Chapter 13: Terrestrial Ecology

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13.1 Introduction

This chapter presents the results of an Ecological Impact Assessment (EcIA) of the NorthConnect HVDC project. The purpose of this EcIA is to: describe the potential effects of the development on the non-avian, terrestrial nature conservation interests of the Site and its immediate environs; assess their significance; and identify appropriate mitigation and good practice methods to protect the nature conservation interests. Related ecological chapters are: Chapter 17, which presents the EcIA for avian features of the Site, and Chapters 14-16 presents the EcIA for the marine nature conservation interests of the Site. The assessment concentrates predominantly on the construction phase of the onshore cabling, as once installed there will be no, or minimal effects during operation. Decommissioning has been scoped out of the assessment, but the impacts would be expected to be similar to those during construction, the effects will be determined by the ecological status at the time of decommissioning.

For the purpose of this EcIA, the Site is detailed in Drawings NCFFS-NCT-X-XG-0001-01and includes the red line application boundary for the HVDC cable corridor from the Converter Station located at 'Fourfields' grid reference NK119 412), to the HDD landfall site at Long Haven (NK 121 399).

The survey areas for ecological components extend beyond the Site boundary to include an ecologically relevant buffer. The survey area for habitats is detailed in Drawing 3155 in Appendix D.4, and for protected mammals in Drawing 3199 in Appendix D.1. This chapter encompasses potential impacts on: terrestrial mammals (otter *Lutra lutra*, water vole *Arvicola amphibious*, and badger *Meles meles*), and the vegetation within the Site. Other terrestrial fauna, for example bats, amphibians and reptiles, were scoped out of this EIA as no significant effects were expected, following previous survey work (Atmos Consulting, 2014).

This chapter is supported by five appendices:

- D.1: Technical Report: Otter, Water vole and Badger survey (Tracks Ecology, 2017b);
- D.2: Extended Phase 1 Habitat Survey (Atmos Consulting, 2014);
- D.3: Time Lapse Camera Otter Survey Report (NorthConnect, 2017);
- D.4: Technical Report: HVDC Route NVC Survey (Tracks Ecology, 2017c); and
- D.5: Longhaven Cliffs SWT Nature Reserve NVC Survey (Tracks Ecology, 2017a)

This EcIA presents baseline information, anticipated impacts from both construction and operation, mitigation and residual impacts, as well as considering associated cumulative impacts.

13.1.1 Terminology Used Within Terrestrial Ecology Chapter

Table 13.1 lays out the terminology used within the chapter and the relevant drawings associated with it.

Table 13.1 Terminology Used and Associated Drawings

Term	Relating To	Relevant Drawing
HVDC NVC survey area	The boundary within which the NVC and Phase 1 habitat survey took place.	3155 in Appendix D.4
HVDC Protected Mammal survey area	The boundary within which the otter, water vole and badger surveys took place.	3199 in Appendix D.1
HVDC Consenting Corridor	The HVDC cable corridor area, within which the cable construction corridor will be.	NCFFS-NCT-X-XG-0001-01

13.2 Sources of Information

13.2.1 Planning Framework

13.2.1.1 National

Biodiversity features within the vision of National Planning Framework (NPF3) as '*natural and resilient place*' with a key action within the NPF3 to '*implement the Scottish Biodiversity Strategy, including completing the suite of protected places and improving their connectivity through a national ecological network centred on these sites'*(Scottish Ministers, 2014a).

The Scottish Planning Policy (SPP) sits alongside the NPF3 and sets out how the NPF3 visions should be delivered on the ground (Scottish Ministers, 2014b). As a statement of Ministers' priorities, it carries significant weight in the preparation of development plans and is a material consideration in planning decisions.

Biodiversity and the natural environment are central to the SPP. The principle polices of the SPP; Sustainability and Placemaking, both feature the natural environment as a consideration.

The primary Subject Policy regarding the natural environment is, 'A Natural, Resilient Place' with benefits for biodiversity sought from new development where possible, including the restoration of degraded habitats and the avoidance of further fragmentation or isolation of habitats. Recognition to the duty by all public bodies under the Nature Conservation (Scotland) Act 2004, to further the conservation of biodiversity, is reflected in the SPP.

It is acknowledged within the Policy – Valuing the Natural Environment that:

'Planning permission should be refused where the nature or scale of proposed development would have an unacceptable impact on the natural environment […] Planning authorities should apply the precautionary principle where the impacts of a proposed development on nationally or internationally significant landscape or natural heritage resources are uncertain but there is sound evidence indicating that significant irreversible damage could occur'.

It is also stated within the same Policy that:

'If there is any likelihood that significant irreversible damage could occur, modifications to the proposal to eliminate the risk of such damage should be considered'.

It is also acknowledged that protected species are an important consideration in assessing planning applications:

'If there is evidence to suggest that a protected species is present on site or may be affected by a proposed development, steps must be taken to establish their presence. The level of protection afforded by legislation must be factored into the planning and design of the development and any impacts must be fully considered prior to the determination of the application'.

The 2020 Challenge for Scotland's Biodiversity aims to promote and enhance Scotland's nature, and to better connect people with the natural world through developing a national ecological network over time. The 2020 Challenge is a supplement to the Scottish Biodiversity Strategy (2004) and together comprise the Scottish Biodiversity Strategy.

13.2.1.2 Local

Aberdeenshire Council specifically acknowledge the need to protect the natural environment within their Local Development Plan (LDP) (Aberdeenshire Council, 2017). Section 15 of the most recent LDP presents the Natural Heritage and Landscape policies which will be adhered to when considering planning applications.

Aberdeenshire Council states within Policy E1 Natural heritage, **Nature conservation sites**, that:

'We will not allow new development where it may have an adverse effect on a nature conservation site designated for its biodiversity or geodiversity importance, except where the following circumstances apply'.

'In the case of an internationally important site, we will not allow development which may have an adverse effect on its integrity, except where there are imperative reasons of overriding public important and there is no alternative solution. In all cases, suitable compensatory measures must be implemented.

For nationally designated sites a thorough assessment must demonstrate that the objective of designation and the overall integrity of the site will not be compromised, or that any significant adverse effects on the qualities for which the site has been designated are clearly outweighed by social, environmental or economic benefits or national importance. In all cases, any impact must be suitably mitigated.

For other recognised nature conservation sites…the proposal's public benefits must clearly outweigh the nature conservation value of the site. In all cases, impacts must be suitably mitigated for.'

Aberdeenshire Council states within Policy E1 Natural Heritage, **Protected Species**, that:

'Development should seek to avoid any detrimental impact on protected species through the carrying out of surveys and submission of protection plans describing appropriate mitigation where necessary.

Development likely to have a detrimental impact on protected species will not be approved unless: for European Protected Species, a thorough assessment of the site has demonstrated that the development is required for imperative reasons of overriding public interest and that the population will be maintained at a favourable conservation status in its natural range; or, for non-bird species protected under the Wildlife and Countryside Act 1981 (as amended) or the Protection of Badgers Act 1992, there will be significant social, economic or environmental benefits. IN either case there must be no other satisfactory solution.'

Aberdeenshire Council states within Policy E1 Natural Heritage, **Wider Biodiversity and Geodiversity**, that:

'If a development may affect undesignated habitats listed in Annex 1 of the EC Habitats Directive, species listed in Annex II of the EC habitats Directive, species listed in the Annexes I and II of the EC Birds Directive, habitats or species on the Scottish Biodiversity List, Local Biodiversity Action Plan priority habitats/species, other species of importance to biodiversity, areas of importance to geodiversity, or semi-natural habitats, we will only approve it when a baseline ecological survey has been carried out…Development will not be allowed if it fragments habitats or is not designed to minimised any adverse impact on the sites environmental quality, ecological status or viability.'

13.2.2 Legislative Framework

13.2.2.1 Habitats Directive

The European Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, also referred to as the 'Habitats Directive' (European Commission, 1992). The primary aim of the Habitats Directive is to maintain biodiversity within the Member States and is transposed into Scottish law by a combination of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland), commonly known and the 'Habitat Regulations' together with the Habitats Regulations 2010 (in relation to reserved matters).

The Habitats Regulations identify several habitats or species whose conservation interest requires the designation of Special Areas of Conservation (SAC) and, in combination with the designation of Special Protection Areas (SPAs) under the Birds Directive, form the Natura 2000 network of protected sites.

In addition, the Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. These species are commonly termed European Protected Species (EPS).

Otters are an EPS and as such it is an offence to:

- Deliberately or recklessly capture, injure or kill, harass, damage or destroy a breeding site or resting place;
- Disturb an otter while it is at a place it uses for shelter or protection;
- Obstruct access by an otter to a breeding or resting place; or
- Disturb an otter in a manner which is likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young.

13.2.2.2 Wildlife and Countryside Act 1981 and Nature Conservation (Scotland) Act 2004

The Wildlife & Countryside Act 1981 (WCA) (as amended in Scotland) was originally conceived to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and the Birds Directive in Great Britain (UK Parliament, 1981). It has been extensively amended since it came first into force.

Schedule 5 of the WCA provides special protection to selected animal species other than birds, through section 9(4) of the Act, against damage to "*any structure or place which [any wild animal included in the schedule] uses for shelter and protection*", and against disturbance whilst in such places.

The WCA contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in

Schedule 9. It also provides a mechanism making the above offences legal through the granting of licenses by the appropriate authorities.

Important amendments to the WCA have been introduced in Scotland including the **Nature Conservation (Scotland) Act 2004** (in Scotland) (NCSA) (Scottish Parliament, 2004). Part 3 and Schedule 6 of this Act make amendments to the WCA, strengthening the legal protection for threatened species. The Nature Conservation (Scotland) Act 2004 (in Scotland) is also the instrument under which Sites of Special Scientific Interest (SSSI) are protected in Scotland.

The **Wildlife and Natural Environment (Scotland) Act 2011** provided a new licensing element to the WCA within Scotland, specifically for certain non-avian protected species 'for any other social, economic or environmental purpose'. This licensing purpose is qualified by two constraints; "*that undertaking the conduct authorised by the licence will give rise to, or contribute towards the achievement of, a significant social, economic or environmental benefit; and that there is no other satisfactory solution*".

All wild plant species receive protection under the WCA, with some species given added protected being listed on Schedule 8. Water voles are afforded protection under Schedule 5 of the WCA, and badgers are afforded protection under Schedule 6.

13.2.2.3 Protection of Badgers Act 1992

Badgers and their setts are protected by the Protection of Badgers Act 1992 (as amended by the Nature Conservation (Scotland) Act 2004) (UK Government, 1992), making it an offence, amongst other actions, to wilfully kill, injure, take or attempt to kill a badger, or, by intentionally or recklessly causing or allowing disturbance or obstruction of a badger sett. In common with other legislation, it is possible to carry out actions that would otherwise be illegal if the activities are conducted under a licence.

13.2.2.4 Water Environment and Water Services (Scotland) Act 2003.

Where a habitat is identified as a potential Ground Water Dependent Terrestrial Ecosystem (GWDTE), they are protected under the Water Framework Directive (Directive 2000/60/EC) (European Commission, 2000) and transposed into Scottish law through the Water Environment and Water Services (Scotland) Act 2003 (Scottish Parliament, 2003). This means any disturbance to the groundwater resource on which a particular GWDTE relies, would be a breach of legislation.

13.2.3 Ecology Guidance

All baseline survey methodologies were undertaken in accordance with current survey guidelines and were agreed to be sufficient by Aberdeenshire Council and Scottish Natural Heritage (SNH). Baseline surveys follow nationally-recognised best practice guidelines (Institute of Environmental Assessment, 1995).

Further relevant guidance included:

- Scottish Biodiversity List, which comes under Section 2 (4) of the NCSA (Scottish Government, 2013);
- PAN 60: Planning for Natural Heritage (Scottish Government, 2008);
- Guidelines for Ecological Impact Assessment in the United Kingdom, (IEEM, 2012);
- The Handbook for Phase 1 Habitat Survey – a technique for Environmental Audit (JNCC, 2010);
- National Vegetation Survey (NVC): Users' handbook (Rodwell, 2006);
- Land Use Planning System (LUPS) Guidance Note 31 (SEPA, 2014);

Further species-specific guidance was also followed and is referenced in the relevant sections.

13.3 Assessment Methodology

The EIA methodology adopted within this assessment is based on standard best practice as detailed in Chapter 3: Methodology and has been agreed with Aberdeenshire Council through the EIA Scoping process.

