6.4 Habitat Regulations Assessment

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Appendix 6.4: Information to Inform Habitats Regulations Appraisal

1. Introduction

1.1 Background

AECOM Limited ('AECOM') was commissioned by SP Transmission to prepare an Information to Inform Habitats Regulations Appraisal in relation to proposals to construct a new substation and associated grid connections at a site in Kincardine (hereafter the 'Proposed Development'). A detailed description of the Proposed Development is available in Chapters 1-5 of this Environmental Impact Assessment Report (EIAR) (Volume 2 Main Report). In summary the separate elements of the Proposed Development are as follows:

- Construction of Kincardine North Substation including works to upgrade Hawkhill Road (referred to in this report as 'KINN' and 'Hawkhill Access Road Improvements' respectively);
- The upgrade and modification of three existing overhead lines: proposed XL Route Upgrade, proposed ZCN Route Upgrade and proposed ZCS Route Upgrade (referred to collectively in this EIAR as 'Overhead Line Works'); and
- Removal of existing 11kV wood pole overhead lines and replacement with 11kV underground cable and associated works (referred to in this EIAR as 'Scottish Power Distribution Works'.)

This appendix accompanies Chapter 6: Ecology of the EIAR. It describes the assessment of potential effects from the Proposed Development on Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites (collectively referred to as 'European sites'). Although presented as an appendix to the EIAR, this Information to Inform Habitats Regulations Appraisal (HRA) addresses separate legislative requirements, which relate solely to European sites. Further information on the legislative context is given in the following sections.

The location of the Proposed Development is shown on Figure 6.1. The area of land encompassing all temporary and permanent working areas is herein referred to in this report as the 'Site'. Where relevant, specific elements of the Proposed Development, for example the Kincardine North Substation, are discussed with respect to baseline results and impacts/effects.

1.2 Legislative context

Under The Conservation (Natural Habitats, & c.) Regulations 1994, herein referred to as the 'Habitats Regulations', a network of sites has been designated across Scotland for the purposes of nature conservation, comprising SAC and SPA. SACs are designated for the protection of habitats and non-avian animal species of conservation concern. SPAs are designated to protect rare or vulnerable species of bird, as well as certain regularly occurring migratory bird species.

Prior to the UK's exit from the European Union (EU), Scotland's SAC and SPA were part of a wider network of such sites known as the 'Natura 2000' network. They were consequently referred to as 'European sites'. Now that the UK has left the EU, Scotland's SACs and SPAs are no longer part of the Natura 2000 network but form part of a UK-wide network of designated sites referred to as the 'UK National Site Network'. However, it is current Scottish Government policy to retain the term 'European sites' to refer collectively to SAC and SPA (including any which are designated following the UK's exit from the EU) (Scottish Government, 2020).

The Habitats Regulations require that any plan or project which is not directly connected with or necessary to the conservation of a European site, and which is likely to have a significant effect on such a site, either alone or in-combination with other plans or projects, must be subject to an 'Appropriate Assessment' of the implications for the Conservation Objectives of that site. Generally, such proposals may only be approved if the 'Competent Authority' has ascertained, by means of an Appropriate Assessment, that there will be no adverse effect on the integrity of the European site(s). The procedure to be applied is known as an HRA[1].

In addition to fully designated European sites, the Habitats Regulations also apply to those sites in the earlier stages of the designation process, including:

- Sites of Community Importance (SCI);
- candidate Special Areas of Conservation (cSAC);
- possible/proposed Special Areas of Conservation (pSAC); and,
- potential/proposed Special Protection Areas (pSPA).

On 9 July 2025, the Minister for Public Finance and the Chief Planner issued a letter providing an update on Scottish Government's policy position on the protection of Ramsar sites (Scottish Government, 2025). This stated that, from the date of that letter, "*Scottish Government considers that listed Ramsar sites should be treated as if they were European sites for the purposes of land use change decision making. Compliance with this policy means that any plan or project which could affect a Ramsar site will involve undertaking a Habitats Regulations Appraisal to determine whether the proposal is likely to have a significant effect on the notified natural features of the site*". Ramsar sites have therefore also been considered as part of this Information to Inform HRA and these sites are assessed alongside the corresponding SACs/SPAs.

For the remainder of this document, the term 'European site' is used to refer to fully designated SACs, SPAs, and candidate, possible and proposed SACs/SPAs, SCI and Ramsar sites.

In the context of the Habitats Regulations, the Proposed Development constitutes a 'project'. Therefore, unless otherwise necessary, for example when considering in-combination effects, no further reference to plans is made.

The Competent Authority responsible for carrying out an HRA is the relevant consenting body for a particular plan or project – in this case Scottish Ministers under section 37 of the Electricity Act, and Fife Council and Clackmannanshire Council under the Town and Country

[1] In the past, the term 'Appropriate Assessment' has been used to describe both the overall process and a particular stage of that process. The term 'Habitat Regulations Appraisal' has come into use in order to refer to the process that leads to an Appropriate Assessment, thus avoiding confusion. Throughout this document, HRA is used to refer to the overall procedure required by the Habitats Regulations.

Planning Act. The Competent Authority is required to apply the Precautionary Principle[2] and can only grant consent once it has been ascertained that there will be no adverse effect on the integrity of the European site(s) concerned. However, the Habitats Regulations provide that, even if adverse effects on European site integrity are predicted, and in the absence of a suitable alternative solution, the project can still be carried forward for imperative reasons of over-riding public interest (IROPI). In such cases, compensatory measures must be implemented.

Although the UK is no longer part of the EU, a series of prior rulings of the Court of Justice of the European Union (CJEU) are relevant and must be considered when conducting HRA. Some of the rulings which are of relevance, and which have been considered when preparing this Information to Inform HRA, are described in NatureScot guidance (NatureScot, 2023; SNH, 2014; SNH, 2019).

As a consequence of the UK's exit from the EU, it was necessary for various amendments to be made to the Habitats Regulations. These changes were required to ensure that Scotland continues to maintain the same standard of protection afforded to European sites. The Habitats Regulations remain in force, including the general provisions for the protection of European sites and the procedural requirements to undertake HRA. The changes made were only those necessary to ensure that they remain operable following the UK's exit from the EU.

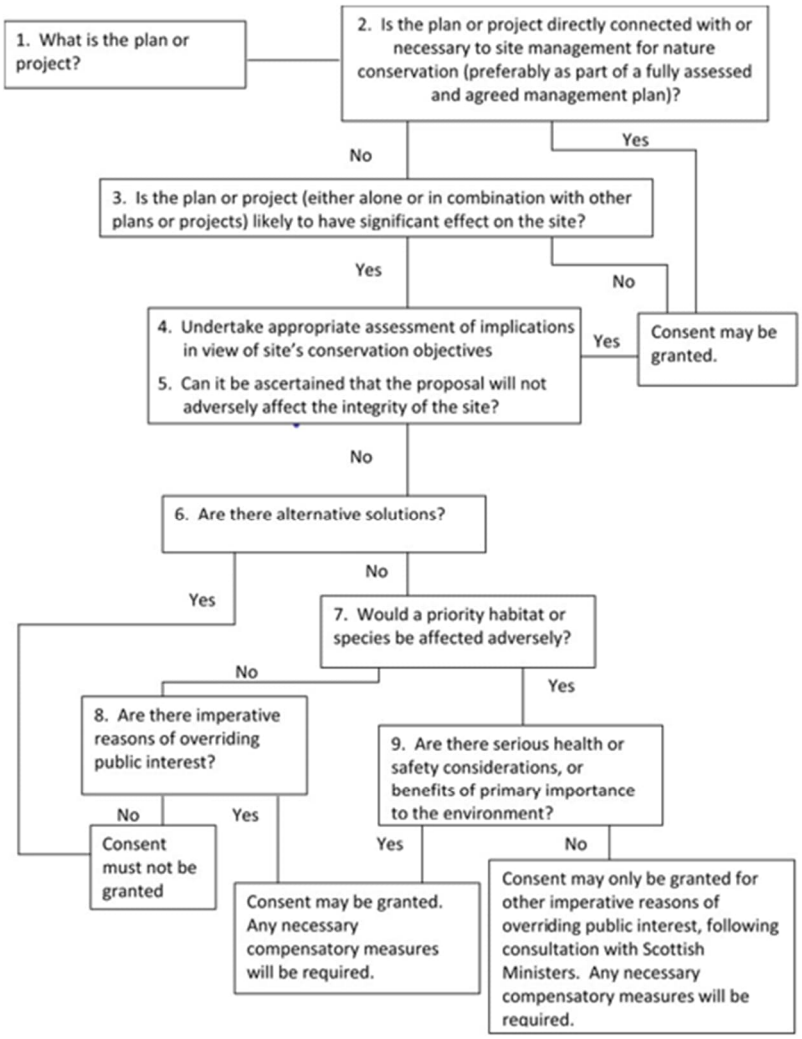
1.3 Overview of the HRA process

The Habitats Regulations set out a step-by-step sequence of statutory procedures to be followed when conducting an HRA. The steps are designed to test the potential effects of a project on a European site and must be followed in the correct and particular order.

NatureScot recommends an approach for HRA of plans and projects, which is outlined as a series of thirteen steps (NatureScot, 2023). However, with cognisance of case law clarifying when mitigation can be taken into account in the HRA process (People Over Wind and Sweetman v Coillte Teoranta (C-323/17)), this has been revised and a flow chart is provided on the NatureScot website, which is reproduced as **Diagram 1. Stages of the HRA process**. Further guidance published by NatureScot on HRA also sets out the methods for assessing whether plans or projects will affect a European site (SNH, 2014).

[2] The Precautionary Principle: the "*absence of scientific evidence on the significant negative effect of an action cannot be used as justification for the approval of this action. When applied to Article 6(3) procedure, the Precautionary Principle implies that the absence of a negative effect on [European] sites has to be demonstrated before a plan or project can be authorised. In other words, if there is a lack of certainty as to whether there will be any negative effects, then the plan or project cannot be approved",* taken from European Commission (2021).

Diagram 1. Stages of the HRA process (taken from NatureScot online guidance (NatureScot 2026a)



In accordance with the process recommended by NatureScot and relevant case law, the methodology for the HRA of a project can comprise four main activities:

- HRA Activity 1: Screening (including a 'likely significant effect' judgement);
- HRA Activity 2: Appropriate Assessment;
- HRA Activity 3: assessment of alternative solutions; and,
- HRA Activity 4: assessment of IROPI, where no alternative solutions exist and where adverse effects remain.

The first activity in the HRA process, as outlined above, is Screening, the purpose of which is to establish whether the project will have likely significant effects on a European site. For this purpose and as a result of case law 'likely' means 'possible' (Waddenzee (C-127/02)).

Should the HRA Screening stage not rule out the possibility for likely significant effects on the qualifying features of any European site then the second activity in the HRA process – Appropriate Assessment – will be required.

Appropriate Assessment considers in more detail the possibility of the impacts of a project identified at the HRA Screening stage as having likely significant effects resulting in adverse

effects on the integrity of the European sites, in view of the Conservation Objectives of those sites. It introduces to the assessment mitigation measures designed specifically to avoid adverse effects on European sites – the HRA Screening stage must be carried out without consideration of mitigation measures.

