 9. CULTURAL HERITAGE

### 9.1 Introduction

9.1.1 The cultural heritage assessment considered the potential effects of the Proposed Development's construction and operation on historic environment sites and features, archaeology and built heritage. It detailed the results of a desk-based assessment, targeted field survey and the significance of any effects upon cultural heritage resulting from the Proposed Development.

9.1.2 It is predicted that there would be theoretical visibility of the Proposed Development from:

- 115 Scheduled Monuments;
- 336 Listed Buildings;
- eight Inventory Garden and Designed Landscapes; and
- five Conservation Areas.

### 9.2 Overview of Effects and Mitigation

9.2.1 It has been assessed that there would be permanent residual effects on 94 heritage assets from construction of the Proposed Development, and on an additional 48 heritage assets if the proposed towers or proposed access tracks were to be located within the LOD.

9.2.2 During operation, the assessment resulted in the identification of **Significant (Moderate)** adverse effects on the settings of eight Scheduled Monuments. While the character of the landscape within which the monuments are located would be altered by the presence of the proposed towers, the permeable nature of the Overhead Line and steel lattice towers would still allow the landscape surroundings, and context, of the monuments to be appreciated, understood and experienced. It is considered that the ability to understand, appreciate and experience the siting of these monuments and the key aspects of their settings would be adequate retained. As such the effect on the integrity of their settings would be **Not Significant**. All other impacts during operation, affecting the settings of designated heritage assets in the surrounding landscape, would give rise to effects that are either **Minor or Negligible** and **Not Significant**.



View to the west of South Leylodge Steading, Stone Circle



### Photomontage of South Leylodge Steading, Stone Circle with the Proposed Development including Tree Felling

- 9.2.3 Embedded mitigation ensured that the Proposed Development was designed through the routeing and alignment stages to avoid any direct impacts on Scheduled Monuments and Inventory Garden and Designed Landscapes that lie in close proximity to the Proposed Development.
- 9.2.4 Applied mitigation will ensure that construction works proceed in accordance with the CEMP which will include measures such as construction machinery operating only within defined working areas and upstanding cultural heritage remains being retained where possible (features fenced off or otherwise visibly marked out to signal their presence to construction workers). Should previously unidentified archaeological remains be encountered during construction they will be subject to a programme of archaeological works to be developed in consultation with Aberdeenshire Council Archaeology Service and detailed in a Written Scheme of Investigation (WSI).
- 9.2.5 Additional mitigation measures will ensure that any archaeological remains that may be present are dealt with appropriately and to reduce and offset the predicted Significant effects. Where upstanding features cannot be avoided or protected during construction, these areas will be investigated and recorded prior to construction works being carried out. Any disturbance to surviving remains of minor historic features (ie field banks, poorly preserved rig and furrow remains) will be kept to a minimum.
- 9.2.6 Watching briefs will be carried out in archaeological sensitive areas where previously recorded cropmarks sites or other heritage assets may survive as buried remains, and which could be potentially affected by groundbreaking works during construction of the Proposed Development. If significant discoveries are made during any archaeological monitoring, and preservation in situ of any sites or features is not possible, provision will be made for an appropriate amount of investigation and recording to be agreed in consultation with Aberdeenshire Council Archaeology Service.
- 9.2.7 The scope of the works required will be detailed in a WSI developed in consultation with Aberdeenshire Council Archaeology Service. The WSI will make provision for appropriate post-excavation analysis and dissemination of the results of the mitigation works, as well as for archiving of the project material and records.
- 9.2.8 In addition, written guidelines will be set out outlining the possibility that remains of military aircraft crash sites may survive within Tannachie and Fetteresso Forest and that there is a need to avoid causing unnecessary damage to these sites should any be encountered.

### 9.3 Summary

- 9.3.1 The overall effects on cultural heritage during construction of the Proposed Development would be **Not Significant**.
- 9.3.2 During operation the Proposed Development would have **Moderate (Significant)** adverse effects on the setting of eight Scheduled Monuments, but there would be **No Significant** adverse effect on the overall integrity of their settings.

## 10. ECOLOGY

### 10.1 Introduction

- 10.1.1 The ecological assessment included consideration of potential effects on ecologically designated sites, habitats of conservation concern and protected species (excluding birds which were considered in the ornithology assessment, see **Section 11: Ornithology**). The ways in which ecological features might be affected (directly or indirectly) by the construction and operation of the Proposed Development were explained and an assessment was made with regards to the significance of these effects.
- 10.1.2 A Shadow Habitats Regulations Appraisal (HRA) was undertaken which assessed Likely Significant Effects from the Proposed Development specifically on European designations; in the case of ecology, it assessed the effects on Special Areas of Conservation (SACs). The Shadow HRA details the potential impacts pre-mitigation and all mitigation measures which will be employed to avoid adversely impacting the qualifying features. The Shadow HRA is appended within the EIAR.