13.3.1 Desk Study

A desk study and literature search was undertaken to inform the characterisation of the existing baseline conditions. Baseline data on the nature conservation interest of the Site and its surroundings, including information on designated nature conservation sites and protected species records, were sought from the following sources:

- SNH interactive map facility at Sitelink (SNH, 2017);
- National Biodiversity Network (NBN) Gateway's information service (NBN, 2017);
- The Scottish Biodiversity List (SBL) is a list of animals, plants and habitats considered to be of principal importance for biodiversity conservation in Scotland; the List was first published in 2005 in compliance with Section 2(4) of The Nature Conservation (Scotland) Act 2004 and has been updated several times (Scottish Government, 2013);
- The UK Biodiversity Action Plan (UK BAP) and North-East Scotland Local Biodiversity Action Plan (LBAP) have been published in response to the Convention on Biological Diversity (CBD) (United Nations, 1992). The LBAP is currently under review and is altering the structure of the plan to an ecosystem approach (Aberdeenshire Council, 2014; JNCC, 2016).
- North East Scotland Biological Records Centre (NESBReC) provided information regarding statutory designations and notable and protected species; ecological records were requested for a buffer of 2km for all protected or notable species (NESBReC, 2016,);
- Large-scale 1:10,000 Ordnance Survey (OS) maps in conjunction with colour 1:25,000 OS map (to determine the presence of ponds and other features of nature conservation interest); and
- Aerial photography for the Site was examined using imagery in the public domain at www.maps.google.co.uk.

13.3.2 Field Surveys

To provide detailed contemporary information on the Site and to determine baselines accurately to inform the EIA, the following field surveys were carried out:

- Extended Phase 1 habitat survey (Atmos Consulting, 2014)
- National Vegetation Classification Survey (includes a Non-native species survey) for NorthConnect HVDC Site (included Phase 1 Habitat Classification) (Tracks Ecology, 2017c)
- Protected mammal (Otter, Water vole & Badger) surveys (Tracks Ecology, 2014, 2017b)
- Otter camera study (NorthConnect, 2017)

In addition, an NVC survey took place encompassing the Longhaven Cliffs Scottish Wildlife Trust (SWT) nature reserve (Tracks Ecology, 2017c). This was carried out to provide SWT with updated ecological information about their reserve. The section of the SWT reserve which the NorthConnect Site was within was also covered by the NVC survey carried out for the HVDC Site. Therefore, this additional report was not utilised for this EcIA.

13.3.2.1 Extended Phase 1 Habitat Survey

Phase 1 Habitat Survey is a standardised method of recording habitat types and characteristic vegetation, as set out in the Handbook for Phase 1 Habitat Survey – a technique for Environmental Audit (JNCC, 2010a).

The area surveyed during the Extended Phase 1 by Atmos Consulting in September 2013 and April 2014 encompassed all aspects of the NorthConnect project, from the HVAC route, to the converter station, to the HVDC route. For the purposes of this ecological assessment, only the land encompassed within the HVDC Site is considered for assessment. The results from this are taken in conjunction with the Tracks Ecology September 2017 NVC survey, which then classified habitat polygons according to Phase 1 Habitat Classifications. As the Tracks Ecology survey is the most recent only the values from this survey is presented for the baseline data. Only the target notes from the Atmos Consulting Report are presented within this EIAR.

This survey method was extended by evaluating the habitats in accordance with the habitats listed in the SNIFFER document Water Framework Directive (WFD) 95 - A Functional Wetland Typology for Scotland (Scotland and Northern Ireland Forum for Environmental Research, 2009), and through the recording of specific features indicating the presence, or likely presence, of protected species or other species of nature conservation significance.

The ecologists were suitably qualified, and surveys were conducted under suitable weather conditions during the optimal time of year.

13.3.2.2 National Vegetation Survey and Non-Native Species Survey

The National Vegetation Survey (hereafter the NVC survey) is described as, *"a detailed phytosociological classification, which assesses the full suite of vascular plant, bryophyte and macro-lichen species within a certain vegetation type" (JNCC, 2011)*. Following the scoping process, Scottish Natural Heritage stated that an NVC survey should be carried out in areas where habitats and/or species of *"natural heritage interest"* are identified. It was undertaken to add to the broader classifications that the Phase 1 Survey Area identified, and aimed to detail any rare or nationally scarce plants. In conjunction with this, a NSS was to take place to identify the presence of any invasive, non-native species.

The Scottish Wildlife Trust carried out an NVC survey in 2015 and shared this data with NorthConnect. The 2015 NVC survey data was used for comparative purposes with the more recent NVC survey commissioned by NorthConnect. The areas surveyed were:

- The HVDC cabling corridor, plus a buffer: see Appendix D.3, Figure 1 for surveyed area.
- Longhaven Cliffs Scottish Wildlife Trust (SWT) Reserve – the area shown in the Phase 1 habitat survey maps provided in Appendix D.5.

The ecologists who carried out the updated NVC and NSS surveys were suitably qualified, and one had worked on the extended Phase 1 habitat survey in 2013/2014, and therefore were very familiar with the survey area. Surveys were conducted under suitable weather conditions during the optimal time of year.

13.3.2.2.1 Limitation of the Data

An area of just over 1 ha where the temporary access road to the HDD site joins the A90 was not surveyed during the NVC survey as the survey was completed prior to the junction design being developed. However, from site visits, it is known that this is a section of land is similar to that of the land classified adjacent to it, as being a mixture of arable, neutral grassland (semi-improved) and a

small section of marshy grassland. For these habitats there will be a slight underestimation of percentage of the land within the consenting corridor redline boundary, however as the largest habitat types present it will not have any bearing on the overall assessment.

13.3.2.2.2 Species of Conservation Interest

Conservation interests within the site were defined as:

- A habitat or species listed on the EU Directive on the Conservation of Natural Habitats and Wild Fauna and Flora (92/32/EEC), the EU Habitats Directive;
- A habitat forming a qualifying feature of a site designated for habitat and/or fauna and flora interests under the EU Habitats Directive;
- A habitat and/or species forming a qualifying feature of national or local designations (e.g. Sites of Special Scientific Interest);
- A habitat and/or species listed on the UK Biodiversity Action Plan and Scottish Biodiversity List; and
- A species listed on its relevant UK Red Data list as being vulnerable to or under threat.

13.3.2.3 Longhaven Cliffs Reserve: Inland Section

In addition to the NVC Survey for the HVDC consenting corridor, the survey work covered an area of the Longhaven Cliffs Reserve. The cliff section of this reserve which is adjacent to the HVDC consenting corridor is already encompassed within the above vegetation assessment. However, the inland section of the reserve was assessed separately.

13.3.2.4 Protected Mammal Surveys

The Phase 1 Habitat Survey recommended that further field surveys targeting otter *Lutra lutra*, water vole *Arvicola terrestris* and badger *Meles meles* should be undertaken to facilitate a comprehensive assessment of the potential impact of the proposal upon those species. As part of the Convertor station and HVAC environmental assessment, surveys targeting a number of protected mammal species were undertaken during September 2014. These surveys covered approximately half of the area proposed for the HVDC development, therefore further surveys were required to encompass the full onshore HVDC consenting corridor. The additional surveys took place on 6th and 7th July 2016, and were conducted by a suitably qualified and experienced ecologist, who is a Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM).

The protected mammal survey areas were dependent on the species and are displayed on Drawing 3199 in Appendix D.1. For otters and water voles, the survey area included all watercourses and waterbodies within a buffer of at least 200m to the proposed infrastructure. For badgers, all land within a buffer of at least 200m to the proposed consenting corridor were surveyed.

13.3.2.4.1 Otter

The otter survey was undertaken on 6th and 7th July 2016 broadly in accordance with the approach detailed in "Otters and Development" guidance document (SNH, 2007) and Ecology of the European Otter (Chanin, 2003). The survey concentrated on all watercourses and waterbodies within at least 200m of proposed infrastructure and included a thorough check for otter resting places (holts and couches). Full details of the methodology are presented in Appendix D.1.

The following field signs were sought:

- Otter spraint (faeces);
- Otter holt (den);
- Footprint;
- Couch (resting place above ground); and
- Pathways and slides into water.

In addition to the survey work, a camera-trap study was set up to investigate the use of an otter holt found during the otter survey. The capture was set to take one video per activation, which would continue until the movement had ceased. Once complete a three-minute delay was in place before activating again. This was to prevent multiple successive captures of an animal remaining in the vicinity of the camera, and hence preserve battery life. The cameras were in 24-hour mode to allow for day and night recordings, and set to detect movement and temperature differences.

13.3.2.4.2 Water Vole

The methodology employed during the survey followed that of an adapted version of the Water Vole Conservation Handbook (Strachan, 2011) with additional reference to field sign guidance provided by Using Field Signs to Identify Water Voles (Ryland & Kemp, 2009) and The Handbook of British Mammals (Corbet & Southern, 1977).

The water vole survey was undertaken concurrently with the otter survey on 6th and 7th July 2016. The survey again focussed on watercourses and waterbodies within at least 200m of proposed infrastructure. Full details of the methodology are presented in Appendix D.1.

Active searches were conducted for water vole signs which included:

- Droppings;
- Burrows;
- Latrines;
- Feeding stations;
- Lawns; and
- Footprints and pathways.

13.3.2.4.3 Badger

The survey for badger was undertaken concurrently with the otter and water vole surveys on 6th and 7th July 2016. The badger survey covered all accessible areas within at least 200m of proposed consenting corridor. The badger survey comprised a search for setts and other signs of badger activity, e.g. latrines, dung pits, pathways, snagged hair and signs of foraging.

Badger surveys are generally best undertaken when vegetation is at a minimum during winter months to maximise chances of identifying sett structures. However, due to the dominance of agricultural habitats and European gorse *Ulex europaeus,* an evergreen species, means undertaking the survey during July was not considered a significant limitation. Full details of the methodology are presented in Appendix D.1.

13.3.3 Impact Assessment Methodology

The assessment of the significance of predicted impacts on ecological receptors is based on both the 'value' of a receptor and the nature and magnitude of the impact that the development will have on it. Effects on biodiversity may be direct (e.g. the loss of species or habitats), or indirect (e.g. effects

due to noise, dust or disturbance), on receptors located within or out with the respective survey area. This EcIA has, in principle, followed the assessment methodology outlined in Chapter 3 with the specific ecological assessment methods and criteria detailed below.

13.3.3.1 Evaluation of Ecological Receptors

The evaluation methodology has been adapted from the Guidelines for Ecological Impact Assessment in the United Kingdom (CIEEM, 2016). A key consideration in assessing the effects of any development on flora and fauna is to define the areas of habitat and the species that need to be considered. This required the identification of a potential zone of influence, which is defined as those areas and resources that may be affected by biophysical changes caused by project activities, however remote from the respective survey area.

The approach that has been undertaken throughout this EcIA is to identify 'valued ecological receptors' i.e. species and habitats that are both valued in some way and could be affected by the proposed development and separately, to consider legally protected species. Both species populations and habitats have been valued using a broad geographical basis with full details in Table 13.2.

Table 13.2Table 13.2 Nature Conservation Receptor Value

Value	Criteria
International	• An internationally important site (SAC) or a site proposed for, or considered worthy of designation; • A regularly occurring substantial population of internationally important species (listed on Annex IV of the Habitats Directive).
National	• A nationally designated site, SSSI, or a site proposed for, or considered worthy of such designation; • A viable area of habitat type listed in Annex I of the Habitats Directive or of smaller areas of such habitat which are essential to maintain the viability of a larger whole; or • A regularly occurring substantial population of a nationally important species, e.g. listed on Schedule 5 & 8 of the 1981 Wildlife and Countryside Act.
Regional	• Areas of internationally or nationally important habitats which are degraded but are considered readily restored; • Viable areas of priority habitat or viable populations identified in the UKBAP or smaller areas/populations which are essential to maintain the viability of a larger area/population as a whole; • Regionally important population/assemblage of an EPS, Schedule 1 and/or 5 species. • Regionally important assemblages of other species or habitats.
High Local	• Ancient semi-natural woodland, Local Nature Reserves (LNRs) and Local Nature Conservation Sites (LNCS); • Locally important population/assemblage of an EPS, Schedule 1 and/or 5 species; or • Sites containing viable breeding populations of species known to be county rarities (e.g. included in the LBAP) or supplying critical elements of their habitat requirements.
Moderate Local	• Undesignated sites, features or species considered to appreciably enrich the habitat resource within the local context (within 2km radius from the site) and may benefit from mitigation as a good practice measure.
Low Local	• Undesignated sites, features or species considered to appreciably enrich the habitat resource within the immediate environs of the site and may benefit from mitigation as a good practice measure.
Negligible	• Common and widespread or modified habitats or species.
Negative	• Invasive, alien species often scheduled under Section 14, Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

The approach of this assessment is to consider the value of the Site for the species under consideration, rather than the nature conservation importance of the species itself, although this is a factor in the evaluation process with the level of use of the Site (number of individuals using the site and nature and level of use) taken into consideration. An assessment is then made of the value of the Site to that species, based upon a combination of data sources, professional judgment and knowledge of the Site and wider area.