1.4 Purpose of this Report

Whilst the various steps involved in the assessment process must be carried out by a Competent Authority, consultants may provide the information that the Competent Authority needs to undertake an HRA. This Information to Inform HRA has therefore been written by AECOM to provide to the Scottish Government's Energy Consents Unit, and Fife Council and Clackmannanshire Council, in their role as Competent Authorities, with the information needed to determine whether the Proposed Development could have adverse effects on the integrity of any European site. It has been prepared with regard to best scientific knowledge and an examination of all of the potential impacts of the Proposed Development on European sites.

1.5 Quality assurance and statement of authority

This project has been completed in line with AECOM's Integrated Management System (IMS). The IMS places great emphasis on professionalism, technical excellence, and quality, as well as covering all aspects of environmental and Health and Safety management. All staff members are committed to establishing and maintaining our accreditation to the relevant international standards, including ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018. In addition, the IMS requires careful selection and monitoring of the performance of all sub consultants and contractor

The assessment was carried out by AECOM ecologists with experience in conducting such appraisals. All are members of the Chartered Institute of Ecology and Environmental Management (CIEEM) at the appropriate grade and adhere to their strict Code of Professional Conduct (CIEEM, 2025).

2. Methodology

2.1 Sources of guidance and data

This Information to Inform HRA has been prepared with cognisance of the following guidance published by the European Commission (EC) and NatureScot:

- *Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission, 2021);
- *Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (European Commission, 2019);
- *Natura Casework Guidance: How to consider plans and projects affecting Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)* (SNH, 2014);
- *Habitats Regulations Appraisal (HRA) of Local Development Plans (LDPs)* (NatureScot, 2023);
- *SNH Guidance Note. The handling of mitigation in Habitats Regulations Appraisal – the People Over Wind CJEU judgement* (SNH, 2019, updated 2025); and,

- *Habitats Regulations Appraisal (HRA) on the Firth of Forth – A Guide for developers and regulators* (NatureScot, 2024a).

Information on relevant European sites, including qualifying features, the latest assessed condition of those features, and the Conservation Objectives for each site was obtained from the NatureScot SiteLink website (NatureScot, 2026c).

2.2 Desk study and field survey

Desk study and targeted field survey were carried out to determine the baseline ecological conditions potentially relevant to this Information to Inform HRA. A description of the relevant methods is given under the following sub-headings, and the results which have been used to inform the assessment in this document are provided in **Section 4**.

Desk study

A desk study was undertaken to identify and obtain information on relevant European sites and to search for records of the qualifying species of such sites within 1 km of the Proposed Development. The desk study was carried out using the data sources detailed in **Table 1. Desk study data sources**[3].

Table 1. Desk study data sources

Data source	Date last accessed	Data obtained
NatureScot SiteLink website (https://sitelink.nature.scot/home)	December 2025	• Information on European sites within the Zone of Influence (ZoI) of the Proposed Development.
Fife Nature Records Centre	October 2024	• Records of protected and/or important species.
Mammal Society Species Hub (https://www.mammal.org.uk/species-hub/full-species-hub/discover-mammals/)	September 2024	• Information on protected and important mammals.
Marine Scotland Maps NMPI (https://marinescotland.atkinsgeospatial.com/nmpi/)	September 2024	• Atlantic salmon *Salmo salar* distribution in Scotland.
Scotland's Environment Map (https://map.environment.gov.scot/sewebmap/)	September 2024	• Obstacles to fish migration.
SEPA Water Classification Hub	September 2024	• Status of watercourses and standing waters.

[3] The desk study was carried out when initially writing up the results of field surveys in 2024. There have been no changes to statutory or non-statutory designated sites in the intervening period, however, it is possible additional records of protected and important species have been made in that time. Full survey limitations detailed in Appendix 6.1.

Data source	Date last accessed	Data obtained
(https://www.sepa.org.uk/data-visualisation/water-classification-hub/)		

Field survey

Non-breeding waterbird surveys and habitat surveys were carried out to inform potential impacts from the Kincardine North Substation with the area surveyed devised from the Red Line Boundary (RLB) of the scheme available at the time (excluding the Hawkhill Access Road Improvements).

Additionally, habitat surveys were undertaken along the XL Route Upgrade in 2024 to inform a Preliminary Ecological Appraisal (PEA) of earlier proposals. This data, alongside desk-based resources where relevant, is used to inform this assessment.

Habitat survey

Habitat surveys were carried out within the area of the Kincardine North Substation RLB plus a 25 m buffer on 15 and 16 April 2024 and of the XL Route Upgrade plus a minimum of 100 m on 8 and 9 July 2024 where access was possible and safe.

The surveys followed the Phase 1 habitat survey method (JNCC, 2010), by which all areas of land within the survey area are assigned standard habitat types and ecological notes are recorded. Notes were made for each habitat which reflect conditions at the time of survey. Typical and important/notable plants (including invasive non-native species) were recorded using the DAFOR (D=dominant; A=abundant; F=frequent; O=occasional; R=rare) scale, and relevant ecological characteristics were documented.

Non-breeding waterbird survey

Survey of non-breeding waterbirds[4] was carried out once per month from October 2023 to March 2024, inclusive, in areas of suitable habitat within the area of Kincardine North Substation RLB, plus a 500 m buffer. The surveys were stratified according to tide times (as given for Kincardine by the UK Hydrographic Office[5]) and focused on high and low tides, to investigate use of the area by birds under different tidal conditions. Where possible, surveys were carried out from one to two hours before, to one to two hours after the focal tide condition and comprised a similar number of high and low tide surveys. Details of the waterbird survey visits are provided in **Table 2. Non-breeding bird survey details**.

Table 2. Non-breeding bird survey details

Date	Tidal state	Tide time	Start time	End time	Weather
31 October 2023	High	09:13	08:13	11:00	No wind. Partly cloudy with excellent visibility. Temperature 6-9°C.

[4] The British Trust for Ornithology (BTO) define waterbirds as wildfowl (ducks, goose and swans), waders, rails, divers, grebes, cormorants, herons, gulls and terns. This BTO definition has been adopted in this Information to Inform HRA.
[5] https://easytide.admiralty.co.uk/.

Date	Tidal state	Tide time	Start time	End time	Weather
21 November 2023	Low	14:36	12:45	15:36	Force 1-2 south-westerly winds. Overcast but excellent visibility. Temperature 7-6°C.
11 December 2023	High	13:50	12:15	15:15	No wind. Partly cloudy with excellent visibility. Temperature 6°C.
15 January 2024	Low	10:25	09:25	12:30	Force 1-2 north-westerly winds. Clear skies and excellent visibility. Temperature -1 to 1°C.
07 February 2024	High	12:50	11:15	14:30	Force 2 westerly winds. Clear skies and excellent visibility. Temperature 5°C.
13 March 2024	Low	10:00	09:00	12:00	Force 2 south-westerly winds. Overcast and drizzly but excellent visibility. Temperature 9-10°C.

The surveys broadly followed the method adopted by the BTO for the national Wetland Bird Survey (WeBS) scheme[6], which itself is based on the 'look-see' method described in Bibby *et al* (2000). However, while the WeBS scheme does not involve the collection of any spatial data, the location of birds present within the survey area was recorded during the non-breeding waterbird surveys carried out for the Proposed Development.

Binoculars and a telescope were used to scan the fields within the survey area for birds from a single vantage point and then the surveyor drove around, stopping at suitable vantage points to scan the surrounding fields for birds. Intertidal habitat within the Firth of Forth SPA was not surveyed as it is sufficiently screened from the Proposed Development by woodland and the A876. All waterbirds encountered during the survey were counted and mapped. Gulls over-flying the survey area were not recorded.

3. Establishing the zone of influence

3.1 Approach

There is no pre-defined guidance on the physical scope of a HRA in all circumstances. When seeking to identify relevant European sites, consideration was therefore given primarily to potential impact pathways and the source-pathway-receptor approach, rather than adopting a purely 'zones'-based approach. The source-pathway-receptor model is a standard tool in environmental assessment. For an impact to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no possibility for an effect to occur. Furthermore, even where an impact is predicted to occur, it may not result in significant effects. It is also important to distinguish between an 'impact' and an 'effect'. An impact is defined as an action resulting in changes to an ecological feature, while an effect is the outcome to an ecological feature arising from an impact (CIEEM, 2018). For

[6] https://www.bto.org/our-science/projects/wetland-bird-survey/taking-part/core-counts-methods.

example, an impact may be the disturbance of a roost of wintering waders as a result of construction activities; the effect would be how the population or conservation status of the species disturbed by the works changes as a consequence.

The zone of influence (ZoI) of a project is the geographic extent over which ecological features may be affected by biophysical changes as a result of a project (CIEEM, 2018). The ZoI of a project will vary depending on the specifics of a particular proposal and must be determined on a case-by-case basis with reference to a variety of criteria, including:

- the nature, size/scale and location of the project;
- the connectivity between the project and European sites, for example through hydrological connections or because of the natural movement of qualifying species;
- the sensitivity of ecological features under consideration; and,
- the potential for in-combination effects.

There is no geographical limit beyond which European sites need not be considered by HRA of a project.

The process of determining which (if any) European sites are within the ZoI of the Proposed Development was therefore a progressive appraisal of the potential for each impact source which could arise from its construction and operation to affect the qualifying features of such sites. This process is set out in **Table 3. Establishing the zone of influence of the Proposed Development** and was conducted with cognisance of all of the impact sources described in the following section.

3.2 Potential sources of impact from the Proposed Development

Potential impacts scoped out of further assessment

In the event that the Proposed Development was no longer required and could be decommissioned then a Decommissioning Plan would be prepared and planning permission would be obtained if required in accordance with the relevant legislation in place at the time. The process of decommissioning would be similar to construction. Consequently, decommissioning is not specifically considered in this Information to Inform HRA, but the impacts would likely be the same as for the construction phase.

Electric and magnetic fields (EMF) are present wherever electricity is used and thus EMF are associated with all electricity transmission infrastructure. Electricity transmission substations and UGC/OHL, such as the Proposed Development, do not produce very large fields themselves (generally less than a microtesla). There are no recognised impacts on terrestrial wildlife from EMFs (Levitt et al, 2022 and Cucurachi *et al*, 2013). Fish species, particularly marine species, are potentially susceptible to EMFs although there is no evidence to suggest EMFs impede the movement/migration of freshwater fish (although empirical studies are limited). This Statement to Inform Habitats Regulations Appraisal therefore concludes that there will be no impact from EMF radiation on any ecological features except for freshwater fish as a result of the Proposed Development.

The Proposed XL Route Upgrade works, comprising the replacement of conductors, will not change the risk of bird collision with respect to the existing baseline as wire configuration and height will remain the same. As such bird collision mortality is scoped out as an operational impact for the XL Route Upgrade.

The Proposed ZCN and ZCS Route Upgrades could potentially result in an increase in bird mortality due to collision with the operational OHL infrastructure. This includes the new OHL tie-ins to Kincardine North Substation and the temporary diversions of the existing OHL. These proposed works, however, are located in an area crossed by three existing high voltage transmission lines. The tie-ins from these OHL would be short in lengths (approximately 200 m) and the temporary diversions would be situated directly adjacent to the existing OHL (adjacent sections of which would be removed, followed by temporary diversion). As such the Proposed ZCN and ZCS Route Upgrades would slightly modify the configuration of the existing OHLs but not introduce novel structures into the environment.