### 10.2 Overview of Effects and Mitigation

- 10.2.1 A total of 39 UK habitat classifications were recorded within the habitat Study Area. The most commonly occurring habitats were Cereal Crops and Modified Grassland. The pattern of land management was very different in Section E, which lies to the southwest of Aberdeen, compared to the other Sections of the Proposed Development as it was dominated by the large forestry plantations of Fetteresso Forest and Durriss Forest. Extents of semi-natural woodlands comprising Lowland Mixed Deciduous Woodland, Upland Birchwoods, Upland Mixed Ashwood, and Wet Woodland, were scattered throughout the Study Area. Notable areas of heathland habitat were present in Section A (the most southern Section) and Section E. In upland areas of Section E, a small area of Blanket Bog was recorded. Wetland habitats were recorded occasionally scattered within lowland areas across all Sections of the Proposed Development, and included Purple Moor Grass and Rush Pastures, and Lowland Fens. Ponds were recorded in Section E. Hedgerows, treelines and watercourses were also recorded throughout the Study Area. Watercourses of importance within the Study Area included (see **Figure A: Overview of the Proposed Development** in **Section 1: Introduction and Background** for locations of Sections A to F):
- Section A - Kerbet Water and Dean Water (designated as part of the River Tay SAC);
  - Section B - River South Esk (SAC) and Noran Water (part of the River South Esk SAC);
  - Section C - West Water and River North Esk;
  - Section D - Bervie Water; and
  - Section E - Cowie Water, Burn of Sheeoch (part of the River Dee SAC), and River Dee (SAC).
- 10.2.2 The Proposed Development would oversail the River Tay SAC, the River South Esk SAC and the River Dee SAC in two locations within each designated area.
- 10.2.3 The Loch of Park Local Nature Conservation Site (LNCS) and River Dee LNCS would also be oversailed by the Proposed Development. The Loch of Park Site of Special Scientific Interest (SSSI) is located directly to the west of the Proposed Development LOD. A small number of Long-Established woodlands of Plantation Origin (LEPO) woodland are located within the Limit of Deviation (LOD) for the Proposed Development, with further LEPO woodlands and semi-natural woodlands within 5 km of the Proposed Development.



**Habitat and Vegetation Types in the Ecological Study Area**



Arable field margin, northwest of Burnside the Meadows.



Bracken at Myriewell Wood. This habitat was commonly found throughout the Ecological Study Area.



Bramble scrub north of Strathmore.



Blanket bog south of Slug Road.



A felled plantation east of Target Wood.



Pond north of the River Dee.



10.2.4 The following key species, amongst others, were considered active in the Study Area:

- Bats;
- Otter;
- Beaver;
- Badger;
- Red squirrel;
- Water vole;
- Pine marten;
- Mountain hare;
- Brown hare;
- Amphibians;
- Reptiles; and
- Fish, including Atlantic salmon.

10.2.5 Due to the protection levels given to a number of species some survey information is presented in a Confidential EIAR Appendix which is made available to Statutory Consultees only.

10.2.6 Construction of the Proposed Development has the potential to impact upon the River Tay SAC, River South Esk SAC, River Dee SAC, Loch of Park SSSI, Woodside LNCS, Auchleuchrie LNCS, Loch of Park LNCS and River Dee LNCS and a number of habitats of conservation concern. The construction of the Proposed Development would also have the potential to disturb protected species through direct habitat loss, habitat fragmentation and disturbance. Approximately 44 hectares of woodland listed on the Ancient Woodland Inventory (less than 41 hectares of LEPO and approximately 3 hectares of semi-natural woodland) would be subject to felling to facilitate the Proposed Development and create the Operational Corridor.

10.2.7 The ecological impact assessment considered the potential effects of development activities by taking into account the link or 'pathway' between the Proposed Development and the ecological receptors potentially affected, such as habitats and species. The desk study, field surveys and ecological impact assessment concluded that adverse effects on designated sites, habitat of conservation concern or protected or notable species as a result of the Proposed Development would be **Not Significant**.

10.2.1 Embedded mitigation ensured that impacts to important ecological receptors were avoided wherever possible during the design developments stages of the Proposed Development. Where avoidance was not possible, the following steps were taken until the impacts were considered by qualified ecologists to have reached an acceptable level: avoid; reduce; restore; and compensate.