13.3.3.2 Legal Protection of Species

There is a need to identify all legally protected species that could be affected by the proposed development to ensure that the development complies with all relevant nature conservation legislation. It is, therefore, appropriate to take into full consideration the legal protection of a species within the evaluation process. For example, full account of the Protection of Badgers Act is taken into consideration, notwithstanding the species protection on animal welfare grounds.

13.3.3.3 Nature and Magnitude of Impact

Impacts can be: permanent or temporary; direct or indirect; adverse or beneficial; reversible or irreversible; and may also have a cumulative function with other activities out with the assessed development. These factors are taken into consideration in the context of the sensitivity of the valued ecological receptor and the range of potential effects. To identify whether impacts are significant or not it is important to undertake the assessment in terms of the integrity (coherence of the ecological structure and function) and conservation status (ability of the receptor to maintain its distribution and/or extent/size) of the receptor.

Table 13.3 provides an overview of the range of impact magnitudes referred to within this assessment. In addition, impacts may also be positive in nature.

Table 13.3 Definition of Magnitude of Impact

Magnitude	Description
Negligible / None	Very slight change from the baseline conditions. Changes barely detectable, approximating to the 'no-change' situation. Any effects likely to be reversible within 12 months and not affect the conservation status or integrity of the receptor.
Low	Minor shift away from baseline conditions. Effects will be detectable but unlikely to be of a scale or duration to have a significant effect on the conservation status or integrity of the receptor in the short term (1-5 years). Overall baseline character of site will not alter substantially.
Medium	Clear effect on the conservation status or integrity of the receptor in the short to medium term (6-15 years), although this is likely to be reversible or replaceable in the long-term (15 years plus).
High	Total loss of, or major alteration to conservation status or integrity of a receptor with situation likely to be irreversible, even in the long term. Fundamental alteration to the character and composition of the Site.

13.3.3.4 Significance of Effects

The significance of an effect is a product of the value of the ecological receptor and the magnitude of the impact on it, moderated by professional judgment. Table 13.4 illustrates a matrix based on these two parameters which is used for guidance in the assessment of significance. In terms of the EIA Regulations, only effects which are 'moderate' or 'major' are considered significant, the others constituting a non-significant effect. The level of effect has been assessed as either major, moderate, minor or negligible, or beneficial in accordance with the definitions provided in Chapter 3: Methodology.

Table 13.4 Significance of Effects

Magnitude of Impact	Value				
	International	**National**	**Regional**	**Moderate Local/ High Local**	**Low Local /Negligible**
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible	Negligible

Key

	Significant Effect
	Non-Significant Effect

13.4 Baseline Information

13.4.1 Statutory Designated Sites

Statutory Designated Sites which may be affected either directly or indirectly are detailed inTable 13.5 and the boundaries of these are mapped in Figure 13.1 One Site of Special Scientific Interest (SSSI) and two Special Areas of Conservation (SAC) were identified within 50km of the UK landfall site as having designated interests to consider for the EcIA.

Table 13.5 Designated Sites

Site	**Approximate distance from Cable Corridor**	**Relevant Terrestrial Designated Interests**
Buchan Ness to Collieston SAC	Crossed by HVDC corridor	Vegetated sea cliffs
Bullers of Buchan Coast SSSI	Crossed by HVDC corridor	Maritime cliff
Collieston to Whinnyfold Coast SSSI	8km south of UK landfall.	Vegetated sea cliffs: Sea wormwood *Seriphidium maritimum*
Rora Moss SSSI	12km NW of HVDC corridor	Raised bog
River Dee SAC	40km SW of UK landfall.	Otter

Figure 13.1 Designated Sites

13.4.1.1 Buchan Ness to Collieston SAC

Buchan Ness to Collieston SAC is located on the east coast and the HVDC corridor crosses through it. The qualifying interest of this SAC is the Annex 1 habitat vegetated sea cliffs of the Atlantic and Baltic Coast. The sea cliffs support a wide range of semi-natural plant communities including: maritime heath; acid peatland; and brackish flushes, which are now rare on the coast of north-east Scotland and this section of coastline has some of the best remaining examples. There is an abundance of local species such as Scot's lovage *Ligusticum scoticum* and roseroot *Sedum rosea* and other species which are more typical of southern Britain such as carline thistle *Carlina vulgaris* and cowslip *Primula veris,* which are associated with dry, calcareous grasslands (JNCC, 2017b).

13.4.1.2 Bullers of Buchan Coast SSSI

This SSSI is a constituent of the Buchan Ness to Collieston SAC and comprises of sea cliffs and inshore stacks which are of special geological and biological interest. Similar to the SAC, the sea cliffs support a wide range of maritime plant communities with good examples of coastal dwarf-shrub heath and brackish flushes (SNH, 2018). In addition, the SSSI supports important breeding seabird colonies, which are considered within Chapter 15: Ornithology.

13.4.1.3 Collieston to Whinnyfold Coast SSSI

This SSSI is a constituent of the Buchan Ness to Collieston SAC, approximately 8km south of the UK landfall site at Long haven, and is designated for its vegetated sea cliffs, specifically Sea Wormwood.

13.4.1.4 River Dee SAC

The River Dee SAC, approximately 40km to the southwest of the HVDC cable corridor, is selected for designated based on Annex II species of Freshwater pearl mussel *Margaritifera margaritifera*, Atlantic salmon *Salmo salar*, and Otter, the latter of which is relevant to this current development proposal. The River Dee has a total length of 570km included within the SAC. Otters are found throughout the Dee catchment as the river system has suitable habitat for otter feeding, resting and breeding (JNCC, 2018). The otter population in this part of north-east Scotland is a strong, high quality population (JNCC, 2018). The latest large-scale otter survey carried out in this area revealed 33 holts within 54 survey sites, and the SAC is defined as being in a favourable condition for the otters (Strachan, 2007).

13.4.2 Other sites

The Scottish Wildlife Trust (SWT) Longhaven Cliffs Reserve is within the boundaries of the designated sites Buchan Ness to Collieston SAC and Bullers of Buchan Coast SSSI. There is also an inland section of the reserve which is approximately 600m from the HVDC cable corridor. The coastal part of the reserve is considered to be important for breeding seabird colonies, along with special habitats such as maritime heath and salt marsh with plants such as devil's-bit scabious *Succisa pratensis* and grass-of-Parnassus *Parnassia palustris*. The HVDC cables will pass under the Longhaven Cliffs Reserve via HDD.

13.4.3 Habitats and Flora

The results from the NVC and NNS surveys were mapped and can be seen in Figure 13.2. The habitats present within detailed botanical surveys (NVC and NNS) are summarised below.

13.4.3.1 Phase 1 habitat survey classifications

The NVC survey carried out in 2017 updated the values of Phase 1 habitat areas from the previous Phase 1 habitat survey. The results of the classifications are summarised in Table 13.6.

Table 13.6 Phase 1 Habitat Community Areas.

Habitat	Area (ha)	Area % of Total
Arable	26.63	36.49
Neutral grassland - semi-improved	15.92	21.81
Marsh/marshy grassland	9.27	12.69
Coastal grassland	5.34	7.32
Maritime cliff	4.49	6.16
Neutral grassland - unimproved	3.97	5.44
Coastal heathland	2.21	3.03
Scrub - continuous	1.40	1.92
Other tall herb and fern - non-ruderal	1.35	1.85
Crevice/ledge vegetation	0.93	1.28
Bare ground	0.51	0.70
Access track	0.33	0.46
Acid grassland - unimproved	0.22	0.30
Shingle/gravel above high-tide mark	0.15	0.20
Other tall herb and fern - tall ruderal	0.10	0.14
Open water	0.09	0.12
Bracken - continuous	0.04	0.06
Quarry	0.03	0.04
Scree	0.02	0.02
Buildings and gardens	<0.01	<0.01
Grand Total	**72.98**	**100.00**

Figure 13.2 shows the habitat types summarised across the Survey Area. Target notes mapped relate to notes in Appendix H3. The dominant habitat types along the HVDC cable corridor are arable land and neutral grassland (semi-improved and improved), which combined relate to 63.7% of the total area surveyed. Marshy grassland is also present within the HVDC corridor (12.69% across the whole survey area) and thereafter all other habitat types were less than 10% within the Survey Area. The current Access Track which leads to the field where the HDD drilling activities will take place currently only takes up 0.46%, or 0.33Ha.

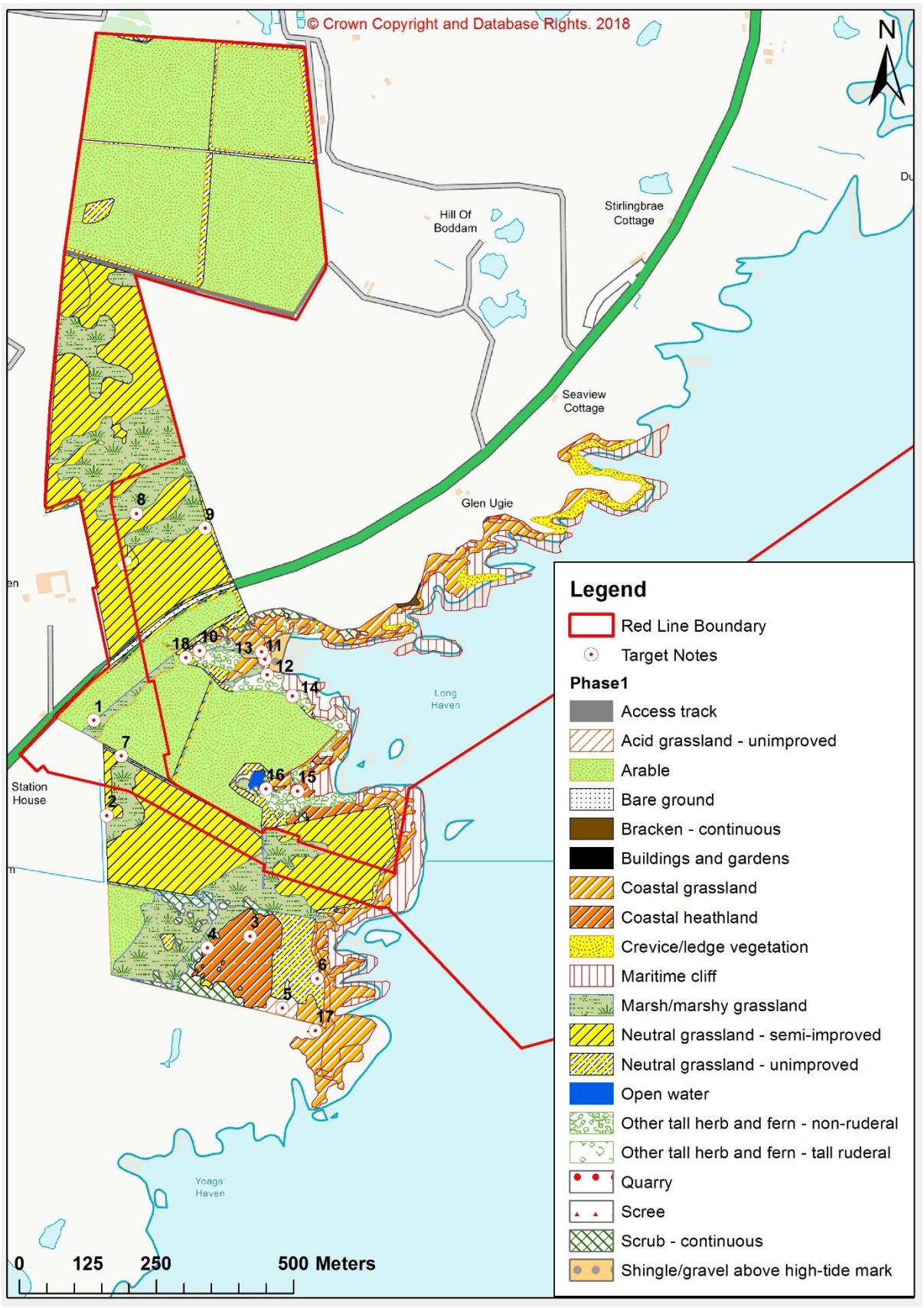

Figure 13.2 Phase 1 Habitat Results from the NVC Survey

13.4.3.2 NVC Survey

This survey encompassed a more in-depth survey of the specific plant communities within the broad habitat classifications. A summary of the NVC communities present within the survey site is shown in Table 13.7. The complete survey and associated figures are shown in Appendix D.4.