Birds using the area, therefore, would be expected to be habituated to the presence of OHL in the landscape. Based on these factors it is not anticipated that the Proposed ZCN and ZCS Route Upgrades would increase the risk of bird collision, with respect to the baseline. Additionally, the Scottish Power Distribution works will result in the removal of sections of distribution OHL in the vicinity of the Kincardine North Substation. As such, bird collision mortality during operation has been scoped out.

Notwithstanding the above, a number of impacts could arise from the construction and operation of the Proposed Development. A summarised description of each, and their potential relevance to the qualifying features of European sites, is given under the following sub-headings.

Direct loss of or damage to habitat[7] within a European site

Construction works which take place within or adjacent to the boundary of a European site could result in the damage or loss of habitat. In the case of the SACs, this may include habitat which is a qualifying feature of the designation. However, even where it is not a qualifying feature, for both SACs and SPAs, habitat which is damaged or lost could be essential to supporting the qualifying plant or animal species, or to the normal functioning of the site.

Loss of habitat outside of a European site which supports qualifying species

Habitat outside of the boundary of a European site, but which supports the qualifying species of such a site, is defined as being 'functionally-linked' to it. The ruling in the Holohan and Others v An Bord Pleanála case (C-461/17) concluded that the loss of functionally-linked habitat could result in significant effects on the qualifying features of a European site, if this prevented the site from meeting its Conservation Objectives.

This impact can only occur on mobile animal species which can occur outside of the European site for which they are designated. For several bird species in Scotland, NatureScot has published guidance on the distances up to which qualifying species may use functionally-linked habitat outside of European sites (SNH, 2016). The distances given in this guidance were used when searching for SPAs designated for birds which may be within the ZoI of the Proposed Development. Accordingly, a search radius of 6 km was used when searching for SPAs designated for breeding bird species, this being the 'core range' which encompasses the majority of species listed in the guidance (the search distance was extended to 10 km from the Proposed Development for diver species and osprey *Pandion haliaetus*). For SPAs designated for non-breeding birds, a search distance of 20 km from the Proposed Development was used, as this is given as the largest core foraging range for any species (non-breeding pink-footed goose *Anser brachyrhynchus* and greylag goose *Anser anser*).

[7] Including any qualifying plant species

For other mobile terrestrial, aquatic or amphibious animals for which SACs are designated in Scotland, the following distances were used when searching for sites which could be impacted by loss of functionally-linked habitat:

- otter *Lutra lutra* – studies quoted by Harris and Yalden (2008) suggest that the mean linear range size for four male otters in North East Scotland was 48 km. For one male in Perthshire the maximum range was 39 km and for another male in Suffolk the range was also 39 km. Female otters generally have smaller ranges, quoted by the same authors as being between 16-21 km. A buffer of 40 km, and only where there is direct hydrological connectivity to the Proposed Development, was used when searching for SACs designated for otter;
- all fish species – no set distance was used when considering potential impacts on fish species. Where a direct hydrological link exists between the Proposed Development and an SAC designated for fish species, it was considered that there could be impacts on these qualifying features;
- marsh fritillary *Euphydryas aurinia* – research has found that the average dispersal distance of male marsh fritillaries was 1.3 km, and up to 510 m for females (Wahlberg *et al*, 2002). On a precautionary basis, therefore, a distance of 1.5 km was adopted;
- great crested newt *Triturus cristatus* – it is generally considered that great crested newts can occur up to 500 m from breeding ponds (NatureScot, 2024b). Therefore, on the assumption that any SAC designated for this species would encompass all breeding ponds used by a meta-population, a buffer of 500 m surrounding the Proposed Development Site is sufficient to account for all terrestrial habitat which may be functionally-linked to these features.
- freshwater pearl mussel *Margaritifera margaritifera* is not a mobile species. However, it relies upon salmonid fish for part of its lifecycle. Therefore, in cases where a direct hydrological connection exists between the Proposed Development and an SAC designated for freshwater pearl mussel, the potential impacts on this species were considered.
- narrow-mouthed whorl snail *Vertigo angustior* is the qualifying species of a single SAC in Scotland, situated in Aberdeenshire, and Geyer's whorl snail *Vertigo geyeri* and round-mouthed whorl snail *Vertigo genesii* are qualifying features of one SAC located in central Scotland. These snails are not wide ranging and there is no possible pathway for impacts from the Proposed Development to affect either site. Therefore, they are not considered further in this Information to Inform HRA.

Disturbance and displacement of qualifying species

Construction and operational activities have the potential to cause disturbance of qualifying animal species. Disturbance can be caused visually (for example by the presence of personnel and plant, or as a result of artificial illumination of habitats) and/or by the noise and vibration generated by works. This could impact qualifying species when inside the boundary of a European site, or outside of a European site when using functionally-linked habitat. It could also have indirect effects, in the case of freshwater pearl mussel, if this impact had adverse effects on Atlantic salmon.

The potential for disturbance to be caused will depend on the location and nature of construction/operational activities, the distribution of the qualifying or supporting species, and the sensitivity of the species to noise and visual disturbance from human activities. However, where disturbance is caused, it can have multiple adverse effects on species, including increased energy expenditure, reduced feeding time, behavioural changes, and displacement.

Based on the published guidance referenced below, the following distances were used when considering how far construction and operational activities may disturb relevant qualifying/supporting species:

- otter – 200 m, in accordance with NatureScot guidance which suggests this distance for otter breeding sites, reduced to 30 m for resting sites not used for breeding (natal/ maternal) purposes (NatureScot, 2024c);
- non-breeding waterbirds – the Waterbird Disturbance Mitigation Toolkit (Cutts *et al*, 2013) provides species-specific information on the sensitivity of several bird species which are qualifying features of SPAs. However, it suggests that, in general, disturbance of non-breeding waterbirds, other than geese, can occur up to distances of around 300 m from construction works. Goodship and Furness (2022) list a potential disturbance distance of 500 m to 1 km for pink-footed goose and therefore this maximum distance has been used;
- breeding birds – 1 km, this being the maximum distance at which NatureScot guidance suggests that which disturbance could occur on the most sensitive species for which SPAs are designated (Goodship and Furness, 2022).

The Proposed Development is approximately 1 km from the upper Firth of Forth so there is no possibility of disturbing marine mammals.

Injury or mortality of qualifying species

The injury or mortality of qualifying species could occur where construction works take place within the boundary of a European site, or where the species in question may be using functionally-linked habitat outside of a European site boundary. When considering the latter possibility, the only relevant terrestrial or amphibious animal species which are sufficiently mobile to be at risk are otter, great crested newt, and marsh fritillary. These species could occur up to the distances set out in relation to loss of functionally-linked habitat (see **Section 3.2 Subsection: Direct loss of or damage to habitat within a European Site**).

Except where nesting, birds are not considered to be vulnerable to injury or mortality as a result of construction works as they are readily able to move away from works activities, and unlikely to be subject to road traffic collision.

Prevention of the migratory movements of qualifying species

The creation of permanent or temporary barriers in a watercourse (e.g. a new culvert), pollution of a watercourse, noise/visual disturbance or EMFs could all act to prevent the migratory movement of the qualifying fish species of SACs.

Although otter could be impacted by works in watercourses or waterbodies, this species is readily able to navigate overland. There is consequently no mechanism by which the Proposed Development could prevent the regular movements, including migration, of qualifying species other than fish.

The ZoI for this impact was therefore taken to be any SAC designated for fish species (or freshwater pearl mussel, which relies on Atlantic salmon, and other salmonids, for part of its lifecycle) for which a direct hydrological connection to the Proposed Development exists.

Changes to surface water or groundwater hydrology

Changes to surface water hydrology can occur as a result of engineering activities during the construction phase. For example, the construction of water crossings can change hydrological conditions within a watercourse. Abstraction of water (e.g. for use in dust suppression or other construction works) can also reduce water levels, as can changes to the existing flows of

surface water to a watercourse. These impacts can occur either within a European site or can impact the qualifying species of a European site if they pass through or occur within the relevant part of the watercourse. In the case of freshwater pearl mussel, if such impacts impacted Atlantic salmon or other salmonids, this could have indirect impacts on their productivity. Therefore, any European site with direct freshwater hydrological connectivity (i.e. not including marine sites) could be impacted by changes to surface water hydrology.

Changes to groundwater conditions can occur as a result of excavations or the installation of piled structures (for example by interrupting groundwater flows). Guidance published by the Scottish Environment Protection Agency (SEPA) suggests that such activities could impact on groundwater dependent terrestrial ecosystems (GWDTE) up to 100 m from excavations less than 1 m in depth, extending up to 250 m for deeper excavations (SEPA, 2024). Therefore, any European site within 250 m of the Proposed Development was considered to be within the potential ZoI of this impact.

Waterborne pollution

Construction and operational activities have the potential to pollute watercourses and/or waterbodies. These could themselves represent qualifying features of a European site, may be within a European site and support the qualifying features of that site, or may be outside of a European site but be functionally-linked to such a site if used by the qualifying animals. Waterborne pollution may arise through spillages of fuels, oils, chemicals or other pollutants, or from the uncontrolled released of sediment.

Waterborne pollution can degrade habitats and can lead to the direct mortality of qualifying species such as fish and freshwater pearl mussel. The distance over which such impacts could have effects would depend on the severity of the pollution. However, any European site which has a direct hydrological connection to the Proposed Development, but not including estuarine or marine designations (where a huge dilution effect on any pollution would occur from the massive volume of the sea), has the potential to be within the ZoI of this impact.

Airborne pollution

Airborne pollution could occur during the construction phase of the Proposed Development. Airborne pollution could impact on qualifying plant species and/or habitats, functionally-linked habitats, and/or species that depend on these.

Dust generated during construction activities can directly impact vegetation or aquatic environments, and can indirectly impact animal species (for example where these habitats are used by them for foraging). During extended periods of dry weather, dust can cover plant foliage and adversely affect photosynthesis or other biological functions. Rainfall can then remove deposited dust and rapidly leach chemicals into the soil. Guidance published by the Institute of Air Quality Management (IAQM) advises that the impacts of construction-related air quality impacts are likely to be 'low' beyond a distance of 50 m (IAQM, 2024). Any European site within 50 m of the Proposed Development was therefore considered to be within the ZoI for dust-related air quality impacts.

Vehicles and plant which operate via internal combustion engines emit airborne pollutants. The most important of these for European sites are oxides of nitrogen (NOx). At close distances to source, NOx can have a directly toxic effect on vegetation at very high concentrations. However, likely to be of greater concern is the contribution NOx makes to the deposition of nitrogen to soils. Increases in nitrogen deposition from the atmosphere can, if sufficiently great, enhance soil fertility and lead to eutrophication.

This can have adverse effects on community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats (Wolseley *et al*, 2006; Dijk, 2011; Air Pollution Information Service (APIS)[8]). Both the IAQM and the Design Manual for Roads and Bridges (DMRB) advise that such impacts are only likely to extend to a maximum of 200 m from a road (or works area), and that air pollution levels fall sharply within the first few tens of metres (IAQM, 2019; Highways England *et al*, 2019). Consequently, a ZoI extending to 200 m from the Proposed Development was used for air quality impacts arising from emissions from construction vehicles and machinery.