10.2.2 Applied mitigation will be in place during the construction of the Proposed Development. The construction works will be undertaken in accordance with SSEN Transmission's GEMPs and SPPs as well as the CEMP that will specify working practices which the Principal Contractors will be required to follow. The Principal Contractors will also be required to prepare an Ecological and Ornithological Management Plan that will specify how the construction works will implement the requirements of the GEMPs and SPPs. Applied mitigation measures will include the following as an example: works will be planned to avoid sensitive times of year (such as breeding seasons), or sensitive times of day (such as dawn/dusk); surveys and monitoring will confirm the status of ecology features prior to works commencing, and will inform any requirement for exclusion buffers, other mitigation measures and/or licensing; infrastructure will be micro-sited to maintain the required exclusion buffers eg from watercourses and sensitive habitats; the removal of woodland and vegetation in sensitive habitats including woodlands, wetlands and riparian corridors will be avoided.

10.2.3 Following the construction phase, site restoration and landscaping proposals will be implemented, including delivery of on-site habitat restoration, compensation planting and biodiversity enhancement. A Site Restoration Plan will be developed as part of the CEMP guided by the Landscape Mitigation Design Guide.

10.2.4 In addition, consideration has been given to opportunities for ecological and biodiversity enhancement. SSEN Transmission is committed to delivering 10% Biodiversity Net Gain on all their projects to conserve, restore and enhance biodiversity. This will include habitat restoration and enhancement that will benefit local and regional biodiversity, such as off-site compensatory tree and hedgerow planting. A Biodiversity Enhancement Plan (BEP) will be prepared.

### 10.3 Summary

10.3.1 The overall effects on ecology during construction and operation of the Proposed Development would be **Not Significant**.

## 11. ORNITHOLOGY

### 11.1 Introduction

11.1.1 This assessment considered the potential effects of the Proposed Development on ornithology (birds). It detailed the methods used to establish the bird species and populations present, together with the process used to determine their Nature Conservation Importance. The ways in which birds might be affected by the construction and operation of the Proposed Development are explained, and an assessment was undertaken with regards to the significance of these effects.

11.1.2 A Shadow Habitats Regulations Appraisal (HRA) was undertaken which assessed Likely Significant Effects from the Proposed Development specifically on European designations, in the case of ornithology it assessed the effects on Special Protection Areas and Ramsar sites. The Shadow HRA detailed the potential impacts pre-mitigation and all mitigation measures which will be employed to avoid adversely impacting the qualifying features. The Shadow HRA is appended within the EIAR. The Shadow HRA concluded that there would be no Likely Significant Effects on the qualifying features of these European designated sites.

### 11.2 Overview of Effects and Mitigation

11.2.1 The Study Area extended up to 20 km from the Proposed Development. A detailed assessment of the potential effects of the Proposed Development on the following European designated sites was undertaken:

- Outer Firth of Forth and St Andrews Bay Complex SPA;
- Firth of Tay and Eden Estuary SPA and Ramsar site;
- Loch of Lintrathen SPA, Ramsar site and Site of Special Scientific Interest (SSSI);
- Loch of Kinnordy SPA, Ramsar site and SSSI;
- Montrose Basin SPA, Ramsar site and SSSI;
- Fowlsheugh SPA and SSSI; and
- Loch of Skene SPA, Ramsar site and SSSI.

11.2.2 Notable birds considered during baseline surveys were:

- Whooper Swan;
- Greylag Goose;
- Pink-footed Goose;
- Red-breasted Merganser;
- Red Kite;
- Peregrine;
- Goshawk;
- Merlin;
- Short-eared Owl;
- Golden Plover;
- Nightjar;
- Black Grouse;
- Curlew;
- Lapwing;
- Herring Gull;
- Mute Swan;
- Barnacle Goose;
- Marsh Harrier;
- Hen Harrier; and
- Barn Owl.

11.2.3 Due to the protection levels given to a number of bird species some survey information is presented in a Confidential EIAR Appendix which is made available to Statutory Consultees only.

11.2.4 Embedded mitigation has ensured that impacts on designated sites and areas of high bird use have been avoided during the design development of the Proposed Development. Devices known as bird diverters will be installed on some sections of the OHL in locations identified to be used by bird species which are considered sensitive to increased risk of collision with the infrastructure. These locations have been agreed in consultation with NatureScot, the Scottish Government's nature conservation agency.

11.2.5 Applied mitigation during construction will safeguard sensitive ornithological sites, ensuring that nesting and roosting birds are not subject to disturbance arising from construction activities. No construction works would take place within identified disturbance buffers during the bird breeding season. In addition, SSEN Transmission is committed to the implementation of their GEMPs, bird SPPs and the CEMP as well as ornithological monitoring during construction.