Table 13.7 NVC Communities

Code	Community/sub-community name
Woodlands and scrub	
W23a	*Ulex europaeus-Rubus fruticosus* scrub, *Anthoxanthum odoratum* sub-community
Mires and heaths	
H7c	*Calluna vulgaris-Scilla verna* heath, *Erica tetralix* sub-community
H7d	*Calluna vulgaris-Scilla verna* heath, *Empetrum nigrum* ssp. *nigrum* sub-community
M27a	*Filipendula ulmaria-Angelica sylvestris* mire, *Valeriana officinalis-Rumex acetosa* sub-community
M27c	*Filipendula ulmaria-Angelica sylvestris* mire, *Holcus lanatus-Juncus effusus* sub-community
M35x	*Ranunculus omiophyllus-Montia fontana* rill, variant community
Grassland and montane communities	
MG1a	*Arrhenatherum elatius* grassland, *Festuca rubra* sub-community
MG1b	*Arrhenatherum elatius* grassland, *Urtica dioica* sub-community
MG5a	*Cynosurus cristatus-Centaurea nigra* grassland, *Lathyrus pratensis* sub-community
MG6a	*Lolium perenne-Cynosurus cristatus* grassland, typical sub-community
MG7	*Lolium perenne* leys and related grasslands
MG10a	*Holcus lanatus-Juncus effusus* rush-pasture, typical sub-community
MG11	*Festuca rubra-Agrostis stolonifera-Potentilla anserina* grassland
U5d	*Nardus stricta-Galium saxatile* grassland, *Calluna vulgaris-Danthonia decumbens* sub-community
U17x	*Luzula sylvatica-Geum rivale* tall-herb community, variant sub-community
Maritime communities	
MC8a	*Festuca rubra-Armeria maritima* maritime grassland, typical sub-community
MC8c	*Festuca rubra-Armeria maritima* maritime grassland, *Ligusticum scoticum* sub-community
MC8d	*Festuca rubra-Armeria maritima* maritime grassland, *Holcus lanatus* sub-community
MC9e	*Festuca rubra-Holcus lanatus* maritime grassland, *Anthoxanthum odoratum* sub-community
Vegetation of open habitats	
OV25	*Urtica dioica-Cirsium arvense* community
OV25b	*Urtica dioica-Cirsium arvense* community, *Rumex obtusifolius-Artemisia vulgaris* sub-community

13.4.3.2.1 Woodlands and Scrub

Scrub communities dominated by European gorse, *Ulex europeaus,* are scattered throughout coastal areas along field margins. The majority of these scrub areas are homogenous stands of gorse, with a scattering of bramble *Rubus fruticosus* and grasses sweet-vernal grass *Anthoxanthum odoratum,* crested dog's-tail *Cynosurus cristatus*, Yorkshire fog *Holcus lanatus* and red fescue *Festuca rubra* at the fringes.

13.4.3.2.2 Mires and Heaths

The dominant heath community throughout the site was *Calluna vulgaris-Scilla verna* heath. The vegetation is typically short, being wind-clipped, and form rather open stands often transitional to other communities, particularly grasslands. The H7c *Erica tetralix* sub-community is found in wetter areas of heathland across the site, typically slightly inland on deeper soils and has higher coverage of the cross-leaved heath *Erica tetralix,* common bent *Agrostis capillaris* and mat-grass *Nardus stricta*.

The H7d *Empetrum nigrum* ssp. *nigrum* sub-community is the most common across the site, found on cliff tops and edges, often in exposed conditions or on dry soils.

The dominant mire community present within the survey area is *Filipendula ulmaria* forming the M27a *Filipendula ulmaria–Angelica sylvestris* mire, *Valeriana officinalis-Rumex acetosa* sub-community. This community is most frequent where natural drainage flows over cliffs from vegetation communities above. Typically, this vegetation is quite rich across the site. A second sub-community is present in Longhaven Bay and is grassier with higher cover of soft rush. This reflects the M27c *Holcus lanatus-Juncus effusus* sub-community.

13.4.3.2.3 Grassland and Montane Communities

There were a number of different grassland communities recorded during the survey. Certain grassland communities, for example MG6 *Lolium perenne-Cynosurus cristatus* grassland and MG7 *Lolio-Plantaginion* leys, are a result of agricultural improvement on the land. This has been recorded near Fourfields and in two large fields east of Longhaven Mains Farm. There are also rush-pasture communities recorded around areas of damp, ungrazed fields, and tall-herb communities present on cliffs along the coast.

13.4.3.2.4 Maritime Communities

A number of maritime communities are present along the edge of the cliffs. Generally, these communities are species poor.

13.4.3.2.5 Vegetation of Open Habitats

The *Urtica dioica-Cirsium arvense* community is the most common vegetation community within the survey area. The community is dominated by the two constants: common nettle and field thistle.

13.4.3.2.6 Species of Conservation Importance

Conservation interest within the site is defined as:

- A habitat or species listed on the EU Directive on the Conservation of Natural Habitats and Wild Fauna and Flora (92/32/EEC), the EU Habitats Directive;
- A habitat forming a qualifying feature of a site designated for habitat and/or fauna and flora interests under the EU Habitats Directive;
- A habitat and/or species forming a qualifying feature of national or local designations (e.g. Sites of Special Scientific Interest);
- A habitat and/or species listed on the UK Biodiversity Action Plan and Scottish Biodiversity List; and
- A species listed on its relevant UK red data list as being vulnerable to or under threat.

The following vegetation communities recorded within the site are identified as of conservation interest, as shown in Figure 13.3:

- MC8 *Festuca rubra-Armeria maritima* maritime grassland
- MC9 *Festuca rubra-Holcus lanatus* maritime grassland
- H7 *Calluna vulgaris-Scilla verna* heath

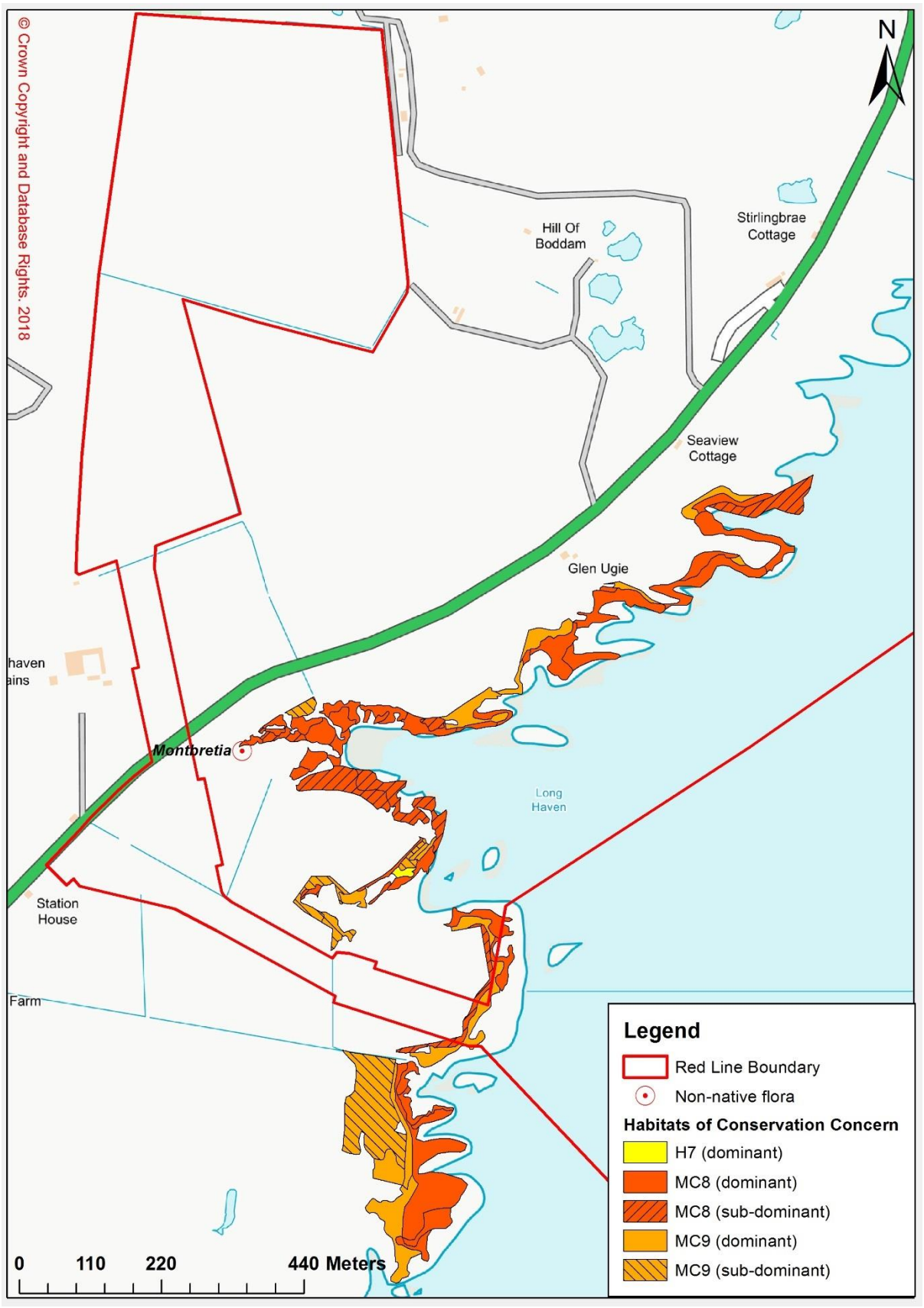

Figure 13.3 Habitats of Conservation Concern and Non-Native Flora

All three communities are listed under Annex 1 habitat type H1230: Vegetated sea cliffs of the Atlantic and Baltic coasts. All three communities also form component parts of maritime cliff and slope vegetation, listed under UK BAP and Scottish Biodiversity List priority habitats.

No individual flowering or lower plant species of conservation concern were recorded i.e. rare, threatened, or nationally scarce conservation status.

13.4.3.2.7 Groundwater Dependent Terrestrial Ecosystems

Habitat classifications related to groundwater dependent species, in line with current guidance (SEPA, 2014), are detailed in Figure 13.4. Only a single habitat which is recognised as being potentially highly dependent on groundwater (SEPA, 2014) was identified: U17 *Luzula sylvatica-Geum rivale* tall-herb community. This community is located along the cliffs and is not located further inland (Figure 13.4) The community tends to develop where there is protection from grazing and burning with more base-rich and mesotrophic soils and a degree of dampness which results in the community being identified as potentially dependent on groundwater. These communities are likely to have some influence from base-rich water present where soils become thin on the cliff tops but significant influence from groundwater at these locations is assessed as unlikely.

Two patches of MG10 *Holcus lanatus-Juncus effusus* rush-pasture marshy grassland are also present within the Site. The small area located near TN9 also supports an M35x *Ranunculus omiophyllus-Montia fontana* variant community and signifies a small localised upwelling of groundwater. A larger area of MG10a is unlikely to be significantly dependent on groundwater although some influence may be present.