Spread of invasive non-native species

Invasive non-native species can have detrimental effects on native flora and fauna. The construction and operation of the Proposed Development is unlikely to result in the spread of any non-native animal species.

However, construction activities have the potential to cause the spread of invasive non-native plant species. Where works take place near to a European site, this could introduce such species to the site and have impacts on habitats and species. It has been assumed that the spread of invasive non-native plants could occur where construction works take place up to a distance of 50 m from a European site, or where there is otherwise a direct hydrological connection between the Proposed Development and a European site (not including marine sites).

3.3 European sites within the zone of influence

With cognisance of the impact sources described above, the ZoI for the Proposed Development was determined, and all the European sites within the ZoI were identified. This is set out in **Table 3. Establishing the zone of influence of the Proposed Development**. This step in the appraisal did not seek to determine the magnitude of any impact nor the potential significance of any effect, but was focussed solely on identifying where a source-pathway-receptor linkage may exist.

Not all impacts will have pathways for effects on the qualifying features of all European sites within the ZoI. Consequently, some sites may be within the ZoI for certain impacts, but not for others.

Eight European sites were determined to potentially be within the ZoI of the Proposed Development (listed below in order of increasing distance from the Site):

- Firth of Forth SPA and Ramsar site – 245 m west of the Site;
- River Teith SAC - 13.5 km northwest of the Site;
- Slamannan Plateau SPA - 14.5 southwest of the Site;
- Loch Leven SPA and Ramsar site - 18 km northeast; and
- South Tayside Goose Roosts SPA and Ramsar site - approximately 20 km northwest of the Site.

The locations of these sites are shown on Figure 6.2 within Chapter 6 Ecology (Volume 2 Main Report). Further details on each European site, including their qualifying features and Conservation Objectives, are given in **Annex A**.

[8] https://www.apis.ac.uk/search-pollutant-impacts.

As stated, simply because a European site was identified to be within the ZoI of the Proposed Development does not necessarily mean that it would be subject to impacts which are sufficient to give rise to likely significant effects. However, establishing the ZoI in this way allows for those European sites which needed to be included in the HRA to be robustly identified.

Table 3. Establishing the zone of influence of the Proposed Development

Impact source	Pathway(s) to European site(s)	European sites within the ZoI
Construction phase		
Direct loss of or damage to habitat within a European site	The direct loss of or damage to habitat within the boundary of a European site is only possible where the Proposed Development lies within or immediately adjacent to an SAC or SPA. On a precautionary basis, any European site within 50 m of the Proposed Development was considered to be sufficiently close that there is a risk of direct damage or loss of habitat. The closest European site to the Proposed Development (Firth of Forth SPA) is approximately 550 m to the southwest and, at this distance, there is no possibility of construction activities causing the direct loss of, or damage to, habitat within this site or any other European Site. The potential for other impacts to result in the indirect loss of habitat from within a European site is considered elsewhere in this table.	None.
Loss of functionally-linked habitat	On a precautionary basis, and in accordance with NatureScot guidance (SNH, 2016), an initial worst-case ZoI of 6 km from the Proposed Development was used when searching for SPAs designated for breeding birds (this being extended to 10 km for diver species and osprey) when considering the loss of functionally-linked habitat. A search distance of 20 km was used when searching for SPAs designated for non-breeding waterbirds. The following distances were used when searching for the mobile qualifying species of SACs: • otter – 40 km (only where a direct hydrological connection exists); • marsh fritillary – 1.5 km; • great crested newt – 500 m. When considering fish species and freshwater pearl mussel, the ZoI was considered to include any watercourse which has a direct hydrological connection to the Site.	• Firth of Forth SPA and Ramsar site • River Teith SAC • Slamannan Plateau SPA • South Tayside Goose Roosts SPA and Ramsar site • Loch Leven SPA and Ramsar site

Impact source	Pathway(s) to European site(s)	European sites within the ZoI
Disturbance and displacement of qualifying species	Disturbance of qualifying animal species could arise when they occur within the boundary of a European site, or when using functionally-linked habitat outside the of the boundary of a European site. The potential ZoI for this impact was therefore considered to be the distances relevant to the loss of functionally-linked habitat above, plus the following distances within which qualifying species are vulnerable to disturbance: • breeding birds – a maximum distance of 1 km; • non-breeding waterbirds – 1 km; and • otter – 200 m.	• Firth of Forth SPA and Ramsar site • River Teith SAC • Slamannan Plateau SPA • South Tayside Goose Roosts SPA and Ramsar site • Loch Leven SPA and Ramsar site
Injury or mortality of qualifying species	On a precautionary basis, and in accordance with NatureScot guidance (SNH, 2016), an initial worst-case ZoI of 6 km from the Proposed Development was used when searching for SPAs designated for breeding birds. Such breeding birds could use habitat in the ZoI and be subject to this impact pathway. Other animal species may be vulnerable to injury or mortality during the construction phase. This could occur where works take place within a European site boundary (or within 50 m of the boundary of an SAC, on a precautionary basis), or if these species occur in functionally-linked habitat away from a European site.	• River Teith SAC
Prevention of migratory movements of qualifying species	Construction activities taking place in or near/over a watercourse have the potential to disrupt the migratory movements of fish species either through the creation of physical barriers, or as a result of disturbance (caused, for example, by noise/vibration/lighting generated during works). The ZoI for this impact was therefore taken to be any SAC designated for fish species, or for freshwater pearl mussel (which rely on salmonids for part of their lifecycle), for which a direct hydrological connection to the Proposed Development exists.	• River Teith SAC
Changes to surface water or groundwater hydrology	During the construction phase, any site crossed by, adjacent to (i.e. within 50 m) or with a direct downstream hydrological connection to the Proposed Development could be impacted by changes	None.

Impact source	Pathway(s) to European site(s)	European sites within the ZoI
	to surface water hydrology (with the exception of marine sites, which are not vulnerable to impacts on surface water hydrology which could occur on minor watercourses within or near the Site only). Any terrestrial European site within 250 m of the Proposed Development could be impacted by changes to groundwater conditions.	
Waterborne pollution	Any European site directly crossed by or adjacent to (taken to mean within 50 m of) the Proposed Development has the potential to be impacted by waterborne pollution. Any other site which has a direct downstream hydrological connection to the Proposed Development (but not including estuarine or marine sites) could also be impacted by pollution affecting habitats or aquatic species.	None.
Airborne pollution	All European sites (with the exception of estuarine and marine sites which are not vulnerable to airborne pollution[9]) within 200 m of the Site were considered at this stage to be within the ZoI of this impact.	None.
Spread of invasive non-native species	The spread of invasive non-native plants could occur where construction works take place up to a distance of 50 m from a European site, or where there is otherwise a direct downstream hydrological connection between the Proposed Development and a European site (not including entirely marine sites, which are not vulnerable to this impact). Construction activities do not have the potential to cause the spread of invasive non-native animals.	• Firth of Forth SPA and Ramsar site
Operational Phase		
Direct loss of or damage to habitat within a European site	There is no mechanism by which operation of the Proposed Development could result in the direct loss of, or damage to, habitat within the boundary of a European site.	None.
Loss of functionally-linked habitat	There is no mechanism by which operation of the Proposed Development could result in a loss of, or damage to, functionally-linked habitat outside of the boundary of a European site.	None.

[9] http://www.apis.ac.uk/node/968.

Impact source	Pathway(s) to European site(s)	European sites within the ZoI
Disturbance and displacement of qualifying species	The intensity of activities during the operational phase of the Proposed Development will be considerably lower than during the construction phase. However, the presence of personnel and vehicles has the potential to cause disturbance of qualifying bird and animal species, Consequently, the ZoI of this impact is considered to be the same as for the construction phase, described above.	• Firth of Forth SPA and Ramsar site • River Teith SAC • Slamannan Plateau SPA • South Tayside Goose Roosts SPA and Ramsar site • Loch Leven SPA and Ramsar site
Injury or mortality of qualifying species	The potential for an increase in bird collision mortality associated with the OHL project elements has been scoped out as detailed in Section 3.2 There are no other mechanisms by which operation of the Proposed Development could cause injury or mortality of qualifying species.	None.
Prevention of migratory movements of qualifying species	Any permanent lighting, or lighting used for maintenance activities, could illuminate watercourses used by qualifying fish species in functionally-linked habitat, and this could in theory prevent migratory movements of these species. EMFs emitted by UGC which pass under watercourses could potentially inhibit the movement of fish species. There will not be sufficient noise/vibration caused by operational activities which could cause disturbance/displace fish species or prevent migratory movements.	River Teith SAC
Changes to surface water or groundwater hydrology	Operation of the Proposed Development will have no impacts on surface water or groundwater hydrology.	None.
Waterborne pollution	The likelihood of operational activities resulting in pollution of surface water is much reduced compared to construction. However, for the purposes of setting the ZoI, it is considered that this will be the same as for the construction phase.	None.

Impact source	Pathway(s) to European site(s)	European sites within the ZoI
Airborne pollution	Operation of the Proposed Development will generate negligible emissions to air, as a result of maintenance activities only, and there is no possibility of this having effects on qualifying or supporting habitats of any European site.	None.
Spread of invasive non-native species	There is also no mechanism by which the operation of the Proposed Development could cause the spread of invasive non-native plant or animal species.	None.

4. Baseline conditions

4.1 Habitats

The following is a summary of the habitats recorded during the field survey, sufficient for the purposes of this Information to Inform HRA. Further details on the habitats present can be found in **Chapter 6: Ecology** and Figure 6.4 (Volume 2 Main Report).

XL Route Upgrade Area

Habitats along the XL Route Upgrade largely comprise arable fields and improved pastures. Some woodland habitat (and successive habitats that establish following clear felling) are present peripherally within the habitat study area, where there are parcels of long-established plantation woodland. The field south of XL016 is less intensely managed and damp, in places, with localised gorse *Ulex europaeus* scrub.

Kincardine North Substation Area

The habitat study area around the Kincardine North Substation is dominated by arable crops and improved pastures; except along the railway and at the edge of the neighbouring industrial land where there are strips of scrub, woodland, and unmanaged neutral grassland. There is one pond present in the far northern part of the study area with transitional swamp habitat around the margins, and a heavily modified watercourse flows through the western part of the study area.

4.2 Non-breeding waterbirds

Desk study records

The desk study identified records of 52 important bird species within 1 km of the Proposed Development, provided by Fife Nature Records Centre. Of these, the following five species are qualifying features of the SPAs within the ZoI of the Proposed Development (see **Annex A**):

- bar-tailed godwit *Limosa lapponica*;
- curlew *Numenius Arquata*;
- golden plover *Pluvialis apricaria*;
- greylag goose; and,
- lapwing *Vanellus vanellus*.

Field survey

Pink-footed goose and curlew were the only target species recorded during non-breeding waterbird surveys carried out between October 2023 and March 2024. Flocks of pink-footed goose and curlew were observed foraging within the Kincardine North Substation RLB during high and low tide; both species are qualifying features of the Firth of Forth SPA. Curlew were regularly recorded during field surveys, whereas pink-footed goose were only recorded in early 2024.

Details of field survey results are provided in **Table 4**. **Non-breeding bird survey results** and Figure 6.6 (Volume 3) shows where target birds were observed foraging on the ground.