SSEN Transmission's Principal Contractors will also be required to prepare an Ecological and Ornithological Management Plan that will specify how the construction works will implement the requirements of the GEMPs and SPPs.

- 11.2.6 SSEN Transmission is also committed to delivering 10% Biodiversity Net Gain on all their projects to conserve, restore and enhance biodiversity. This will include habitat restoration and enhancement that will benefit local and regional bird populations, such as off-site compensatory tree and hedgerow planting. A Biodiversity Enhancement Plan (BEP) will be prepared.
- 11.2.7 The implementation of the Ecological and Ornithological Management Plan as well as adherence to all GEMPs, BSPPs and the CEMP will be supervised by an Advisory Environmental Clerk of Works (ECoW).
- 11.2.8 Overall, no Likely Significant Effects on the qualifying features of the European designated sites are predicted, however, there would be a **Negligible** effect on European designated sites which is **Not Significant**.
- 11.2.9 The construction phase is not predicted to result in significant adverse effects upon any of the assessed bird species following implementation of the GEMPs, SPPs and CEMP; overall effects would be **Not Significant**.
- 11.2.10 Population reductions due to displacement and/or collision mortality of the operational phase would be **Not Significant**.

### 11.3 Summary

- 11.3.1 Effects arising from the construction and operation of the Proposed Development would be **Not Significant** for the European sites and all bird species.

## 12. HYDROLOGY, HYDROGEOLOGY, GEOLOGY AND SOILS

### 12.1 Introduction

12.1.1 This assessment considered the potential effects of the Proposed Development on hydrology, hydrogeology, geology and soils during construction and operation. The assessment included potential effects on water quality, flood risk and drainage, groundwater abstractions, private water supplies (PWS), peat, and groundwater dependent terrestrial ecosystems (GWDTE)<sup>19</sup>.

### 12.2 Overview of Effects and Mitigation

12.2.1 The Proposed Alignment crosses numerous watersheds and catchments. There are several small ponds/lochans close to the Proposed Development, none of which would be crossed. Several of the watercourses within the area are designated SACs which are of international importance and many of the smaller watercourses and tributaries are within the catchments of the River Tay SAC, River South Esk SAC and the River Dee SAC, and as such the water environment along much of the route of the Proposed Development is considered a sensitive receptor (see also **Section 10: Ecology**).

12.2.2 There are several flood risk areas from rivers crossed by the Proposed Development including flood risk associated with:

- the Kerbet Water and the Dean Water west of Forfar;
- the River South Esk;
- the Cruick Water and the West Water near the confluence with the River North Esk;
- the Luther Water;
- the River Dee; and
- the Gormack Burn and the Kinnernie Burn.



Unnamed Drains

<sup>19</sup> GWDTEs are wetlands that are directly dependent on groundwater bodies



Stone Box Culvert



River South Esk

- 12.2.3 The Proposed Development would require 30 new temporary or permanent watercourse crossings for access tracks during construction. The OHL itself would oversail multiple watercourses along the alignment but no works would take place within the watercourses.
- 12.2.4 There are a number of PWS, abstraction points, Scottish Water assets, wells and springs along the route of the Proposed Development. There are eight GWDTEs within 250 m of the Proposed Development, and the majority of the area is not underlain by peat although there are small areas of peat present in Section E (see **Figure A: Overview of the Proposed Development in Section 1: Introduction and Background** for locations of Sections A to F):
- 12.2.5 Embedded mitigation aimed to avoid watercourses and areas at risk of flooding where practicable. Where flood risk areas could not be avoided, there will be no land raising within the flood risk areas. Single span bridge crossings will be used for all new watercourse crossings on natural watercourses within the SAC catchments. Areas of peat have also been avoided where possible.
- 12.2.6 Watercourses and waterbodies, where practicable, were buffered by either a minimum of 10 m or SEPA's Recommended Riparian and Geomorphic Risk Buffer distance (if greater)<sup>20</sup>. SEPA's guidance for river crossings and excavations near groundwater abstractions, PWS sources and GWDTE has been followed.
- 12.2.7 Applied mitigation includes compliance with SSEN Transmission's GEMPs and the CEMP; the CEMP will include a detailed Pollution Prevention Plan (PPP) to ensure that any discharges of water runoff from the Proposed Development to the water environment do not cause pollution. Monitoring of the water quality of the PWS and some GWDTE will be undertaken before, during and after construction. Post construction monitoring will be undertaken in peat reuse and restoration areas (in Durriss Forest) to ensure vegetation re-establishes, with additional seeding with locally appropriate seed stock if monitoring indicates the need.
- 12.2.8 With embedded and applied mitigation many potential significant effects on the water and peat environment have been, and will be, avoided or reduced, including effects on water quality, run-off rates and flood risk to the downstream water environment. However, potential significant effects could occur locally at areas where watercourse buffers could not be achieved, the construction effects assessment focused on the following:
- surface and ground water quality;
  - runoff rates and flood risk and groundwater levels/recharge;
  - PWS and abstractions;
  - geology receptors;
  - GWDTE; and
  - peat.
- 12.2.9 During construction **Significant (Moderate)** effects were predicted to water quality in downstream watercourses including:

<sup>20</sup> The recommended buffer width is scaled to watercourse width, of between 10 m to 30 m either side of the channel.

- the Dean Water catchment which includes the River Tay SAC;
- the River South Esk catchment which includes the River South Esk SAC;
- the West Water catchment;
- the Bervie Water catchment;
- the Carron Water catchment; and
- the River Dee catchment which includes the River Dee SAC and a drinking water protection area.

12.2.10 It is noted that the predicted adverse effects would be localised (at locations where recommended buffers would not be achieved) but given the high sensitivity of the water environment results in a **Significant (Moderate)** effect.

12.2.11 **Significant (Moderate)** effects were also predicted to a number of PWS and GWDTEs.

12.2.12 The potential operational impacts of the Proposed Development are associated with the permanent infrastructure and any required maintenance work during operation, which will be infrequent. Embedded and applied mitigation will be in place and runoff will be attenuated and there will no land raising in flood risk areas. Given the size of the areas of hardstanding compared to the catchment areas of the downstream watercourses, the magnitude of the effect on flood risk is considered to be **Not Significant**.

12.2.13 Additional mitigation during construction will include the following site-specific measures, which when implemented effectively are considered to mitigate the potentially significant effects identified above to non-significant levels:

- Additional pollution, silt and sediment control measures and sustainable drainage systems at locations where recommended riparian buffers could not be achieved.
- No construction materials (soils/ materials or fuels) will be placed within flood risk areas, where practicable.
- Further PWS, pipework and well investigations will be undertaken before construction and monitoring of PWS will be undertaken.
- Alternative water will be supplied if required, eg portable bowsers, new PWS or new mains connection.
- Site-specific mitigation at a number of GWDTEs, including monitoring will be undertaken.

### 12.3 Summary

12.3.1 The effects on water quality and hydrology (flood risk) to downstream watercourses and receptors from the Proposed Development during construction would be **Not Significant**. The effects on geology and peat receptors would be **Not Significant**. Effects on PWS quality and quantity would be **Minor/ Negligible** and effects on GWDTEs would be **Minor**. Overall effects during construction would be **Not Significant**.

12.3.2 Effects during operation are predicted to be **Not Significant**.



## 13. TRAFFIC AND TRANSPORT

### 13.1 Introduction

13.1.1 The potential effects of the Proposed Development on traffic and transport were assessed. A review of the existing transport baseline conditions was undertaken, along with a detailed review of the likely impact of construction traffic on the surrounding road network and an assessment of these impacts on those using and living near to routes which would be used for construction traffic access. A review of the likely impacts, necessary mitigation measures and consideration of the subsequent significance of effects was undertaken. The following routes and their users and nearby receptors were included in the assessment:

- A class roads;
- B class roads;
- C class roads; and
- Other minor roads and tracks providing local access.



**Minor Road near Jacksbank**

### 13.2 Overview of Effects and Mitigation

13.2.1 Embedded mitigation measures include:

- implementation of standard traffic management measures, including the provision of direction and speed limit signage; and
- use of local material suppliers wherever practicable to reduce traffic impacts and overall project mileage.

13.2.2 Applied mitigation measures will be implemented during construction including the following:

- Provision of an industry standard Construction Traffic Management Plan (CTMP), incorporating measures such as road cleaning facilities at the site access and warning signage. The CTMP will also include vehicle access routing to be observed by construction traffic which will be agreed with the relevant local roads authorities.
- Provision of an Outdoor Access Management Plan (OAMP) which will include measures for the management of existing public access during the construction and operation of the Proposed Development.
- A Staff Travel Plan will be prepared and implemented to manage the arrival and departure of staff and to encourage sustainable modes of transport, especially car-sharing.

13.2.3 The assessment presented worst-case effects as the effects would not be anticipated to occur throughout the whole period of construction activity. The findings indicated that further consideration of mitigation was necessary to reduce the predicted significant adverse effects further where possible. It was recognised that some road users and roadside receptors, particularly those along minor and lightly trafficked routes leading to the construction working areas, would be particularly susceptible to adverse effects.