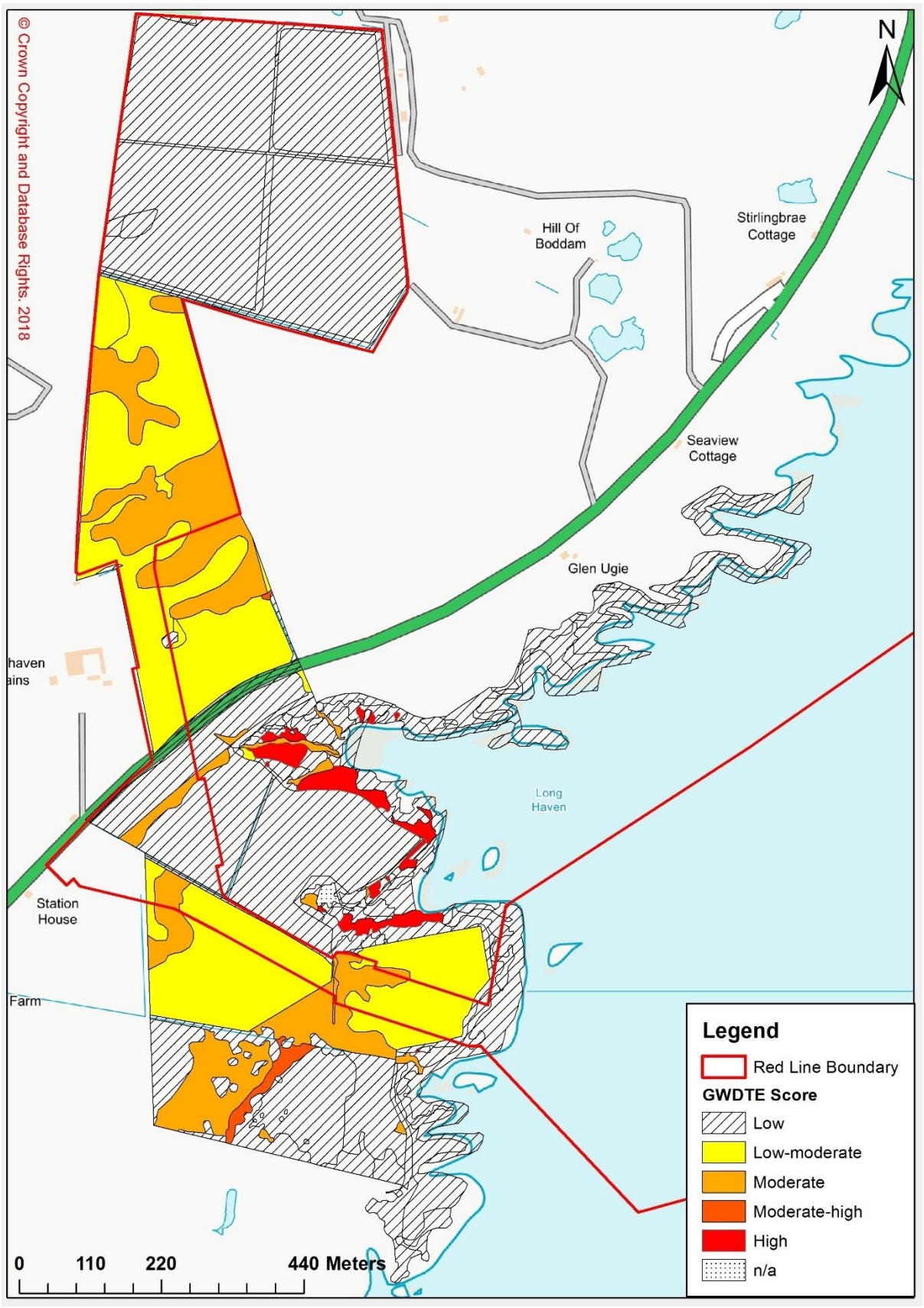

Figure 13.4 Groundwater Dependent Terrestrial Ecosystems

13.4.3.3 Non Native Species Survey

Non-native and invasive species survey was carried out in conjunction with the NVC survey.

Only a single non-native species was recorded within the Site as indicated on Figure 13.3:

- Monbretia, *Crocosmia* x crocosmiiflora

No species were recorded that are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (where relevant to Scotland), which makes it an offence to release or spread any plant or animal that is identified as a potential threat to native biodiversity. Species listed on Schedule 9 may not be released or introduced without a license, allowed to escape into the wild, or caused to be spread in the wild. No species were recorded within the survey area identified as invasive 'alien' species on the Water Framework Directive alien species list or on the Scottish Natural Heritage Species Action Framework as being target species for management to limit their spread. As a result, based on the survey findings no specific action in relation non-native species is likely to be required, although the spread of non-natives, not identified on Schedule 9 of the Wildlife and Countryside Act should also be avoided.

13.4.3.4 Longhaven Cliffs Reserve: Inland Section

The inland section of the Longhaven Cliffs Reserve, which is more than 600m from the HVDC onshore corridor, was found to have the following species of conservation interest within it (see Appendix D.5: Figure 4):

- H7 *Calluna vulgaris-Scilla verna* heath

No individual flowering or lower plant species of conservation concern were recorded i.e., rare, threatened, or nationally scarce conservation status.

The inland section of the Longhaven Cliffs Reserve was found to have the following non-native and invasive species present (Appendix D.5: Figure 5):

- Pampas grass, *Cortaderia selloana*
- Cotoneaster, *Cotoneaster* sp.

Neither of these species are listed on the Schedule 9 of the Wildlife and Countryside Act.

No habitats recognised as being potentially highly dependent on groundwater were located within the inland section of the Longhaven Cliffs Reserve.

13.4.4 Protected Species of Fauna

Existing information held by the NESBReC did not reveal any reports of otter, water vole or badgers within the HVDC red line boundary area, although the habitat was identified as being suitable for all three species. The results from the 2014 Extended Phase 1 Habitat Survey, the 2014 and 2016 Protected Mammal Surveys, revealed signs of all three-mammal species being assessed, the results of which are described below in detail, for each species. Further information is available in Appendix D.1.

13.4.4.1 Otter

General Information

Otters fall under the Annex II of the Conservation (Natural Habitats &c.) Regulations 1994 as amended in Scotland which transpose into Scottish law the European Community's Habitats Directive

(92/43/EEC). In addition, otters are listed in the Scottish Biodiversity List, the UK Biodiversity Action Plan (BAP), and fall within the ecosystem group for the North-East Scotland LBAP. The IUCN classifies otters as being Near Threatened, though in the UK the otter is currently recovering from its historical persecution. Whilst its distribution is known to be increasing, ongoing efforts to ensure it returns to a favourable conservation status are still required (JNCC, 2010b).

It is known that otters may have several resting places (including holts and couches) throughout their home range (Mason & Macdonald, 2009). A home range is the area which an animal utilises regularly for their individual requirements, including foraging, breeding, and sheltering. Depending on whether the otter is predominantly using freshwater habitats for their foraging needs or the coastal habitat, can affect how large their foraging range is, with coastal populations tending to have smaller ranges (JNCC, 2007). Sex differences in home ranges also exist with male otters normally recorded as having larger home ranges (Kruuk & Moorhouse, 1991). The distribution of these ranges can be up to 20km for a female otter and up to 32km for a male otter, or as little as 4-5km depending on the productivity of the habitat (SNH, 2007). Studies on the River Dee and River Don demonstrated ranges along the rivers of between 12km and 80km for male otters, and females using up to 20km of water (Chanin, 2013). Distances between otter shelters and resting places can be 2km, but may also be as little as being every 150m of shoreline (SNH, 2007).

Previous studies utilising otter signs as evidence for habitat usage have demonstrated that during the winter and spring months more otter spraints are recorded, as during the summer, 'smears' (secretions lacking solid food remains) are more common (Macdonald & Mason, 1987). It is likely that smears are more readily washed away in wet weather conditions.

Whilst the majority of otters in Scotland are located in the West and North, the Aberdeenshire coastline and the Dee catchment area have recorded otters throughout the area. This north-east coastline and riverine system has extensive areas of suitable habitat along the coastline for feeding, resting and breeding, including suitable watercourses. The Dee population of otters is described as *"a strong, high quality population, representative or north-east Scotland" (JNCC, 2017a)*.

Field survey results

No significant watercourses are present within the HVDC Protected Mammal survey area; which extends from the coast inland to a mix of mainly agricultural habitats. However, there are numerous small ditches with fast flowing water, small waterbodies, areas of scrub and the coastline, which may provide opportunities for places of shelter, commuting links and limited foraging (Tracks Ecology, 2017b). Table 13.8 present a summary of the waterbodies which were suitable for otters, and the evidence of otters recorded during the protected mammal surveys, the Phase 1 Habitat survey, and during subsequent visits to the HVDC Site. Those waterbodies which were unsuitable for otters are not summarised, although further information on these can be found in Appendix D.1. Figure 13.5 shows the location of the waterbodies within the otter survey area. Target Notes in Figure 13.5 relate to those described in Appendix D.2.

Table 13.8 Summary of Otter Survey Data

Location	Relation to HVDC Consenting Corridor	Description	Evidence of otters
Waterbody 1	North, by approx. 350m.	Man-made pond within Highfields property. Small vegetated island present.	Restricted access meant no detailed survey of pond could take place, but likely to offer foraging suitability and ground shelter opportunities
Waterbody 3	East, by approx. 10m.	Inland pond associated with agricultural drains, vegetated along the banks.	No evidence of otters, though the pond and surrounding habitat is suitable for an otter couch due to vegetation cover.
Waterbody 4	North East, by approx. 50m.	By former quarry by the cliff. Vegetation and some scrub present. Good sheltered links to the coastal areas. Holt camera set up at this location.	Holt found by the banks, sprainting and feeding evidence recorded on multiple visits from May 2014-February 2018.
NK 12022 40953	South, by approx. 45m.	Bog pool, 30m southeast of the Fourfields site. Target note 27 in Appendix D.2.	Otter spraint found on a grass hummock, and slide noted going into the bog pool.
NK 11927 40416	North east, by approx. 130m.	On the coastal path, adjacent to the dismantled railway line. Target note 31 in Appendix D.2.	Two otter spraints found on wooden steps.

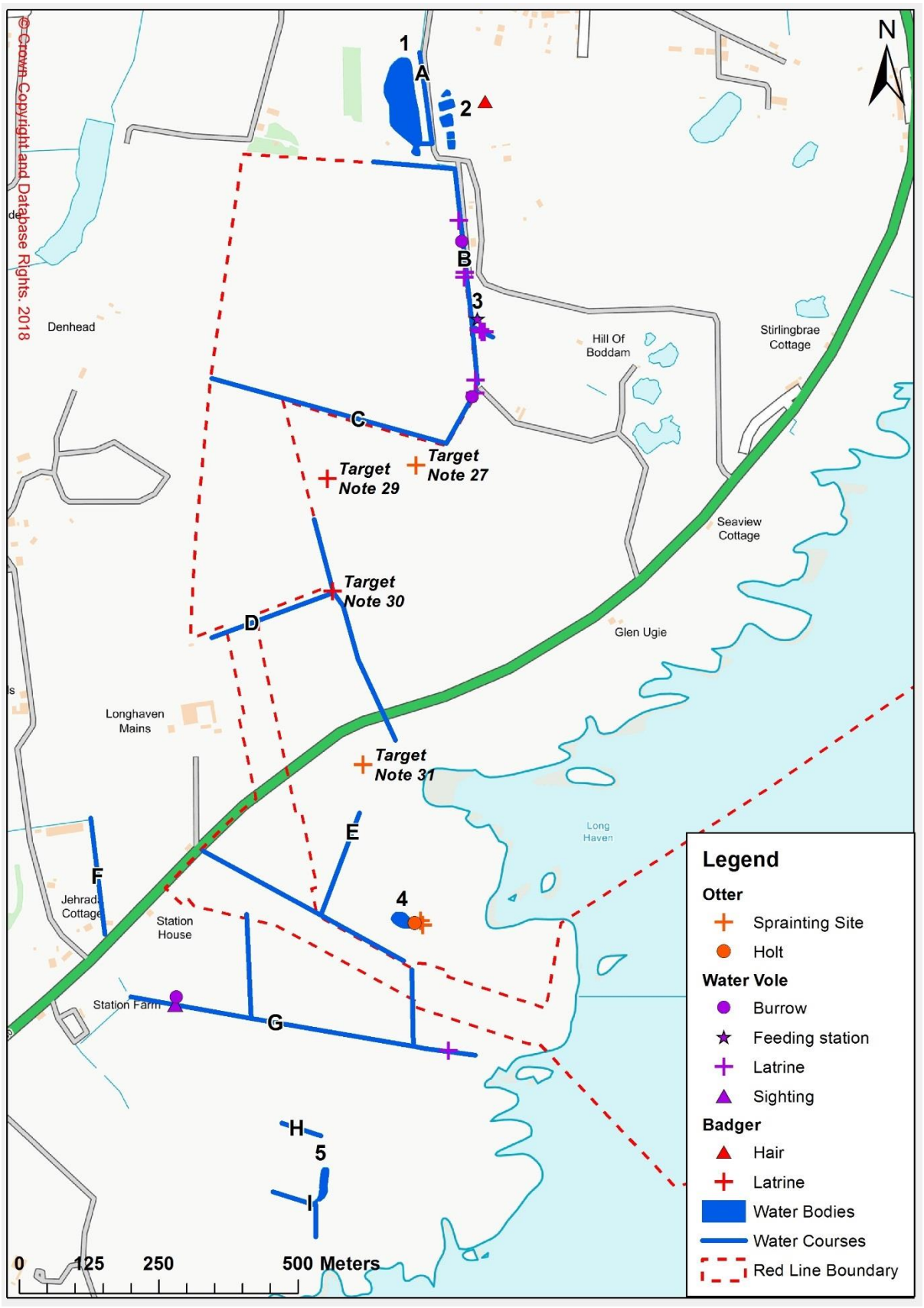

Figure 13.5 Protected Mammal Survey Results from within and surrounding the onshore HVDC consenting corridor. Target Notes relate to those described in Appendix D.2.