Table 4. Non-breeding bird survey results

Survey month	Tidal state	Species	Number of birds present*	Location and proximity to the Kincardine North Substation RLB
October 2023	High	Curlew	40	In an adjacent field to the southwest of the OHL tower works. Approximately 40 m west of the Kincardine North Substation RLB.
November 2023	Low	Curlew	44 + 5	Both flocks were in fields adjacent to the OHL tower works (one where planning for Kincardine Grid Services Complex has been approved) and another approximately 100 m to the north.
		Herring gull	2	In an arable field, approximately 500 m west of the OHL tower works.
December 2023	High	Curlew	10 + 4 + 9	All flocks were in adjacent fields, west of the OHL tower works.
January 2024	Low	No target species recorded.		
February 2024	High	Curlew	150 + 12 + 5	All flocks were in fields west of the OHL tower works. The closest flock was approximately 350 m distant.
		Pink-footed goose	200	In an arable field approximately 700 m west of the OHL tower works, on the banks of the Firth of Forth.
March 2024	Low	Pink-footed goose	200 + 145	All birds present in the main arable fields overlapping the OHL tower works.

* Numbers presented are flock sizes. Where multiple numbers are given, more than one flock of the species was present within the survey area.

Peak numbers of curlew and pink-footed goose observed during one survey visit was 49 (in November 2023) and 345 (in March 2024) respectively which represents approximately 1.3% and 2.3% of the Firth of Forth SPA populations when considering the latest population estimates (see **Annex A**).

4.3 Fish

A summary of the baseline conditions for fish is provided in this section due to the potential connectivity with the River Teith SAC. Information was gathered through desk study and an evaluation of watercourses on Site during the habitat surveys.

No records of fish were identified during the desk study; however, migrating Atlantic salmon are present within the River Forth and Firth of Forth, downstream of the Canal Burn, according to Marine Scotland's NMPI. The Canal Burn and unnamed tributary therefore are considered unsuitable for most notable fish species (including Atlantic salmon and lamprey species) for the following considerations:

- there is a high frequency of obstacles to migration (especially the numerous culverts);

- water quality is poor and was observed to be both slightly brackish and with evidence of iron oxide deposits;
- substrate is likely soft which does not offer suitable spawning habitat; and
- there is a lack of connectivity to suitable spawning habitat upstream (if present).

There are no watercourses which overlap the XL Route upgrade area.

5. Test of likely significant effects

5.1 Overview

This section assesses the potential for the identified construction and operational phase impacts, for which pathways to European sites exist, to have likely significant effects on those sites. Natural England (2018) summarises case law on the meaning of likely significant effects, as follows:

- an effect is 'likely' if it "*cannot be excluded on the basis of objective information*"; and,
- an effect is 'significant' if it "*is likely to undermine the conservation objectives*" of a European site.

While use of the Precautionary Principle, as defined in European Commission (2021), sets the threshold for 'likely' to be quite low, the Court of Justice of the European Union (CJEU) ruled in the Boggis judgement that there should be "*credible evidence that there was a real, rather than hypothetical risk*" (Court of Appeal case C1/2009/0041/QBACF Citation No [2009] EWCA Civ. 1061).

The test of likely significant effects in this section is necessarily a high-level appraisal, with a precautionary approach adopted when reaching a conclusion.

The significance of effects should be determined in relation to the specific features and environmental conditions of the European site concerned, taking particular account of the site's Conservation Objectives and ecological characteristics (European Commission, 2019).The nature of the likely interactions between the Proposed Development and the integrity of a European site will depend upon: the sensitivity of the European site's qualifying features to potential impacts arising from the project; the current conservation status of the European site and its qualifying features; and, any likely changes to key environmental indicators (e.g. water quality) that underpin the conservation status of European sites and their qualifying features, in combination with other plans and projects.

The purpose of HRA Screening is to determine those elements of a project regarding which it can be stated, without detailed appraisal, that significant effects on a European site are unlikely. In line with case law (People Over Wind and Sweetman v Coillte Teoranta (C-323/17)), consideration cannot be given at this stage to specific mitigation measures designed to avoid significant effects on a European site. However, NatureScot has published guidance on the handling of mitigation when carrying out HRA (SNH, 2019). NatureScot advises that, although mitigation designed specifically to avoid significant effects on the qualifying features of a European site cannot be referred to at the HRA Screening stage, it is reasonable to consider the 'intrinsic elements' of a development, including those which can be regarded as 'good practice' or 'best practice' for development of that type.

Standard good practice works methods which would be adopted by the Proposed Development, regardless of the presence of European sites, would include the implementation of pollution prevention measures following NetRegs Guidance on Pollution Prevention (GPP) (NetRegs (2025)). Furthermore, under the Wildlife and Countryside Act 1981 (the 'WCA'), it is an offence in Scotland to cause any animal or plant to spread or grow in the wild outside of its native range. Appropriate biosecurity measures will therefore also be implemented during works carried out during the construction and operational phases to prevent the spread of invasive non-native species. Such measures would be set out in a Biosecurity Management Plan, Construction Method Statement, and/or other similar document(s).

All watercourse crossings installed by the Proposed Development will be designed so as to be passable to aquatic animals. SEPA (2025) guidance on the design of watercourse crossings will be followed, as well as other relevant guidance, to ensure that this is achieved. There will consequently be miniscule loss of aquatic habitat.

5.2 Impacts excluded from appraisal

On the basis of the initial assessment described in **Table 3. Establishing the zone of influence of the Proposed Development**, and considering NatureScot's guidance on the handling of mitigation in HRA and the 'intrinsic elements' of the Proposed Development described in Section 5.1, the following possible impacts have been excluded from further appraisal because there is clearly no potential for them to occur:

During the construction phase:

- direct loss of or damage to habitat within the boundary of a European site;
- changes to surface water or groundwater hydrology;
- waterborne pollution;
- airborne pollution; and
- spread of invasive non-native species.

During the operational phase:

- direct loss of or damage to habitat within the boundary of a European site;
- loss of functionally-linked habitat;
- injury or mortality of qualifying species;
- changes to surface water or groundwater hydrology;
- waterborne pollution;
- airborne pollution; and,
- spread of invasive non-native species.

5.3 Screening assessment

For each European site, the construction and/or operational phase impacts for which that site was determined to be within the ZoI of the Proposed Development are examined in **Table 5 to Table 9** for their potential to result in likely significant effects on the qualifying features.

Information on each European site relevant to the test of likely significant effects, including the list of qualifying features, Conservation Objectives, and known existing threats or pressures,

was obtained from NatureScot SiteLink website. A summary of this information for each European site is presented in **Annex A**.

Table 5. HRA Screening assessment for Firth of Forth SPA and Ramsar site

Impact source	Potential effects	Potential for likely significant effects?
Loss of functionally-linked habitat	The only qualifying species of Firth of Forth SPA recorded within the Site was pink-footed goose. Curlew, which is also a qualifying species, was recorded within the wider survey area, as close as approximately 5 m to the Site. Both species forage in agricultural grassland and/or arable fields during the non-breeding season (Woodward *et al*, 2015). According to the citation document[10], the population of pink-footed goose within Firth of Forth SPA is 10,852 birds. The maximum count of this species recorded by non-breeding bird surveys within the Site was 345, spread between two flocks. This would therefore represent approximately 3.2% of the Firth of Forth SPA pink-footed goose population. Although no curlew were recorded using the Site during the non-breeding bird surveys, the habitat within it is similar to that in the surrounding fields, within which curlew were recorded. It is therefore considered to be suitable for this species, and it is possible that the Site could be used by curlew for foraging. Based on the flock sizes recorded in the fields around the Site, it is possible that this could involve numbers representing more than 1% of the Firth of Forth SPA population. Within this area foraging habitat for these species could be permanently lost during the construction of the Kincardine North Substation and associated ZCN and ZCS Route Upgrades. Works associated with the Proposed AL Route Upgrade and Scottish Power Distribution works would result in the temporary loss of suitable foraging habitat for these species with habitats expected to recover in the short-term following works (e.g. one growing season). Given the confirmed use of the Site by pink-footed goose, and the potential for curlew to also occur, both in numbers representing more than 1% of the respective SPA populations, likely significant effects resulting from loss of functionally-linked habitat cannot be excluded at this stage. All other qualifying species are considered likely absent or only present infrequently and/or in low numbers	**Yes (curlew and pink-footed goose)**
Disturbance and displacement of qualifying species	As detailed above pink-footed goose and curlew were recorded during the wintering bird surveys within suitable foraging habitat within or adjacent to the Kincardine North Substation RLB. While no surveys were undertaken across the Proposed XL Route Upgrade, suitable foraging habitat in this area could be used by pink-footed goose associated	**Yes (curlew and pink-**

[10] https://sitelink.nature.scot/site/8499.

Impact source	Potential effects	Potential for likely significant effects?
	with the SPA[11]. The Waterbird Disturbance Mitigation Toolkit (Cutts *et al*, 2013) suggests that a 300 m disturbance distance from construction works is appropriate for curlew and Goodship and Furness (2022) lists a maximum disturbance distance of 1 km for Pink-footed goose. As such it is considered that works associated with the Proposed Development could potentially disturb these species within the above distances. With the exception of the flocks of pink-footed goose recorded within the Site, only one other flock of this species was recorded by surveys. This was approximately 500 m from the Site and therefore beyond the distance at which disturbance is considered to be a possibility. Nonetheless, pink-footed goose may use adjacent fields and those immediately across the A876 from the Proposed Development where disturbance would be possible. Curlew were recorded in fields immediately adjacent to the Site, with a flock of 44 birds present in November 2023. According to the citation document, the population of curlew within Firth of Forth SPA is 1,928 birds. This flock would therefore represent approximately 2.2% of the SPA curlew population. Although larger flocks were recorded, and within 300 m of the Site, these were all situated to the west of the busy A876 road, which would almost certainly act as a screen against disturbance from construction activities. Given the presence of flocks of curlew representing more than 1% of the Firth of Forth SPA population well inside the distance at which construction-related disturbance is considered to be possible, and the likely presence of pink-footed goose in the same fields, likely significant effects as a result of disturbance/displacement cannot be excluded at this stage. All other qualifying species are considered likely absent or only present infrequently and/or in low numbers	**footed goose)**
Operational Phase		
Disturbance and displacement of qualifying species	During operation of the Kincardine North Substation the infrequent presence of personnel, potentially with plant and machinery, could cause disturbance/displacement of birds, but is likely to happen so rarely that it would not significantly affect pink-footed goose using habitats in the area. However, and as stated in NatureScot guidance on HRA on the Firth of Forth (NatureScot, 2024a), wildlife can also be subject to displacement without disturbance, for example due to the presence of new objects and/or infrastructure. The	**Yes (curlew and pink-footed goose)**

[11] Pink-footed goose could potentially forage within 20 km of roost sites in the SPA. For other species these distances are considerably shorter, typically no more than 2 km.