13.2.4 An Enhanced CTMP has therefore been committed as an additional mitigation measure. The standard CTMP will be made more detailed and project specific. Additional measures within this Plan will include:

- HGV traffic moving past key sensitive receptors such as primary schools at certain times of the day will be avoided;
- adoption of a speed limit of 20 mph for all construction vehicles travelling through villages and towns;
- a site worker transport and travel arrangement plan will be implemented;
- all drivers will be required to attend an on-site induction and regular refresher briefings;
- an information telephone line will be established and communicated to affected communities to allow for enquiries and complaints to be registered by local residents and other road users. All complaints registered will be logged and appropriately responded to and corrective actions identified and fed back to the site management teams;
- road edge reviews to keep the roads and footways clean and safe;
- any damage to road infrastructure caused directly by construction traffic would be made good; and
- helicopters may be used to minimise vehicular access where practicable.

### 13.3 Summary

13.3.1 **Minor** traffic and transport effects would occur during the construction phase of the Proposed Development on a number of roads and tracks, the overall residual effect on traffic and transport would be **Not Significant**.

## 14. NOISE AND VIBRATION

### 14.1 Introduction

14.1.1 The noise and vibration assessment considered the potential effects of the Proposed Development on human receptors sensitive to noise and vibration during construction and operation. The methodology focused on the assessment of effects on permanent Noise Sensitive Receptors (NSRs) in the Study Area. A NSR is any building where the presence of noise could significantly impact the occupants' well-being, activities, or health eg residences, schools, hospitals, offices and other commercial properties. Where likely significant effects were predicted, appropriate mitigation measures were proposed.

### 14.2 Overview of Effects and Mitigation

14.2.1 The construction phase was identified as having the greatest potential for significant adverse noise and vibration effects, particularly on residential properties in proximity to the proposed OHL. Nine principal construction phases were assessed:

- vegetation clearance and felling;
- access and enabling works;
- piling works for towers;
- foundations;
- tower erection;
- stringing of OHL conductors;
- installation of downleads<sup>21</sup>;
- scaffolding and yard work; and
- dismantling.

14.2.2 The following sets out the predicted effects from construction activities:

- Felling activities would vary in time with some areas expected to experience very short-term effects dependent on the extent of woodland felling required in proximity to sensitive receptors.
- The noise due to excavators and saws would be dominant and have the potential to cause **Significant** noise issues during early works to establish access and construction working areas etc.
- For the piling phase **Significant** noise effects were predicted, the breaker and hammer rig were predicted to cause the highest impacts.
- For the foundations phase **Significant** noise effects were predicted. The breaker and excavators were predicted to cause the highest impacts.
- Tower erection noise effects would be **Not Significant** if activity was undertaken during daytime and Saturday working hours.
- Stringing would generate **Significant** noise effects due to the static vehicle activity such as telescopic handlers and tractors.
- Downleads noise effects would be **Not Significant** if scheduling of noisy equipment was undertaken during daytime and Saturday working hours.
- Scaffolding and yard work noise effects would be **Significant** mostly due to the telehandler activity.
- Dismantling noise effects would be **Significant** due to the breaker activity.

14.2.3 The significance of effects from construction vibration and construction traffic vibration would be **Minor** and **Not Significant**.

14.2.4 The construction effects on noise from the Proposed Development would be **Significant** prior to the application of mitigation, the mitigation set out below would reduce these **Significant** effects.

14.2.5 During operation, audible noise from the Proposed Development would be **Negligible** and **Not Significant**. The assessment indicated that one NSR in close proximity to the temporary diversion for the Kintore to Fetteresso 275 kV

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<sup>21</sup> In the context of a new build overhead line (OHL) that terminates to a substation, "downleads" refer to the conductors that transition from the overhead line tower down to the substation equipment.

/400 kV OHL realignment may experience noise effects during wet weather conditions<sup>22</sup> however as the diversion is temporary the impact is considered **Minor** and therefore **Not Significant** however liaison with the property is recommend. The internal noise level was assessed as **Minor** and **Not Significant**.

14.2.6 Embedded mitigation included considering proximity to noise sensitive receptors as part of the iterative design development of the Proposed Development through routeing and alignment stages with the aim of avoiding sensitive receptors such as residential properties as far as possible. The OHL conductor type selected for the Proposed Development is a low noise conductor which will reflect best practice and dampers will be attached to minimise vibration and noise from operation of the Proposed Development (ie electricity transmission through the conductors).