Waterbody 4, by a former quarry, was the only place recorded as possibly having an otter holt during the surveys within the HVDC otter survey area, and a holt was located within large boulders present by the water's edge. From the feeding and sprainting evidence found consistently over numerous site visits, it is thought that a coastal otter is using this location periodically. Whilst the otter camera study which took place from June-July 2017, and from October-November 2017, revealed no evidence on camera of regular otter usage of the holt, when visited in October 2017, the holt had been in use during the interim period as vegetation was cleared from the hole. It is possible that this is a holt which is used during another part of the annual cycle, or used less frequently than a natal holt would be. It is possible the otter has several sites along the coastline that it visits, and this site is one it transits through at particular times of the year. As otter home ranges can overlap (Kruuk & Moorhouse, 1991), it is possible that more than one otter will be using this coastline.

Further evidence of otter presence in the area came from the extended Phase 1 survey and the 2014 mammal survey, where both surveys identified otter spraints. The extended Phase 1 survey recorded them at two locations (Appendix D.2: TN27 and TN31), and the 2014 mammal survey recorded one by waterbody 4. In addition, ad hoc sightings of spraints along the coast were recorded during the ground investigation bird surveys on 31st January and 26th February 2018.

13.4.4.2 Water Vole

General Information

As well as being afforded protection under Schedule 5 in the WCA, water voles are listed in the Scottish Biodiversity List (SBL), the UK Biodiversity Action Plan (BAP), and are within the ecosystem group for the North-East Scotland LBAP. Water voles in the UK have had a long-term decline, with the most recent decline recorded as an 88% decrease in number of individuals.

Water voles require water bodies with grasses and herbs on the banks for feeding and digging their burrows (SNH, 2016). Maintaining this vegetation along water bodies is an important aspect of water vole conservation. Their preferred water habitat will largely be slow-flowing or static burns, ditches and drains, with a steep bank profile (SNH, 2016). Water voles tend to live in small colonies of up to 10 breeding individuals, and in the breeding period (March to September) will defend a territory of between 30-200m of watercourses (SNH, 2016).

In the field burrows are a distinctive sign of water voles, being recorded usually within 3m of a watercourse (SNH, 2016). Droppings are used to mark their territories and are deposited both outside burrows and at specific latrines along the watercourse.

The NBN Atlas revealed that whilst no water voles have been previously recorded in the HVDC water vole survey area, there are 34 records of water vole in a 10km grid south of Longhaven village, the outer edge of which is less than 2km away.

Field survey results

Most of the watercourses identified during the survey are essentially agricultural drains supporting often low levels of water. Nevertheless, there were a number of waterbodies which offered some suitability to water voles and evidence of water voles were recorded in a number of locations in both the 2014 and 2016 mammal surveys, these are shown in Figure 13.5. The extended Phase 1 habitat survey identified suitable habitat for water voles, but recorded no evidence of water voles during the survey. A summary of the waterbodies which had evidence of water vole usage recorded during the protected mammal surveys and the extended Phase 1 Habitat survey is presented in Table 13.9. Those

waterbodies which were unsuitable for water vole are not summarised but further details of this can be seen in Appendix D.1.

Table 13.9 Summary of water vole evidence recorded during the surveys

Location	Relation to HVDC Consenting Corridor	Description	Evidence of water vole
Watercourse A	North, by approx. 35m.	A drain channel north of Fourfields, no open water present, extensive vegetation present	No water vole recorded but vegetation cover suitable for shelter and winter food available.
Watercourse B	On Eastern boundary of Consenting Corridor.	Ditch with low water depth, overgrown, vegetated banks.	Several water vole latrines identified, and a number of burrows.
Watercourse C	Consenting Corridor crosses this watercourse.	Ditch with limited vegetation cover and very little water.	Several water vole latrines identified, and a number of burrows.
Watercourse D	Consenting Corridor crosses this watercourse.	Section of agricultural drain, no open water present, extensive vegetation present	No water vole recorded but ditch offers suitable habitat with extensive foraging opportunities.
Watercourse G	Consenting Corridor crosses this watercourse.	Heavily vegetated field drain, south of A90	A number of burrows and latrines recorded, and a sighting of a water vole.
Waterbody 1	North, by approx. 20m.	Man-made pond within Highfields property. Small vegetated island present.	Restricted access meant no detailed survey of pond could take place, but likely to offer foraging suitability and ground shelter opportunities.
Waterbody 3	East, by approx. 10m.	Inland pond associated with agricultural drains, vegetated along the banks.	Water vole latrines recorded.

The water vole evidence noted in the watercourses and waterbodies within the water vole survey area confirm a small population present. At Watercourse G, evidence of water vole recorded is potentially a single dispersing individual looking to establish a territory.

No water voles were identified at these watercourses or waterbody locations during the 2014 survey, indicating a mobile metapopulation which is dispersing through the suitable agricultural drain network on an annual basis (Tracks Ecology, 2017b).

13.4.4.3 Badger

General Information

The Protection of Badgers Act 1992 affords protection to badgers and their setts, though the badger is not on either the UK BAP list or the SBL.

Badgers are highly territorial mammals which live in distinct social groupings, on average 4-6 adults will live per group (SNH, 2015). Latrines mark their territory boundaries, and in Scotland a territory is normally 70-120 hectares, though this can vary depending on the productivity of the area (SNH, 2015).

The NBN Atlas revealed two records of badgers within a 10km grid around Peterhead and Boddam. One record was north of Boddam in 2000, and the other was north of Peterhead in 2013 – neither of which is within the HVDC cable corridor.

Field survey results

During the extended Phase 1 survey evidence of badgers was identified at two locations. The first was a latrine at a disused quarry situated on the hill above Longhaven Mains, approximately 40 east of the Consenting Corridor, as shown in Figure 13.5 (Target note 29). The latrine had three pits and mammal pathways were present. No other signs of badgers were noted at this location. The second location was a latrine at the edge of the valley mire located adjacent to the Consenting Corridor, as shown in Figure 13.5 (Target note 30). This latrine had 10 pits and defined mammal pathways from the fence line to the quarry area. No confirmed setts were identified although a number of areas offered potential for sett construction including the disused quarry where the first latrine was found, in the boulders or in the gorse, and in the banks to the south of the Denend farmhouse. This latter location showed signs of a potential relict sett, now long abandoned, though is out with the HVDC cable corridor area.

During the surveys taken in 2014 and 2016, limited evidence to suggest that badgers were present within the HVDC badger survey area was identified. Only a single field sign in each survey was recorded, confirming the presence of badger in the area. A snagged hair on barbed wire fence to the south of Denend, and a snagged hair on fence adjacent to the quarry approximately 130m to the north east of the Consenting Corridor were found, as shown in Figure 13.5. No evidence of setts or latrines were identified from within the HVDC badger survey area.

The agricultural nature of the HVDC cable corridor area and surrounding landscape offers highly suitable habitat for badgers, and the presence in places of dense gorse cover could have obscured signs of setts being present. It is therefore likely that badgers use the HVDC cable corridor area on a frequent basis for foraging and commuting.

13.4.5 Valuation of Key Receptors

This section evaluates the nature conservation interests of the cable corridor survey area for its habitats and for the species it supports in terms of its relative importance in a geographical context. The value for each receptor is presented in Table 13.10.

Table 13.10 Evaluation of nature conservation interests.

Ecological Receptor	Conservation Importance	Evaluation Rationale	Ecological Receptor Value
Designated Sites for Nature Conservation			
Buchan Ness to Collieston SAC	International	The SAC is crossed at the cable landfall. The HVDC cables will pass underneath the vegetation in the SAC and therefore it is highly unlikely there will be any effects on the vegetated sea cliffs for which the site is designated. However, due to the proximity of the designated site to the consenting corridor it will be included in the assessment.	International.
Bullers of Buchan Coast SSSI	National	As with the SAC, the SSSI is crossed at the cable landfall. The HVDC cables will pass through the cliffs. The SSSI will be assessed in conjunction with the SAC.	National
Collieston to Whinnyfold Coast SSSI	National	This SSSI begins 8km south of the cable landfall. As the relevant desigated feature, vegetated seacliffs, has no ecological connectivity with any of the works being carried out for the HVDC cabling, this site can be excluded from further assessment.	Excluded from assessment.
River Dee SAC	International	The SAC is approximately 40km from the cable landfall site. Coastal otters have a much shorter range of between 2-10km and therefore it is unlikely any otters will be moving between the HVDC site and the SAC. River Dee otters are known to have larger ranges, but these otters use the river itself, rather than moving further up the coast. Therefore, there is unlikely to be connectivity between the River Dee otters and the coastal otters using land around the cable landfall site. This site is therefore excluded from further assessment.	Excluded from assessment.
Other Sites and Inventory Habitats			
Longhaven Cliffs Reserve	High Local	The coastal part of the reserve is located within the SAC and is therefore included as part of the SAC's assessment. The inland section of the reserve is approximately 600m from the closest point of the cable corridor and therefore no effects on the flora will be expected. Furthermore, no groundwater dependent species were found within the inland reserve section or individual flowering or lower plant species of conservation concern were found. Therefore, this is excluded from further assessment.	Excluded from assessment as included with Buchan Ness to Collieston SAC assessment.

Ecological Receptor	Conservation Importance	Evaluation Rationale	Ecological Receptor Value
Flora: Dominant Habitats			
Arable	High Local	Although Arable Field Margins is a UK BAP Priority Habitat, no significant field margins are present within the Phase 1 habitat survey area and the arable habitats present are highly managed through modern agricultural techniques. The wider landscape is dominated by this habitat. As the habitat is of limited ecological value, it is excluded from further assessment. It should be noted that the disturbance of the arable land is, however, taken into consideration further in Chapter 8: Land Quality.	Low local: excluded from further assessment
Semi-improved neutral grassland	High Local	Semi-improved neutral grassland can support a number of invertebrate and small mammal species which can enrich the local biodiversity. This feature is common and widespread at a local and regional level and supports an unremarkable array of floral species. The habitat is recognised within the LBAP. As the habitat is of limited ecological value, it is excluded from further assessment. It should be noted that the disturbance of the semi-improved land is, however, taken into consideration further in Chapter 8: Land Quality.	Low local: excluded from further assessment
Marshy grassland	Moderate Local	Although marshy grassland can be identified as habitat potentially dependent on groundwater, the habitat present in the HVDC survey is due to surface water movements and is related to farm management practices. In the NVC survey it was recorded that no groundwater dependent terrestrial ecosystems classified as moderate high or above will be crossed by the HVDC consenting corridor. The habitat within the Phase 1 HVDC survey area is occasionally grazed by cattle. All the land will be reinstated after installation. This habitat is excluded from further assessment.	Low Local: excluded from further assessment.
Coastal grassland	Regional	This grassland can support maritime species, and during the NVC survey a number of maritime communities were present. A small section of coastal grassland falls within the consenting corridor. However, as the cables will pass under this section of coastal grassland via HDD, no impacts are anticipated. Therefore, this habitat type is excluded from further assessment.	High Local: excluded from further assessment.

Ecological Receptor	Conservation Importance	Evaluation Rationale	Ecological Receptor Value
Maritime cliff	International	This habitat type is designated under the Bullers of Buchan Coast SSSI and under the SPA as vegetated sea cliffs, and as such is assessed under these designated sites. A number of habitat types of conservation interest were located within the maritime cliffs. Maritime cliff is within the consenting corridor, however the cables will pass beneath via HDD, so no impacts anticipated. It is however noted that one section of maritime cliff habitat is within 50m of the HDD entry point. This section was assessed in Chapter 9: Air Quality under potential dust effects. No significant effects on dust on this community, or any maritime community is predicted. Due to it being classed as having a regional value, it is included in the assessment as a precaution.	Regional
Flora: Other Notable Habitats			
Unimproved neutral grassland	Low Local	From north of the A90 up to Fourfields the consenting corridor will pass through sections of neutral grassland. This is an unremarkable habitat type with no species of conservation concern found within it. Its disturbance is already considered within Chapter 8: Land Quality. As it is ecologically not of high value, it is excluded from further assessment.	Negligible: excluded from further assessment.
Coastal heathland	Regional	The consenting corridor will not pass through the coastal heathland found as part of the NVC survey. One habitat of conservation concern was noted within the coastal heathland classification, approximately 110m north of the consenting corridor. Other coastal heathland habitat types were found within 50m of the consenting corridor near the HDD landfall. This was assessed in Chapter 9: Air Quality as having no significant effect due to dust. However, as there is a habitat of conservation concern within this habitat classification it is included for further assessment as a precaution.	High Local
Scrub - continuous	Negligible	Scrub dominated by European gorse is not notable in biodiversity terms, although it provides shelter and foraging habitat for a number of species (e.g. birds, invertebrates and mammals). Due to its widespread nature in the wider countryside, it is excluded from further assessment. However, it should be noted that shrub offers potential set building locations for badgers, which are considered separately.	Negligible: excluded from further assessment.
Bare ground and Access Track	Negligible	Of limited ecological value and therefore is excluded from further assessment.	Negligible: excluded from further assessment.