Impact source	Potential effects	Potential for likely significant effects?
	Kincardine North Substation will be positioned in the centre of the field encompassed by the RLB. This location must be used to enable the OHLs to be turned into the new substation. Pink-footed goose and curlew require some line of sight when foraging, in order to detect predators. It is very likely that the presence of the substation, with surrounding security fencing, will make the Site effectively unsuitable for both pink-footed goose and curlew through displacement effect. For the same reasons as set out in relation to the construction phase, therefore, at this stage, likely significant effects cannot be excluded for pink-footed goose and curlew. All other qualifying species are considered likely absent or only present infrequently and/or in low numbers	

Table 6. HRA Screening assessment for River Teith SAC

Impact source	Potential effects	Likely significant effects?
Loss of functionally-linked habitat	The River Teith SAC is approximately 13.5 km northwest of the Proposed Development and is hydrologically connected via the River Forth and Firth of Forth. However, this SAC lies upstream of the confluence of the Firth of Forth and the Canal Burn (which flows through the Site). The watercourses within and around the Site comprise agricultural drainage ditches which are very shallow and densely vegetated and/or polluted (for example from agricultural run-off). They are unsuitable for the qualifying fish species of the River Teith SAC (Atlantic salmon, river lamprey *Lampetra fluviatilis*, brook lamprey *Lampetra planeri* and sea lamprey *Petromyzon marinus*), which require good water and substrate quality (especially in spawning areas) (e.g. NatureScot, 2026b; Hendry and Cragg-Hine, 2003). There is consequently no possibility of a loss of functionally-linked habitat having significant effects on this European site.	No
Disturbance and displacement of qualifying species	As described above, due to lack of suitable habitat, there is no possibility of the qualifying fish species of the River Teith SAC occurring in the vicinity of construction works, and therefore no potential for disturbance/displacement.	No

Impact source	Potential effects	Likely significant effects?
Injury or mortality of qualifying species	As described above, there is no possibility of the qualifying fish species of the River Teith SAC occurring in the watercourses to be crossed by the Proposed Development.	No
Prevention of migratory movements of qualifying species	As described above, there is no possibility of the qualifying fish species of the River Teith SAC occurring in the watercourses to be crossed by the Proposed Development.	No
Operational Phase		
Disturbance and displacement of qualifying species	As described above, there is no possibility of the qualifying fish species of the River Teith SAC occurring in the watercourses to be crossed by the Proposed Development.	No
Prevention of migratory movements of qualifying species	As described above, there is no possibility of the qualifying fish species of the River Teith SAC occurring in the watercourses to be crossed by the Proposed Development.	No

Table 7. HRA Screening assessment for Slamannan Plateau SPA

Impact source	Potential effects	Likely significant effects?
Loss of functionally-linked habitat	The sole qualifying feature of Slamannan Plateau SPA is non-breeding Taiga bean goose *Anser fabalis*. This species was not recorded during non-breeding bird surveys. The distribution of the Taiga bean goose population associated with Slamannan Plateau SPA is relatively well understood (for example as a consequence of research on satellite tagged birds) and is restricted to areas within and immediately surrounding the SPA boundary. It is highly unlikely that birds from Slamannan Plateau SPA, 14.5km southwest of the Site, would occur within or near to the Site and there will be no loss of functionally-linked habitat as a result of the construction of the Proposed Development.	No

Disturbance and displacement of qualifying species	As described in the row above, it is highly unlikely that Taiga bean goose associated with Slamannan Plateau SPA would occur in the vicinity of the Site, and there is no possibility of construction works causing disturbance/displacement.	No
Operational Phase		
Disturbance and displacement of qualifying species	As described above.	No

Table 8. HRA Screening assessment for Loch Leven SPA and Ramsar site

Impact source	Potential effects	Likely significant effects?
Loss of functionally-linked habitat	Loch Leven SPA and Ramsar site is designated for a range of over wintering waterbirds including pink-footed goose, which are considered to have core foraging ranges of up to 20 km from sites for which they are qualifying features (SNH, 2016). The EIA boundary is located approximately 18.0 km from SPA/Ramsar site at its closest point, and therefore at the very upper limit of the core foraging range of this species. Based on the foraging distribution provided in Mitchell (2012) the core foraging areas for pink-footed goose are located within approximately 10 km of the SPA. As such birds recorded during the surveys, or those which may use habitat on or adjacent to the Proposed XL Route Upgrade, are unlikely to be connected to this SPA.	No
Disturbance and displacement of qualifying species	As stated above pink-footed goose from the SPA are unlikely to use foraging areas on or near the Site.	No
Operational Phase		
Disturbance and displacement of qualifying species	As described above.	No

Table 9. HRA Screening assessment for South Tayside Goose Roosts SPA and Ramsar site

Impact source	Potential effects	Likely significant effects?
Loss of functionally-linked habitat	South Tayside Goose Roosts is designated for non-breeding greylag goose and pink-footed goose, which are considered to have core foraging ranges of up to 20 km from sites for which they are qualifying features (SNH, 2016). The EIA boundary is located approximately 20 km from South Tayside Goose Roosts SPA and Ramsar site at its closest point, and therefore at the very upper limit of the core foraging range of these species. Greylag goose was not recorded during field surveys but was identified in the desk study. Pink-footed goose were recorded during the non-breeding bird surveys in February and March 2024. Based on the foraging distribution provided in Mitchell (2012) the core foraging areas from this SPA are to the northeast of the SPA and directly to the southwest. As such birds recorded during the surveys, or those which may use habitat on or adjacent to the Proposed XL Route Upgrade, are unlikely to be connected to this SPA.	No
Disturbance and displacement of qualifying species	As stated above, greylag goose and pink-footed goose from the SPA are unlikely to use foraging areas on or near the Site.	No
Operational Phase		
Disturbance and displacement of qualifying species	As described above.	No

5.4 In-combination assessment

There is no requirement to consider in-combination effects during the screening stage as no effects, other than those concluded to be likely significant effects (and therefore already screened in), were identified

5.5 HRA Screening conclusion

The appraisal set out in this section of this Information to Inform HRA excluded the possibility of likely significant effects from the Proposed Development, either alone or in-combination with other plans or projects, on six European sites which were initially identified as potentially being within the ZoI: River Teith SAC, Slamannan Plateau SPA, South Tayside Goose Roosts SPA and Ramsar site and Loch Leven SPA and Ramsar site.

However, likely significant effects on two of the qualifying features of Firth of Forth SPA and Ramsar site – pink-footed goose and curlew – could not be excluded. This European site has therefore been taken forward to the Appropriate Assessment stage, in respect of these two qualifying species only.

6. Appropriate Assessment

6.1 Overview

The HRA Screening stage described in **Section 5** could not exclude the potential for likely significant effects on two of the qualifying species of Firth of Forth SPA and Ramsar site (pink-footed goose and curlew) as a result of the construction and operation of the Proposed Development. Therefore, the potential for there to be adverse effects on the integrity of these sites was 'screened in' for detailed Appropriate Assessment. This section describes the Appropriate Assessment stage.

6.2 Firth of Forth SPA

Site description

Firth of Forth SPA is a multi-part site, encompassing a complex of estuarine and coastal habitats between Alloa and the Fife and East Lothian coasts. The site includes extensive invertebrate-rich intertidal flats and rocky shores, areas of saltmarsh, lagoons and sand dune. The total area of the site is stated in the citation document as being 6,317.93 ha. The Firth of Forth SPA is situated approximately 245 m southwest of the Proposed Development at its closest point.

The SPA is designated for a number of non-breeding waterbird species, including pink-footed goose and curlew, both of which were recorded by field surveys carried out for the Proposed Development.

The Conservation Objectives for Firth of Forth SPA are:

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.

- To ensure for the qualifying species that the following are maintained in the long term:
  - Population of the species as a viable component of the site.
  - Distribution of the species within site.
  - Distribution and extent of habitats supporting the species.
  - Structure, function and supporting processes of habitats supporting the species.
  - No significant disturbance of the species.

Pink-footed goose

The most up to date SPA population of pink-footed goose is 15,098 individuals (Stroud *et al*, 2016). According to the species account for the Firth of Forth region given in Woodward *et al* (2015), winter numbers of pink-footed goose have increased, in line with national trends for this species. The distribution of pink-footed goose within both the Inner Forth (where the Proposed Development lies) and Outer Forth is stated by Woodward *et al* (2015) to be "*locally numerous*". Pressures which may act on the species within and around the SPA relate to changes in agricultural practice, and the fact that pink-footed goose is a quarry species for hunters.

Mitchell (2012) identifies areas known to be used by foraging pink-footed goose associated with Firth of Forth SPA. It highlights that there are two important feeding areas within the Firth of Forth region, one around Skinflats, near Grangemouth (approximately 5.5 km from the Proposed Development) and one around Aberlady, East Lothian (approximately 55 km from the Proposed Development). In relation to the birds associated with Skinflats, Mitchell (2012) states that feeding is concentrated near to the firth around Clackmannan and upstream, towards Stirling, with records in the vicinity of the Proposed Development. However, the feeding distribution of pink-footed goose associated with Skinflats (and more widely with the rest of the Firth of Forth SPA) shown in Mitchell (2012) is extremely wide, covering a large area of the Inner Forth Valley, and the agricultural lands of Fife and East Lothian.

Curlew

The most up to date SPA population of curlew is 3,740 individuals (Stroud *et al*, 2016). According to the species account for the Firth of Forth region given in Woodward *et al* (2015), winter numbers of curlew have been variable, but has increased from a citation population of 1,928 individuals. The population trend for curlew is stated to be similar to that being seen elsewhere in Scotland, and the data suggest that conditions within the Firth of Forth remain relatively favourable for curlew with the population status listed by NatureScot as 'favourable maintained'. The distribution of curlew within both the Inner Forth (where the Proposed Development lies) and Outer Forth is stated by Woodward *et al* (2015) to be "*widespread, numerous*".

Disturbance caused by recreational activities, particularly dog walking, is identified as a negative pressure acting on curlew within the Firth of Forth area.

6.3 Firth of Forth Ramsar site

The boundary of the Firth of Forth Ramsar site is coincident with the Firth of Forth SPA.

The Ramsar site is designated for a number of non-breeding waterbird species, including pink-footed goose and curlew, both of which were recorded by field surveys carried out for the Proposed Development.

Conservation objectives for the Ramsar site align with the objectives for Firth of Forth SPA (see Section 6.2).

As pink-footed goose and curlew are also qualifying features of the coincident SPA, population numbers and use of the Ramsar site by these species are consistent with those described in Section 6.2.

6.4 Loss of functionally-linked habitat

Pink-footed goose

Pink-footed goose occur in a broad range of habitat types during the non-breeding season, including saltmarsh, estuaries and agricultural land, which can be improved or fertilised grasslands, stubble fields, pastures and newly sown cereal fields (Bird Life International, 2025). The species therefore has relatively non-specific habitat requirements, and the habitat that can be used is extremely widespread across the Forth Valley, Fife and East Lothian.

The only suitable foraging habitat permanently lost as a result of the Proposed Development would be associated with the Kincardine North Substation and adjacent tower footprints of the ZCN and ZCS Route Upgrades. The area of the KINN Site is approximately 35.8 ha. Although not within the boundary of Firth of Forth SPA, for context, this would represent less than 1% of the total area of that European site. This percentage would be substantially smaller still when taken relative to the area of suitable habitat available to pink-footed goose within the wider landscape outside of the SPA boundary.

As stated in Woodward *et al* (2015) and Mitchell (2012), pink-footed goose have a very wide foraging distribution, both within the Firth of Forth SPA, and more extensively across the Forth Valley, Fife and East Lothian. In particular, the distribution maps shown in Mitchell (2012) illustrate that this species forages over a very large area, and, although SPA birds do occur within and around the Site, more important foraging areas exist some distance away, in particular at Skinflats and Aberlady.