14.2.7 Applied mitigation will include the development and implementation on site of a Construction Noise Management Plan (CNMP) which will be produced as part of the CEMP by the Principal Contractors and agreed with the relevant local authorities. Procedures will include where necessary and practicable the following:

- Minimising noise from plant operation and construction activities as much as is reasonably practicable at source.
- Using acoustic absorptive screens, hoardings or barriers within the construction site.
- Locating plant and equipment liable to create noise as far from NSRs as is reasonably practicable.
- Carrying out identified high noise level activities at times when they are least likely to cause a nuisance to residents including:
  - the time expected to fell trees in each area will be specified to assess the severity of the construction noise; and
  - the running time of excavators, saws, breakers, hammer rigs and static vehicle activity such as telescopic handlers / telehandlers and tractors will be carefully managed and controlled.
- Providing advance notice of unavoidable periods of high noise levels to residents.
- Avoiding vehicles waiting or queuing, particularly on public highways or in residential areas with their engines running.
- Scheduling deliveries to arrive during daytime hours only, and delivery vehicles will follow routes that minimise use of residential roads.
- Fitting and maintain silencers to plant, machinery, and vehicles where appropriate and necessary.
- Operating plant and equipment in modes that minimise noise.
- Using electrically powered plant rather than diesel or petrol driven, where this is practicable.

14.2.8 Additional mitigation has also been committed to reduce predicted construction noise to non-significant levels. It will include:

- The noisiest activities will be restricted to daytime and Saturday working hours.
- Noise compliance measurements will be undertaken during peak activities to ensure noise emissions remain within permitted limits. Where exceedances are identified, further mitigation will be implemented.
- During access/enabling, foundation, and piling phases, the active time of the noisiest equipment will be reduced to maintain worst-case levels at or below 65 dB at receptors. If noise levels exceed acceptable thresholds the Principal Contractors will be provided with site-specific mitigation requirements for inclusion in the CNMP. This may involve detailed scheduling of the periods for operating high-noise equipment such as saws, breakers, and piling rigs.
- The simultaneous operation of noise-generating machinery will be managed to minimise noise impacts.
- Communities will be informed of the programme of construction activities and a Community Liaison contact will be appointed to deal with any community queries or feedback.

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<sup>22</sup> An energised OHL can be the source of an audible phenomenon known as 'corona discharge' which can be the source of audible noise, a crackling sound accompanied sometimes by a low frequency hum. The highest noise levels generated by an OHL usually occur during light rain.



### 14.3 Summary

- 14.3.1 Noise effects from the Proposed Development during construction would be **Minor** and **Not Significant** provided that all additional mitigation is effectively implemented on site.
- 14.3.2 Operational noise effects from the Proposed Development would be **Minor / Negligible** and **Not Significant**.
- 14.3.3 Vibration effects during construction of the Proposed Development would be **Minor** and **Not Significant**.

## 15. CUMULATIVE EFFECTS ASSESSMENT

### 15.1 Introduction

15.1.1 The cumulative effects assessment considered the potential significant cumulative effects predicted for the Proposed Development when considered alongside other future developments (known as ‘in-combination effects’); significant in-combination effects may occur when a number of future development projects are consented and then constructed within the same timeframe as the Proposed Development. Reasonably foreseeable future developments were considered. There are a number of developments relating to electricity infrastructure in the area and these have been notable additions in the cumulative assessment.

15.1.2 In addition, the potential for effects to arise from the interaction of different impact types from the Proposed Development on common receptor groups (known as ‘interactive effects’) was assessed.

### 15.2 Overview of Effects and Mitigation

#### In-combination Effects

15.2.1 When the Proposed Development was considered alongside other developments **Significant** in-combination effects were predicted in relation to the following:

- Land Use: prime agricultural land – Effects on prime agricultural land were predicted when the Proposed Development was considered alongside other developments. The development of all these projects, which include other transmission projects, windfarms and residential developments, would collectively result in a loss of prime agricultural land which is considered to be **Significant**. Such effects would occur during construction; they would be permanent and cannot be mitigated.
- Forestry: woodland – Effects on woodland were predicted when the Proposed Development was considered alongside the other developments. The development of all these projects, which includes other transmission projects, windfarms and Battery Energy Storage System (BESS) developments, together would result in the loss of woodland during the construction phases which would be **Significant**.
- Landscape and Visual – Effects on both landscape and visual receptors were predicted when the Proposed Development was considered alongside the other developments. The development of all the projects would result in both construction and operation landscape and visual effects which would be **Significant**.
- Cultural Heritage – Effects on scheduled monuments were predicted when the Proposed Development was considered alongside other developments. **Significant** cumulative operational effects were predicted on the setting of four Scheduled Monuments and a potential cumulative effect on the setting of an additional Scheduled Monument.