Ecological Receptor	Conservation Importance	Evaluation Rationale	Ecological Receptor Value
Acid grassland - unimproved	National	Lowland acid grassland on the UK BAP list. However, only 0.30% of the total survey area was found to have acid grassland on it, equating to 0.22 Ha. The consenting corridor does not pass through any area of acid grassland and therefore this habitat type is excluded from further assessment.	Moderate Local: excluded from further assessment.
Tall herb and fern	Regional	The species found within this habitat are highly dependent on groundwater. The consenting corridor will not pass directly though where these plants are found. However, they will be included as part of the assessment on a precautionary basis.	High Local
Open water	Moderate Local	The consenting corridor will not pass through the area of open water found during the NVC survey, however the open water is where a known otter holt is. Therefore, this will be included as part of the assessment.	Moderate Local
Quarry	Low Local	No quarries are present within the consenting corridor. The coastal disused quarry has the potential to provide shelter for a range of species, and is known to be where an otter holt is located. There is also an inland disused quarry surveyed during the extended Phase 1 habitat survey that had evidence of badger latrines. They should therefore be included in the assessment.	Low Local
Flora: Specific Botanical Interests			
Maritime grassland communities MC8: *Festuca rubra-Armeria maritima* and MC9 *Festuca rubra-Holcus lanatus*	National	Listed under Annex 1 habitat type H1230: vegetated sea cliffs of the Atlantic and Baltic coasts. These communities also form component parts of Maritime cliff and slope vegetation, listed under UK BAP and Scottish Biodiversity List priority habitats. These habitats are within the consenting corridor. However, the cables will pass under this section of the coast via HDD, so no impacts are anticipated. However, one section is within 50m of the HDD entrance and is therefore included as a precaution.	High Local
Heath community H7: *Calluna vulgaris-Scilla verna*	National	Listed under Annex 1 habitat type H1230: vegetated sea cliffs of the Atlantic and Baltic coasts. This community also form component parts of Maritime cliff and slope vegetation, listed under UK BAP and Scottish Biodiversity List priority habitats. There is one small patch identified approximately 110m from the HVDC consenting corridor. Due to its conservation status, this habitat is included as a precaution.	High Local:

Ecological Receptor	Conservation Importance	Evaluation Rationale	Ecological Receptor Value
GWDTE tall herb community U17 *Luzula sylvatica-Geum rivale*	National	Habitat is identified as being highly dependent on groundwater (SEPA, 2014). GWDTE are protected under the Water Framework Directive. This plant community was located along the cliffs to the north of the consenting corridor, but not within the consenting corridor itself. This habitat is included on a precautionary basis due to the potential effects on groundwater the cabling installation may have.	High Local.
Invasive species: Monbretia, Pampas grass and Cotoneaster	Negative	None of the invasive species identified are listed on the Schedule 9 of the WCA (where relevant to Scotland), or were identified as being an 'alien' species on the WFD list of SNH Species Action Framework. Pampas grass and Cotoneaster were recorded within the inland section of the Longhaven Reserve which is more than 600m from the nearest part of the HVDC cable corridor and therefore will remain untouched. Monbretia is found approximately 70m east of the consenting corridor. As good practice, mitigation will be implemented for Monbretia, however no further assessment of this species is required during the impact assessment.	Negative: excluded from further assessment.
Fauna: Protected Species			
Otter	International	Otters are a UK BAP priority species and receive full legal protection as an EPS. Otters are found throughout most of Scotland, the species is considered relatively widespread and common and the Scottish population represents 90% of the total British population (Scottish Natural Heritage, 2010). Evidence of otters being present during the protected mammal surveys demonstrates that they use this coastline. They are included as part of the assessment.	International
Water vole	National	Small population present on a short section of an unnamed burn, and evidence of habitat suitability in other areas near to the HVDC cable corridor. Water vole are distributed throughout much of north east Scotland and are one of the UKs most threatened native mammals. They are included as part of the assessment.	National
Badger	National	Badgers are identified as being present on at least an infrequent basis across the Survey Area, with a number of habitats likely to provide foraging resources. No evidence of active setts was identified although the dense scrub and areas of restricted access may support such.	National

13.5 Impact Assessment

The impacts of the development on the non-avian, terrestrial ecological receptors which have been assessed as having some ecological value are assessed in terms of their impact magnitude and significance. Where impacts are negligible, no further assessment is undertaken.

13.5.1 Nature of Potential Impacts

A number of potential impacts (in the absence of secondary mitigation) have been identified in connection with both the onshore construction phase of the development, and these may be direct or indirect impacts. Effects will be divided into those effects on flora receptors and those protected mammal receptors.

13.5.1.1 Effects on Habitats and Flora

Potential impacts may include:

- Loss of habitat within the construction corridor due to excavation of cabling trenches, installation of haul roads/drainage ditches, storage of soil heaps, construction laydown areas and temporary site compound facilities;
- Pollution of habitats or flora of conservation concern due to construction works; and
- Accidental effects on groundwater affecting groundwater dependent species.

13.5.1.1.1 Habitat Loss

None of the scoped-in habitats in Table 13.9 will be subject to any habitat loss as a result of the HVDC cable works. This is because the HDD will go under the maritime cliff and designated sites. The quarries and the open water habitats will also not be affected by the HVDC cabling. The NVC survey revealed the cable corridor mostly contains neutral grassland and disturbed agricultural land, which will be restored after the works have been completed.

Therefore, the impact on receptors, ranging from **international** to **low local** in value, is **negligible**, leading to either a **minor** or a **negligible**, **non-significant** effect.

13.5.1.1.2 Pollution of Habitats

If an accidental spill would occur during construction, it could impact upon the flora surrounding the spill. If it were to occur the most likely habitat type to be affected would be the agricultural land and grasslands, as these are the dominant habitat types the cable route is passing through. These habitats have been scoped out for assessment due to their widespread nature. Waterbody 4, where the otter holt was recorded, is located at the bottom of a cliff, not in direct proximity to any cabling activities, as discussed in Chapter 10: Water Quality (onshore) spillages to Waterbody 4 are unlikely, taking account of mitigation the resultant effects on water quality were deemed to be negligible, non-significant. The designated site habitats are being drilled under with HDD, so should not be subject to any pollution events.

There are several small sections of vegetation of conservation concern in close proximity to the consenting corridor, including; coastal grassland, coastal heathland, and non-ruderal tall herb and fern habitats. As identified in Chapter 9: Air Quality, there is the potential for these habitats to be affected by fugitive dust emissions from the cable installation works. However, as identified in the Air Quality assessment, no significant effects are expected providing the dust management plan is adhered to, as laid out within the Schedule of Mitigation.

Therefore, impacts on the designated sites and habitats, of **international** and **national** value, is **negligible** due to the techniques being used, leading to a **minor**, **non-significant** effect.

The impacts on the open water, quarry (Waterbody 4), of **moderate** and **low** local value, is **negligible**, leading to a **negligible**, non-significant effect.

Impacts of pollution on tall herb and fern habitats, which are associated as being potentially dependent on groundwater, are considered further in section 13.5.1.1.3, but if the land or groundwater were to be polluted there could be an effect on these receptors. As discussed in Chapter 8: Geology and Hydrogeology with mitigation including: pollution prevention measures, and a pollution response plan in place, the risk of a spill occurring and contaminating the ground water is low; hence the impact on these **high local** receptors is assessed as **low**, leading to a **minor**, **non-significant** effect.

13.5.1.1.3 Effects on Groundwater

As identified in Chapter 8: Geology and Hydrogeology there will be a potential need to extract groundwater entering excavation, particularly closer to the Fourfields Site. There are habitats within 50m of the consenting corridor which are defined as being highly dependent on groundwater, but from the habitat survey, none of these are within the Fourfields site.

In Chapter 9: Water Quality (Onshore), it is identified that the existing field drains are not currently well maintained and that maintenance shall be completed. Maintenance will be limited to the areas in the vicinity of the HDD work site, the access road and the cable installation works, which does not include moderate to high or high GWDE. Any effects on hydrology will be very localised. The surface water management during construction will be subject to a Construction Licence will be required under the Water Environment (Controlled Activities (Scotland) Regulations (as Amended) (CAR).

The highly groundwater dependent plants (tall herb and ferns) were found closer to the cliff, near the HDD site and just south of the A90. It is not expected that there will be long-lasting effects on the groundwater and hence on the species which are highly dependent upon it. Therefore, the effects on tall herb and ferns, a **high local** receptor, is expected to be **negligible**, leading to a **negligible**, **non-significant** effect.

13.5.1.2 Effects on Protected Mammal Species.

Potential impacts may include:

- Disturbance of habitat for species protected under European and National legislation during construction works;
- Direct physical damage inflicted to protected species as a consequence of construction works, resulting in injury or death;
- Pollution and degradations of watercourses/water quality due to construction disturbance, pollution, and run-off;
- Fragmentation of habitats and severance of ecological corridors during construction; and
- Indirect temporary impacts on adjacent habitats (and the species that use them) for example through noise and visual disturbance.

13.5.1.2.1 Habitat Disturbance

The project has specifically ensured that the identified otter holt is beyond 50m of the nearest point to the HVDC cable corridor. Furthermore, the coastal path around the cliffs, where otter spraints

where located during the surveys, will not have any works near it. Therefore, the otter's coastal range will not be affected by the works. If the otter uses the farm fields to move across, then there is the chance that it will be disturbed during construction.

During the most recent badger surveys, limited signs of badger presence were recorded, however in the extended Phase 1 habitat survey carried out in 2014, evidence of badger latrines were present. Furthermore, from the NVC survey continuous scrub habitat is present, which can provide shelter and suitable habitat type for badgers to build their setts. From the habitat survey it is noticed that the majority of the scrub habitat is not within the HVDC corridor. There is a small patch of scrub at the south end of Fourfields which may need to be disturbed when the HVDC cables are being installed. Therefore, there is the potential for badgers to be disturbed during the works if they were to be using this scrub or moving across the fields.

For water voles, the surveys found that two water courses which will be crossed by the HVDC cabling had evidence of water vole usage. It is noted that water voles can disperse throughout different water bodies depending on the year or season, so they may well be using other waterbodies close to the consenting corridor by the time construction is due to commence.

For otters of **international** value in the absence of mitigation there could be a **low** impact magnitude, leading to a **moderate**, **significant** effect. For badgers of **national** value, this leads to a **minor**, **non-significant** effect. For water voles of **national** value, they could be subjected to a **medium** impact magnitude, leading to a **moderate**, significant effect.

13.5.1.2.2 Accidental Physical Damage

During the cable construction it is possible that one of the protected species of mammal is accidentally injured or killed through interactions with machinery or plant, or by becoming trapped in an excavation. In the absence of mitigation this effect is likely to negative and permanent for the individual animal, however it very unlikely to occur at a frequency that could result in population level effects at a species level. For otters of **international** value in the absence of mitigation there could be a **low** impact magnitude, leading to a **moderate**, **significant** effect. For water voles and badgers of **national** value, this leads to a **minor**, **non-significant** effect.

13.5.1.2.3 Pollution of Habitats

As laid out in Chapter 8: Land Quality and Chapter 10: Water Quality (on-shore) accidental spills could lead to effects on the land and water quality. However, with the comprehensive primary and tertiary mitigation in place, as set out in Chapters 8, 24 (Resource and Waste), and 25 (Schedule of Mitigation), the risk of a spill occurring, and the contaminant reaching the ground or water environment in a volume with the potential to cause environmental effects is extremely low.

The potential to for surface water runoff to carry silts into the watercourses and for silt issues to arise during culvert installation during road construction and cable installation across watercourses is considered with Chapter 10: Water Quality (Onshore). With appropriate mitigation the effects on water quality were deemed to be minor, non-significant. Watercourses potentially affected include Watercourses C and G which provided water vole habitat. Water voles are known to still use water courses which are turbid (Pond Conservation, 2010), provided this is not due to chemical pollutants.

As a result of the mitigation measures already in identified in other topic specific chapters, the effects of accidental spills the **international** valued otters and **nationally** valued water vole and badgers is expected to be of **negligible** magnitude, leading to a **minor**, **non-significant** effect for otters and **negligible, non-significant** effects for water voles and badgers.

For sedimentation of water bodies, with the mitigation identified in Chapter 10: Water Quality (Onshore), for water voles, there may be a **low** magnitude of effect, leading to a **minor, non-significant** effect.

13.5.1.2.4 Habitat Fragmentation

It is possible that the cable construction corridor could cause a small degree of habitat fragmentation as sections of the corridor where trenching is required will be fenced off during cable installation. However, as the construction corridor width is largely 50m, larger mammals such as the otters and badgers may be able to move cross the corridor to the south of the works, towards the coastal path and at the sections where HDD is being employed. Evidence from the otter survey revealed that it is likely a coastal otter that is utilising the area. As no parts of the coast will be disturbed during the works, no habitat fragmentation along the coast itself will take place. Badger evidence was low during the surveys, but the grassland is suitable habitat for them to cross through.