Conditions within and surrounding Firth of Forth SPA are considered to be favourable for pink-footed goose, with the latest assessed condition of the qualifying feature being Favourable Maintained, and Woodward *et al* (2015) stating that the population has increased since designation of the European site.

The loss of a single small field which, although used by SPA birds, is highly unlikely to be of particular importance to this species, is therefore extremely unlikely to prevent the Conservation Objectives of the site being met. It is therefore concluded that **there will be no adverse effect on the integrity of Firth of Forth SPA and Ramsar site due to loss of functionally-linked habitat used by pink-footed goose due to the construction of the Proposed Development**.

Curlew

Curlew occur in a range of habitats during the non-breeding season, including rocky shores, mudflats, saltmarshes, mussel beds, and fields adjacent to coastal areas[12]. No curlew were observed within the EIA boundary during surveys carried out for the Proposed Development, but flocks were present in fields surrounding the Kincardine North Substation (see **Figure 6.6**). This includes fields adjacent to the A876 road, both on the same side of the road as the Proposed Development and the opposite side. The largest flock of curlew were recorded in a field immediately adjacent to the estuary. The only suitable foraging habitat permanently lost as a result of the Proposed Developed would be associated with the Kincardine North Substation and adjacent tower footprints of the ZCN and ZCS Route Upgrades. While no curlews were recorded in this area the habitat present is similar to adjacent areas where they were recorded.

The results of the field surveys therefore show that a number of different fields are used by curlew in the vicinity of the EIA boundary. More widely, there is likely to be abundant similar locations which are suitable and remain available for use by curlew, even considering their relatively small home range. For example, Woodward *et al* (2015) states that the species is both numerous and widespread within the Firth of Forth SPA. As a qualifying feature of the SPA, curlew is also assessed as being in Favourable Maintained condition.

Consequently, the loss of a single small field, which may be used on occasion by SPA birds, is very unlikely to prevent the Conservation Objectives of the site being met. It is therefore concluded that **there will be no adverse effect on the integrity of Firth of Forth SPA and Ramsar site due to loss of functionally-linked habitat used by curlew due to the construction of the Proposed Development**.

6.5 Disturbance and displacement of qualifying species

Pink-footed goose

Construction Phase

Construction activities have the potential to disturb pink-footed goose up to a maximum distance of 1 km from works (Goodship and Furness, 2022) for the duration of the construction program, which could span four non-breeding seasons for the Kincardine North Substation. Two flocks of pink-footed goose were recorded within the Kincardine North Substation RLB and therefore birds using these areas would likely be subject to disturbance/displacement. However, the only other observation of pink-footed goose was a flock approximately 500 m distant, which is less likely to subject to disturbance impacts.

There are existing sources of anthropogenic disturbance immediately surrounding the Kincardine North Substation site, which would likely serve to 'screen' the surrounding fields from construction activities: the A876 road to the west, an industrial site to the north, and a railway line and the A977 road to the east. To the south there is mature woodland which would provide visual and noise screening to any birds occurring southwards.

Works associated with the Proposed XL Route upgrade, which is distant from the main concentration of works associated with the Kincardine North Substation, would be of shorter

[12] https://curlewlife.org/2021/11/what-do-curlew-do-in-the-winter-months.

duration and be undertaken over a maximum of one non-breeding season (across approximately 3 months).

As stated above in relation to loss of functionally-linked habitat, there is abundant alternative habitat which could be used by pink-footed goose. Therefore, even if disturbance and/or displacement were to occur, it would impact birds over a relatively small area and would not prevent pink-footed goose from having access to sufficient foraging land.

It is therefore concluded that **there will be no adverse effect on the integrity of Firth of Forth SPA and Ramsar site due to disturbance/displacement of pink-footed goose as a result of the construction of the Proposed Development**.

Operational Phase

Due to the presence of the new substation, and in particular the surrounding security fencing and landscape planting, a degree of displacement of foraging pink-footed goose is likely to occur from remaining potentially suitable habitat within the RLB following construction. It is therefore assumed that all land within Kincardine North Substation RLB will be lost to pink-footed goose during the operational phase, even though the footprint of the new substation is considerably smaller than this.

However, displacement effects due to the presence of the new infrastructure and landscape planting, or from operational activities, are not expected to occur over a wider area than this, due to the presence of existing disturbance sources in all directions around the Site (the A876 road to the west, the industrial site to the north, the railway line and A977 to the east, and woodland (which is avoided by pink-footed goose) to the south).

Consequently, and for the same reasons as described for loss of functionally-linked habitat, **there will be no adverse effect on the integrity of Firth of Forth SPA and Ramsar site due to disturbance/displacement of pink-footed goose during the operational phase of the Proposed Development**.

Curlew

Construction Phase

Construction activities have the potential to disturb curlew up to a distance of around 300 m from works (Cutts *et al*, 2013) for a maximum of four non-breeding seasons. No curlew were recorded in the main fields within the Kincardine North Substation RLB, however flocks of up to 44 birds were recorded in fields immediately to the west. Birds were observed foraging in close proximity to the A876 road, without apparent disturbance from passing vehicles.

If disturbance and/or displacement of curlew from these fields were to occur, there will remain abundant alternative, suitable and undisturbed habitat in the wider area beyond 300 m from the Proposed Development. This includes the field to the southwest, adjacent the firth, in which the largest recorded flock of curlew (150 birds) was observed during non-breeding bird surveys. Curlew would be unlikely to use habitats on or adjacent to the Proposed XL Route upgrade due to the distance from the SPA.

Therefore, even if disturbance and/or displacement were to occur, it would impact birds over a relatively small area and would not prevent curlew from having access to sufficient foraging land to meet the SPA Conservation Objectives.

It is therefore concluded that **there will be no adverse effect on the integrity of Firth of Forth SPA and Ramsar site due to disturbance/displacement of curlew as a result of the construction of the Proposed Development**.

Operational Phase

As described for pink-footed goose, it has been assumed that the presence of the Proposed Development will effectively displace curlew from the entirety of the Kincardine North Substation RLB during its operational lifetime. However, curlew were recorded in fields immediately west of the Proposed Development, including close to the A876 road. This and other habitat in the surrounding area will remain available and, at approximately 50 m from the edge of the new substation, is likely to be sufficiently far from the Proposed Development such that displacement impacts are not expected.

Consequently, and for the same reasons as described for loss of functionally-linked habitat, **there will be no adverse effect on the integrity of Firth of Forth SPA and Ramsar site due to disturbance/displacement of curlew during the operational phase of the Proposed Development**

6.6 In-combination assessment

As stated in **Section 5.4**, cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2018). A search was carried out as detailed in Chapter 2 of the EIA Report of other plans and projects which could lead to the permanent loss of functionally-linked habitat used by pink-footed goose and/or curlew, or the disturbance/displacement of these species. Identifying development occurring in the part of the Inner Forth nearest the Kincardine North Substation was considered sufficient for determining whether there could be in-combination effects. The impacts of the Proposed XL Route upgrade are relatively minor and development across the wider Forth area is very unlikely to add significant effects not identified by this assessment.

Therefore, only schemes within 1 km of the Kincardine North Substation were searched for, as this would identify particular pressure on the qualifying species in a concentrated area. Of the schemes identified in Chapter 2 the following could result in the permanent loss of potentially suitable foraging habitat, i.e. agricultural land, for pink-footed goose and curlew:

- Kincardine Grid Services Complex (ECU00003326)
- Kilbagie Battery Energy Storage System (ECU00005240)
- Meadowend Battery Energy Storage System (BESS) (ECU00005178)

Owing to the lack of detailed baseline information relating to habitat used by waterbirds for many of the above schemes, a precautionary approach to cumulative assessment has been adopted and all potentially suitable habitat within the application boundaries of the above projects is assumed to be used for foraging. Therefore, at most, the above schemes increase permanent loss of foraging habitat in proximity to the Firth of Forth SPA and Ramsar site by approximately 50 ha. However, development along this section of the Forth Valley is clustered around already developed land, with large expanses of agricultural fields remaining unaffected (e.g. approximately 600 ha of open agricultural fields immediately west of the A876). Within the search area stated above, the combined loss of 90 ha accounts for a loss of

less than 4% of the suitable foraging habitat. In the wider area, similar habitats are abundant along the River Forth.

Although the additive impact of these various developments more than doubles the magnitude of habitat loss from the Proposed Development alone, the extent is still at a very small scale in the wider environment. Furthermore, as the schemes are highly localised around already developed areas, the largest areas of alternative suitable habitat in the wider landscape will remain undisturbed. It is therefore concluded that **there will be no adverse effect on the integrity of Firth of Forth SPA and Ramsar site due to loss of functionally-linked habitat used by pink-footed goose or curlew due to the combined habitat loss of all identified schemes and the Proposed Development**. **Similarly, there will be no adverse effect on the integrity of Firth of Forth SPA and Ramsar site due to disturbance/displacement of pink-footed goose or curlew due to the combined impacts of the Proposed Development and the schemes identified above.**

7. Conclusion

Eight European sites were determined to be within the potential zone of influence of the Proposed Development:

- Firth of Forth SPA and Ramsar site;
- River Teith SAC;
- Slamannan Plateau SPA;
- South Tayside Goose Roosts SPA and Ramsar site; and
- Loch Leven SPA and Ramsar site

Likely significant effects on the qualifying features of River Teith SAC, Slamannan Plateau SPA, South Tayside Goose Roosts SPA and Ramsar site and Loch Leven SPA and Ramsar site were excluded during the HRA Screening stage. However, it was not possible to exclude the possibility of likely significant effects on two of the qualifying features of Firth of Forth SPA and Ramsar site: pink-footed goose and curlew due to impacts from disturbance and displacement during construction.

Following an examination of the effects this Information to Inform HRA concluded that **the Proposed Development will not result in adverse effects on the integrity of any European site, either alone or in-combination with other projects or plans**.

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Annex A Information on relevant European sites

Below are details of the European sites which were established through this Information to Inform HRA to be within the Zone of Influence of the Proposed Development.

All information provided below is taken from NatureScot sitelink[Error! Bookmark not defined.] unless otherwise stated. Population estimates for the Special Protection Areas are taken from the Joint Nature Conservation Committee (JNCC) third SPA Review. Populations for notified species of the underlying Ramsar sites are assumed to mirror their respective SPAs as up to date population estimates specific to Ramsar sites are not available. All population estimates listed are based on counts of individuals unless otherwise stated.