**Landscape and Visual Cumulative Assessment of Proposed Development in the Emmock Substation Area<sup>23</sup>**

<sup>23</sup> The colour of the towers represents different projects that were included in the cumulative assessment.

### Interactive Effects

#### *Residential Properties (or Groups)*

15.2.2 Residential property groups closest to the Proposed Development's construction areas and access routes are likely to experience potentially **Significant** interactive effects. The construction programme would span up to five years and the effects from construction on local noise and traffic levels and visual amenity would vary throughout the programme depending on the construction phase. Overall, given the scale and duration of the construction programme, and the proximity of some residential properties to the Proposed Development's construction boundary, there is potential for construction interactive effects on the amenity of some people living in a number of residential property groups to be **Significant**, albeit for limited and discontinuous periods of time. The following effects were predicted to affect some people as follows:

- 33 communities would experience cumulative interactive visual, noise and traffic effects;
- 85 communities would experience cumulative interactive visual and traffic effects; and
- 3 communities would experience cumulative interactive visual and noise effects.

#### *Key Recreational Routes including Core Paths*

15.2.3 The users of some sections of key recreational routes, including Core Paths, may experience adverse cumulative interactive effects from the Proposed Development during construction from visual amenity and traffic related environmental effects together with physical effects where the alignment of recreational routes may need to be temporarily restricted with path diversions implemented. Some construction works would also generate noise which may further affect path users. Given the scale and duration of the construction programme and the number and location of the recreational routes there is potential for construction interactive effects from visual amenity and traffic to be **Significant** for some people albeit for limited periods of time.

#### *Accessible Watercourses*

15.2.4 Users of accessible watercourses may experience cumulative interactive effects from the Proposed Development during construction and operation. The key effects would be on people accessing watercourses for recreational fishing from exclusion zones under the OHL which would be established for safety reasons, from adverse visual amenity effects and potentially from some noise and other disturbance during construction. These effects would occur notably along the key rivers used for fishing such as the River Dee, River North Esk and River South Esk which are accessed by local communities, tourists and visitors to the region. Effects would be experienced during construction but would then continue into the operational phase of the Proposed Development for some users which may be **Significant**.

15.2.5 The following additional mitigation measure will be applied in order to reduce, as far as practically possible, cumulative effects:

- The Principal Contractors will appoint an Environmental Liaison Manager with specific responsibility to lead on managing, and wherever possible reducing, cumulative environmental effects (in-combination and interactive) during construction and liaising with local communities.

### **15.3 Summary**

15.3.1 Cumulative in-combination effects relating to Landscape and Visual during construction, and Land Use, Forestry, Landscape and Visual and Cultural Heritage during the operation of the Proposed Development are predicted to be **Significant**.

15.3.2 Cumulative interactive effects on some residential properties, some key recreational routes and some accessible watercourses from Visual, Noise and Traffic during construction from the Proposed Development are predicted to be **Significant**, effects on accessible watercourses would continue into the operational phase.

## 16. SUMMARY

16.1.1 Each technical Chapter in the EIAR identified the potential for Significant environmental effects from the construction or operation of the Proposed Development. The following types of mitigation measures were identified:

- **Embedded mitigation:** measures which are incorporated and inherent within the project's design;
- **Applied mitigation:** standard/best practice environmental management during construction; and
- **Additional mitigation:** bespoke measures identified from the EIA.

16.1.2 This NTS summarises the key mitigation measures which have been committed to by SSEN Transmission. The EIAR sets out full details in the Schedule of Mitigation along with details of the project stage to which the mitigation measures are relevant and the parties responsible for their implementation.

16.1.3 Following the application of embedded, applied and additional mitigation measures, residual adverse **Significant** effects are predicted to remain from the Proposed Development on some receptors for the following topics:

- Land Use and Prime Agricultural Land;
- Forestry;
- Landscape and Visual Amenity;
- Cultural Heritage;
- Cumulative - in-combination effects on Land Use and Prime Agricultural Land, Forestry, Landscape and Visual and Cultural Heritage; and
- Cumulative - interactive effects on some residential properties, some key recreational routes and some accessible watercourses from Visual, Noise and Traffic effects.

16.1.4 The Proposed Development is not predicted to have residual adverse Significant effects on:

- Ecology;
- Ornithology;
- Hydrology, Hydrogeology, Geology and Soils;
- Traffic and Transport; or
- Noise and Vibration.



Figure B: Proposed Development