For water voles, there will be disturbance of some of the water courses during the cabling installation and temporary road works, which may mean they are not able to use sections of the water course temporarily whilst the construction is being completed. From the water vole surveys watercourses G and C had evidence of water voles' usage, and both these ditches will need to be crossed during enabling and installation works, however water flows will be maintained. Water voles often change their distribution year to year and it is possible that the existing population distribution as presented in the baseline information could expand or relocate to include additional areas. Their habitat may therefore be fragmented but this is only likely to occur for short periods of time, across one or two years (see Chapter 2: Project Description for predicted timings). As the project design is such that the land will be restored to its former usage after cable installation, this also relates to ensuring the water courses are not adversely affected in the medium or long term.

Otters, an **internationally** valued receptor is predicted to have a **negligible** magnitude of impact due to habitat fragmentation, leading to a **minor, non-significant** effect.

Badgers and water voles, **nationally** valued receptors, would also be subject to a **low** impact, leading to a **minor, non-significant** impact.

13.5.1.2.5 Noise and Visual Disturbance

Noise and visual disturbance may lead to avoidance of affected areas by the protected mammals which may alter their spatial use of the surrounding landscape, including disruption to commuting and foraging patterns. For otters, the identified holt, if it is in use during the construction works is more than 50m from the closest part of the cable corridor, and is at the bottom of a disused quarry, so is also afforded screening from the potential noise disturbance. Chapter 22: Noise (In-Air) demonstrated that noise in the quarry will not differ from background noise during HVDC cabling works.

Badgers are by nature nocturnal and as the working hours are predominantly during the day, it is unlikely there will be any visual or noise-based disturbance on these species. It should be noted that in the context of the site, the mammals may be used to relatively high background noise, due to the presence of the A90.

Water voles are notoriously shy animals and are easily disturbed by human presence. It is possible that if they are present during the works that they will be disturbed by the works and may move further along the water body.

Internationally valued otters and **nationally** valued water vole and badgers is expected to be of **negligible** magnitude, leading to a **minor**, **non-significant** effect for otters and **negligible, non-significant** effects for water voles and badgers.

13.5.2 Operation / Maintenance

It is not expected that the cables will require regular repairs or maintenance, but if they do require works sections of the cable route may need re-excavated. This would lead to temporary disturbance of a small area of land, but this would be reinstated again once the repairs had been carried out. As such, it is expected that once the HVDC cable is operational, there will be minimal disturbance and/or impact on the ecological receptors identified above, hence the potential effects on habitats, flora, and protected mammal species are assessed as **no change**.

13.6 Mitigation Measures

This section outlines the proposed mitigation strategy for the development. Mitigation measures are aimed to prevent or reduce any likely significant effects on the ecological receptors identified. In line with EcIA guidance, mitigation measures are required for impacts identified as being of minor significance or greater in EcIA terms. As detailed in Chapter 3: Methodology, standard construction practices, such as Pollution Prevention Guidance are assumed to be applied. However, where the overall EcIA significance is less than moderate, mitigation may not be required but some habitats and species are still subject to mitigation to ensure high environmental working standards and legal compliance, for example the European Protected Species.

13.6.1 Habitats and Flora

Potential impacts of the development on valued ecological receptors have been minimised through careful site design, resulting in no significant effects on habitats or flora being identified. However, the following considerations will be made in line with environmental best practice.

13.6.1.1 Invasive Species

As part of the Schedule of Mitigation the location supporting Montbretia, an invasive non-native species, will be identified on relevant constraints drawings. If works are located within 50m of the species, then the areas containing the invasive species will be clearly marked to prevent any disturbance. If these areas need to be disturbed, then a suitably experienced professional will be consulted with respect to the most appropriate method of managing the invasive species.

13.6.1.2 Aquatic Habitats and Groundwater Dependant Ecosystems.

Mitigation measures identified in Chapter 10: Water Quality (Onshore), and Chapter 8: Geology and Hydrogeology will be implemented to prevent pollution associated impacts and to minimise effects on hydrology in terms of flooding and impacts on GWDE.

13.6.2 Protected Species

Potential significant impacts were identified for otters and water voles, resulting from the effects of habitat disturbance and possible accidental physical damage resulting from the construction activities. The following mitigation measures will be implemented in order to reduce the magnitude of these effects.

13.6.2.1 Pre-construction Surveys

Pre-construction protected mammal surveys will be undertaken in order to ascertain whether any protected mammal species, or areas of importance to these species are present within or in the immediate vicinity of the construction areas, this will allow specifics of the mitigation to be tailored.

This will also safeguard against any breach in wildlife legislation with respect to protected terrestrial species within these areas.

This will focus on all watercourses within 200m of the proposed HVDC corridor for otters and water voles, and all areas within 200m of the HVDC cable corridor for badgers, and should be completed within 8 weeks of the start of construction. This will allow time for licences to be sought if required. Further checks closer to the time of the works should be completed as deemed appropriate by the initial survey to ensure no changes have occurred.

Dependent on the results of the pre-construction surveys, an assessment of the likelihood of disturbance to protected mammals will be undertaken and the need for an EPS or derogation licence under the Conservation (Natural Habitats &c.) Regulations 1994 as amended in Scotland will be assessed and discussed with SNH.

13.6.2.1 Prevention of Habitat Disturbance

Any protected mammal features in close proximity of the works will be clearly marked including an appropriate buffer zone. A minimum buffer of 40m will be implemented for any newly identified otter holt or badger sett, although this will be reviewed dependent on the level of activity identified during the surveys. Appropriate mitigation will be identified dependant on the nature of the protected mammal feature, and construction workers will be briefed on the significance of these locations.

In the unlikely event that a previously undiscovered protected mammal feature (holt, sett, or burrow etc.) is identified during the works, work will stop within 30m, of the feature or immediately if already within 30m, and the Contractor and Client will be informed. Appropriate mitigation measures will be identified through consultation with SNH, and appropriately qualified experts as necessary. Works will not recommence in the affected area until suitable mitigation is in place.

Trenching under the watercourses and associated use of dams and culverts shall be undertaken following best practice techniques as discussed in Chapter 10: Water Quality (Onshore), with duration and extent of disturbance minimised and habitat reinstatement undertaken at the earliest opportunity.

Artificial lighting within the site, and along watercourses should be minimised wherever possible and directed to only the areas where it is required.

13.6.2.2 Prevention of Physical Harm and Entrapment

All site personnel will be instructed to remain vigilant for protected mammals, and will stop operations in the event of risk of causing harm to a protected mammal. There will be an ongoing watching brief for protected mammals by the sites environmental staff, during all works with the potential to cause damage or injury to protected mammals in areas identified as being sensitive during the preconstruction surveys.

Any pipes or other such materials shall be stored upright, or have covers fitted to the ends, or be appropriately fenced off to prevent entrapment or occupation my protected mammal. Temporary ramps will be utilised within the cable trenches to allow mammals to escape by themselves, should they fall in.

13.7 Residual Effects

The potential significant effect is accidental injury caused to one of the protected mammals during works. Pre-construction surveys, as laid out in Mitigation, Section 13.6, will result in it being unlikely

that any mammals will be injured as part of the work. Therefore, the resulting impact on the protected mammal species is of **negligible** magnitude, resulting in a **negligible**, **non-significant** effect.

For otters and water voles, which could be disturbed during the construction works, pre-construction surveys will also ensure that any mammals utilising the habitat are noted, which can then mean further mitigation can be put in place to minimise disturbance. Therefore, the resulting impact on the protected mammal species is of **negligible** magnitude, resulting in a **negligible**, **non-significant** effect.

13.8 Cumulative Effects

The only project which is to be considered as part of the cumulative assessment is the NorthConnect HVAC cabling and Converter Station construction. The permanent effect of arable land being disturbed as the Converter Station is being built on top of it, will not be added to by the HVDC works in the long-term as all the land will be restored to its former usage, with the exception for a 1m strip at the A90 of the temporary access road which will remain as a tarmacked. The same mitigation procedures will be put in place for the Protected Mammal species in both projects. Therefore, there are no cumulative effects expected for the terrestrial ecological receptors between the two aspects of the NorthConnect Project.

13.9 Summary

The key habitats and species within the respective survey area were identified during the completion of baseline surveys: Extended Phase 1 habitat survey; National Vegetation Survey, Non-native species Survey; and Otter, Water Vole and Badger Survey. No significant effects on ecological receptors have been identified resulting from the development. Several best practice measures have been identified along with a number of species specific mitigation approaches in order to reduce ecological effect as far as possible. Table 13.11 provides a summary of the potential impacts, their levels of significance before and after mitigation, along with a summary of mitigation.

Table 13.11 Summary of potential ecological effects.

Receptor	Nature of Impact	Receptor Sensitivity	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Construction							
Buchan Ness to Collieston SAC	Habitat loss or pollution	International	Negligible	Minor: Non-Significant	No specific mitigation as cables pass under this site via-HDD.	Negligible	Minor: Non-significant
Buller of Buchan SSSI	Habitat loss or pollution	National	Negligible	Negligible: Non-significant	No specific mitigation as cables pass under this site via-HDD.	Negligible	Negligible: Non-significant
Maritime Cliff	Habitat loss or pollution	Regional	Negligible	Negligible: Non-significant	No specific mitigation.	Negligible	Negligible: Non-significant
Coastal Heathland	Habitat loss or pollution	High Local	Negligible	Negligible: Non-significant	Dust Management Plan.	Negligible	Negligible: Non-significant
Tall herb and fern	Habitat loss or pollution. Groundwater effects.	High Local	Low	Minor: Non-Significant	Dust Management Plan.	Negligible	Negligible: Non-significant
Open Water	Pollution	Moderate Local	Negligible	Negligible: Non-significant	No specific mitigation.	Negligible	Negligible: Non-significant
Quarry	Habitat loss or pollution	Low Local	Negligible	Negligible: Non-significant	No specific mitigation.	Negligible	Negligible: Non-significant
Habitats: MC8, MC9, H7.	Habitat loss or pollution	High Local	Negligible	Negligible: Non-significant	Dust Management Plan.	Negligible	Negligible: Non-significant
Habitat U17	Habitat loss or pollution. Groundwater effects.	High Local	Low	Negligible: Non-significant	As identified in Chapter 8: Geology and Hydrology, and 10: Water Quality	Negligible	Negligible: Non-significant

Receptor	Nature of Impact	Receptor Sensitivity	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Otter	Habitat disturbance	International	Low	Moderate: Significant	Avoidance of construction near otter holt location Pre-construction surveys and exclusion zones.	Negligible	Minor: Non-significant
	Habitat fragmentation	International	Negligible	Minor: Non-significant		Negligible	Minor: Non-significant
	Noise or visual disturbance	International	Negligible	Minor: Non-significant	No specific mitigation	Negligible	Minor: Non-significant
	Accidental physical damage	International	Low	Moderate: Significant	Pre-construction surveys, exclusion zones, and construction watching briefs. Measures to prevent entrapment.	Negligible	Minor: Non-significant
	Water course pollution	International	Low	Moderate: Significant	As identified in Chapter 10: Water Quality	Negligible	Minor: Non-significant
Badger	Habitat disturbance or fragmentation	National	Low	Minor: Non-significant	No specific mitigation.	Low	Minor: Non-significant
	Noise or visual disturbance	National	Low	Minor: Non-significant	No specific mitigation.	Low	Minor: Non-significant

Receptor	Nature of Impact	Receptor Sensitivity	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Badger	Accidental physical damage	National	Low	Minor: Non-significant	Pre-construction surveys, exclusion zones, and construction watching briefs. Measures to prevent entrapment.	Negligible	Minor: Non-significant
	Water course pollution	National	Low	Minor: Non-significant	No Specific mitigation.	Low	Minor: Non-significant
Water Vole	Habitat disturbance	National	Medium	Moderate Significant	Pre-construction surveys Culverts installed as discussed in Chapter 10: Water Quality (Onshore)	Low	Minor: Non-significant
	Habitat fragmentation	National	Low	Minor: Non-significant	No specific mitigation.	Low	Minor: Non-significant
	Noise or visual disturbance	National	Low	Minor: Non-significant	No specific mitigation.	Low	Minor: Non-significant
	Accidental physical damage	National	Low	Minor, Non-Significant	Pre-construction surveys, exclusion zones, and construction watching briefs. Measures to prevent entrapment.	Negligible	Negligible: Non-significant
	Water course pollution	National	Low	Minor, Non-Significant	As identified in Chapter 10: Water Quality	Low	Minor

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