Firth of Forth SPA

Date of designation: 30 October 2001

Local planning authority: East Lothian (primary), City of Edinburgh, Clackmannanshire, Falkirk, Fife, Marine Scotland (inshore), Stirling, West Lothian

Total area: 6,317.93 ha

Qualifying features [Population and latest assessed condition]:

- Bar-tailed godwit [1,312; Favourable Maintained]
- Common scoter *Melanitta nigra* [1,393; Unfavourable Declining]
- Cormorant *Phalacrocorax carbo* [615; Favourable Maintained]
- Curlew [3,740; Favourable Maintained]
- Dunlin *Calidris alpina* [5,853; Favourable Declining]
- Eider *Somateria mollissima* [5,298; Favourable Declining]
- Golden plover *Pluvialis apricaria* [2,664; Unfavourable Declining]
- Goldeneye *Bucephala clangula* [768; Unfavourable Declining]
- Great crested grebe *Podiceps cristatus* [113; Unfavourable Declining]
- Grey plover [396; Favourable Declining]
- Knot *Calidris canutus* [3,752; Unfavourable Declining]
- Lapwing [4,717; Favourable Declining]
- Long-tailed duck *Clangula hyemalis* [193; Unfavourable Declining]
- Mallard *Anas platyrhynchos* [1,115; Favourable Declining]
- Oystercatcher *Haematopus ostralegus* [7,212; Favourable Maintained]
- Pink-footed goose [15,098; Favourable Maintained]
- Red-breasted merganser *Mergus serrator* [336; Unfavourable Declining]
- Red-throated diver *Gavia stellata* [87; Favourable Maintained]
- Redshank *Tringa totanus* [4,898; Favourable Maintained]
- Ringed plover *Charadrius hiaticula* [619; Favourable Maintained]
- Scaup *Aythya marila* [40; Unfavourable Declining]
- Shelduck *Tadorna tadorna* [3,343; Favourable Maintained]
- Slavonian grebe *Podiceps auratus* [29; Unfavourable Declining]
- Turnstone *Arenaria interpres* [854; Favourable Maintained]
- Velvet scoter *Melanitta fusca* [652; Favourable Maintained]
- Wigeon *Anas penelope* [1,976; Favourable Maintained]
- Waterfowl assemblage [Favourable Maintained]
- Sandwich tern *Sterna sandvicensis* [1,243; Favourable Maintained]

Conservation objectives:

1. To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.
2. To ensure for the qualifying species that the following are maintained in the long term:
   - Population of the species as a viable component of the site.

Firth of Forth SPA

- Distribution of the species within site.
- Distribution and extent of habitats supporting the species.
- Structure, function and supporting processes of habitats supporting the species.
- No significant disturbance of the species.

Existing threats, pressures, and activities with impacts on the site:

The main threats to the qualifying features for Firth of Forth SPA are recreational activities and disturbance, including dog walking, and climate change. Other negative pressures include game and fisheries management (including fishing and harvesting aquatic resources), changes in biotic conditions (water quality) and other natural events.

Firth of Forth Ramsar site

Date of designation: 30 October 2001

Local planning authority: East Lothian (primary), City of Edinburgh, Clackmannanshire, Falkirk, Fife, Marine Scotland (inshore), Stirling, West Lothian

Total area: 6,317.93 ha

Qualifying features [and latest assessed condition]:

- Bar-tailed godwit [Favourable Maintained]
- Common scoter [Unfavourable Declining]
- Cormorant [Favourable Maintained]
- Curlew [Favourable Maintained]
- Dunlin [Favourable Declining]
- Eider [Favourable Declining]
- Golden plover [Unfavourable Declining]
- Goldeneye [Unfavourable Declining]
- Great crested grebe [Unfavourable Declining]
- Grey plover [Favourable Declining]
- Knot [Unfavourable Declining]
- Lapwing [Favourable Declining]
- Long-tailed duck [Unfavourable Declining]
- Mallard [Favourable Declining]
- Oystercatcher [Favourable Maintained]
- Pink-footed goose [Favourable Maintained]
- Red-breasted merganser [Unfavourable Declining]
- Red-throated diver [Favourable Maintained]
- Redshank [Favourable Maintained]
- Ringed plover [Favourable Maintained]
- Sandwich tern [Favourable Maintained]
- Scaup [Unfavourable Declining]
- Shelduck [Favourable Maintained]
- Slavonian grebe [Unfavourable Declining]
- Turnstone [Favourable Maintained]
- Velvet scoter [Favourable Maintained]
- Wigeon [Favourable Maintained]
- Waterfowl assemblage [Favourable Maintained]

Conservation objectives:

1. To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.
2. To ensure for the qualifying species that the following are maintained in the long term:
   - Population of the species as a viable component of the site.

Firth of Forth Ramsar site

- Distribution of the species within site.
- Distribution and extent of habitats supporting the species.
- Structure, function and supporting processes of habitats supporting the species.
- No significant disturbance of the species.

Existing threats, pressures, and activities with impacts on the site:

The main threats to the qualifying features for Firth of Forth Ramsar site are recreational activities and disturbance, including dog walking, and climate change. Other negative pressures include game and fisheries management (including fishing and harvesting aquatic resources), changes in biotic conditions (water quality) and other natural events.

River Teith SAC

Date of designation: 17 March 2005

Local planning authority: Stirling

Total area: 1,289.33 ha

Qualifying features [and latest assessed condition]:

- Atlantic salmon [Unfavourable Recovering]
- Brook lamprey [Favourable Maintained]
- River lamprey [Favourable Maintained]
- Sea lamprey [Unfavourable Declining]

Conservation objectives:

1. To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained, and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features.
2. To ensure for the qualifying species that the following are maintained in the long term:
   - Population of the species, including range of genetic types for salmon, as a viable component of the site.
   - Distribution of the species within site.
   - Distribution and extent of habitats supporting the species.
   - Structure, function and supporting processes of habitats supporting the species.
   - No significant disturbance of the species.

Existing threats, pressures, and activities with impacts on the site:

<u>Atlantic salmon</u>

May be impacted by a range of pressures in the freshwater and marine phases of their lifecycle. In the freshwater environment these pressures may include, amongst others: loss of habitat connectivity, habitat degradation, climate change-related changes to surface water temperature and hydrology. In River Teith SAC the main negative pressures on Atlantic salmon are forestry operations, invasive species and water quality.

<u>Brook, river, and sea lamprey</u>

Habitat degradation is one of the key factors affecting brook, river and sea lamprey. They require clean, well oxygenated water and suitable substrates to use as spawning and nursery habitats. Activities such as river engineering or poor catchment management that could result in these habitats being damaged or removed could affect them. Indirect

River Teith SAC

unwanted effects such as the smothering of habitat with fine material as a result of eutrophication could also affect lamprey. The main negative pressures affecting the brook, river, and sea lamprey population in River Teith SAC are forestry operations, water management and water quality.

Slamannan Plateau SPA

Date of designation: 09 October 2008

Local planning authority: North Lanarkshire

Total area: 590.91 ha

Qualifying features [Population and latest assessed condition]:

- Taiga bean goose [276; Favourable Maintained]

Conservation objectives:

1. To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.
2. To ensure for the qualifying species that the following are maintained in the long term:
   - Population of the species, including range of genetic types for salmon, as a viable component of the site.
   - Distribution of the species within site.
   - Distribution and extent of habitats supporting the species.
   - Structure, function and supporting processes of habitats supporting the species.
   - No significant disturbance of the species.

Existing threats, pressures, and activities with impacts on the site:

Changes in farming practices have reduced the availability of suitable habitat for foraging bean goose within Slamannan Plateau SPA. No other significant pressures on the SPA population have been identified.

South Tayside Goose Roosts SPA

Date of designation: 22 April 1993

Local planning authority: Perth and Kinross

Total area: 332.17 ha

Qualifying features [Population and latest assessed condition]:

- Greylag goose [186; Unfavourable declining]
- Pink-footed goose [11,725; Unfavourable Declining]
- Waterfowl assemblage [Favourable Declining]
- Wigeon [16 pairs; Condition Not Assessed][13]

Conservation objectives:

[13] Population listed is cited population as species not listed for SPA in Third SPA Review

South Tayside Goose Roosts SPA

1. To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.
2. To ensure for the qualifying species that the following are maintained in the long term:
   - Population of the species as a viable component of the site.
   - Distribution of the species within site.
   - Distribution and extent of habitats supporting the species.
   - Structure, function and supporting processes of habitats supporting the species.
   - No significant disturbance of the species.

Existing threats, pressures, and activities with impacts on the site:

The main negative pressures within South Tayside Goose Roosts SPA are climate change, forestry operations, proactive on-site management, recreational / disturbance and under grazing. Other threats that could impact the site include renewable abiotic energy use, changes in biotic conditions and other forms of pollution.

South Tayside Goose Roosts Ramsar site

Date of designation: 22 April 1993

Local planning authority: Perth and Kinross

Total area: 332.17 ha

Qualifying features [and latest assessed condition]:

- Greylag goose [Unfavourable declining]
- Pink-footed goose [Unfavourable Declining]
- Waterfowl assemblage [Favourable Declining]
- Wigeon [Condition Not Assessed]

Conservation objectives:

1. To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.
2. To ensure for the qualifying species that the following are maintained in the long term:
   - Population of the species as a viable component of the site.
   - Distribution of the species within site.
   - Distribution and extent of habitats supporting the species.
   - Structure, function and supporting processes of habitats supporting the species.
   - No significant disturbance of the species.

Existing threats, pressures, and activities with impacts on the site:

The main negative pressures within South Tayside Goose Roosts SPA are climate change, forestry operations, proactive on-site management, recreational / disturbance and under grazing. Other threats that could impact the site include renewable abiotic energy use, changes in biotic conditions and other forms of pollution.

Loch Leven SPA

Date of designation: 27 March 2000

Local planning authority: Perth and Kinross

Total area: 1611.29ha

Qualifying features [Population and latest assessed condition]:

- Cormorant [177; Favourable maintained]
- Gadwall Anas strepera [340; Favourable maintained]
- Goldeneye [442; Favourable maintained]
- Pink-footed goose [15,992; Favourable maintained]
- Pochard *Aythya ferina* [2,528; Favourable maintained]
- Shoveler *Anas clypeata* [192; Favourable maintained]
- Teal [4,340; Favourable maintained]
- Tufted duck *Aythya fuligula* [3,742; Favourable maintained]
- Whooper swan *Cygnus cygnus* [202; Favourable maintained]
- Waterfowl assemblage [Favourable maintained]

Conservation objectives:

1. To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.
2. To ensure for the qualifying species that the following are maintained in the long term:
   - Population of the species as a viable component of the site.
   - Distribution of the species within site.
   - Distribution and extent of habitats supporting the species.
   - Structure, function and supporting processes of habitats supporting the species.
   - No significant disturbance of the species.

Existing threats, pressures, and activities with impacts on the site:

None listed

Loch Leven Ramsar Site

Date of designation: 27 March 2000

Local planning authority: Perth and Kinross

Total area: 1611.29ha

Qualifying features [Population and latest assessed condition]:

- Cormorant [Condition Not Assessed]
- Gadwall Anas strepera [Condition Not Assessed]
- Goldeneye [Condition Not Assessed]
- Pink-footed goose [Favourable maintained]
- Pochard *Aythya ferina* [Condition Not Assessed]
- Shoveler *Anas clypeata* [Favourable maintained]
- Teal [Condition Not Assessed]
- Tufted duck *Aythya fuligula* [Condition Not Assessed]
- Whooper swan *Cygnus cygnus* [Condition Not Assessed]

Loch Leven Ramsar Site

- Waterfowl assemblage [Favourable maintained]
- Eutrophic Loch [Unfavourable recovering]

Conservation objectives:

1. To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.
2. To ensure for the qualifying species that the following are maintained in the long term:
   - Population of the species as a viable component of the site.
   - Distribution of the species within site.
   - Distribution and extent of habitats supporting the species.
   - Structure, function and supporting processes of habitats supporting the species.
   - No significant disturbance of the species.

Existing threats, pressures, and activities with impacts on the site:

None listed